
Liant Software Corporation

Relativity[®]

Data Manager Installation Guide

Second Edition

LIANT

Copyright © 1994-2008 by Liant Software Corporation. All rights reserved. Printed in U.S.A.

No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopied, recorded, or otherwise, without prior written permission of Liant Software Corporation.

The software described in this document is furnished under license and may be copied (with inclusion of the copyright notice) only in accordance with the terms of such license.

The information in this document is subject to change without prior notice. Liant Software Corporation assumes no responsibility for any errors that may appear in this document.

Companies, names, and data used in examples herein are fictitious.

Liant Software Corporation

5914 West Courtyard Dr., Suite 100
Austin, TX 78730-4911
U.S.A.

Phone (512) 343-1010
(800) 762-6265
Fax (512) 343-9487

Web site <http://www.liant.com/>

RM, RM/COBOL, RM/COBOL-85, Relativity, Enterprise CodeBench, RM/InfoExpress, RM/Panels, VanGui Interface Builder, CodeWatch, CodeBridge, Cobol-WOW, WOW Extensions, InstantSQL, Xcentricity, XML Extensions, Liant, and the Liant logo are trademarks or registered trademarks of Liant Software Corporation.

Micro Focus COBOL is a registered trademark of Micro Focus International Limited.

Microsoft, MS, MS-DOS, Windows 98, Windows Me, Windows NT, Windows 2000, Windows XP, Windows Server 2003, Windows Vista, Windows Server 2008, and Visual Basic are trademarks or registered trademarks of Microsoft Corporation in the USA and other countries.

Simba is a registered trademark of Simba Technologies.

UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company Ltd.

All other products, brand, or trade names used in this publication are the trademarks or registered trademarks of their respective trademark holders, and are used only for explanation purposes.

Documentation Release History for the Relativity Data Manager Installation Guide:

Document Edition Number	Applies To Product Version	Publication Date
Second	Relativity version 12 and later	October 2008
First	Relativity version 6 and later	January 2005

Important These Liant manuals are distributed as Adobe Acrobat PDF files and require the Adobe Acrobat Reader, v6.0 or higher, in order to view them. The installation program for the Adobe Acrobat Reader is available from the Adobe web site at: www.adobe.com.

Contents

- Preface..... 1**
 - Introducing the Relativity Data Manager..... 1
 - Related Relativity Documentation..... 2
 - Using Online Help..... 3
 - Relativity Data Manager Help Files..... 3
 - Accessing the Relativity Data Manager Help Files..... 4
 - Using the Relativity Help files..... 4
 - Conventions Used in this Document..... 5
 - Registration..... 5
 - Technical Support..... 5
 - Support Guidelines..... 6
 - Test Cases..... 6

- Chapter 1: Installation and Verification of Relativity Data Manager... 7**
 - System Requirements..... 8
 - Installing the Relativity Data Manager..... 9
 - Electronic Software Delivery Installation..... 9
 - CD-ROM Installation..... 11
 - Verifying the Installation..... 12
 - Accessing Relativity Data Sources from Microsoft SQL Server Via OLE DB..... 17
 - Removing the Relativity Data Manager..... 18

- Appendix A: Indexed File Recovery Utility (recover1) for RM/COBOL 19**
 - Installing the Recovery Utility Program..... 19
 - Using the Recovery Utility Program..... 20
 - Recovery Command..... 20
 - Recovery Command Options..... 21
 - Recovery Process Description..... 23
 - Recovery Support Module Version Errors..... 24
 - Example..... 24
 - Recovery Program Error Messages..... 30

- List of Figures**
 - Figure 1: File Recovery Verification..... 25
 - Figure 2: Recover1 Summary..... 26
 - Figure 3: Recover1 Statistics..... 27
 - Figure 4: Recover1 Finished Successfully..... 27
 - Figure 5: Entering Key Information..... 28
 - Figure 6: Entering KIB Information..... 29

Preface

Introducing the Relativity Data Manager

The Relativity Data Manager is used in the single-tier configuration where the complete Relativity DBMS resides on a single Windows machine. This component implements the ODBC interface, the file to relational database transformations, and the application data file access routines. All the data files to be accessed must be accessible from the Windows machine, either because the files exist on disk drives attached to that machine or are accessible using the Windows network file system.

Relativity provides for a *true* relational database view of your COBOL application data. It also provides a Microsoft Windows Open Database Connectivity (ODBC)-compliant relational database engine that allows SQL-based access to your COBOL application data *without* moving, converting, replicating or re-engineering your legacy data files. With Relativity, you can choose virtually any modern Windows development tool to build applications for ad hoc reporting, decision support, and specialized data processing functions. Furthermore, using Relativity, you do not have to rewrite or migrate any of your working applications.

This manual, the *Relativity Data Manager Installation Guide*, which is part of the Relativity document set listed in [Related Relativity Documentation](#) (see page 2), describes how to install the Relativity Data Manager software component on a Windows-based workstation and verify that the installation was successful by configuring a data source. It also explains how to run the RM/COBOL Indexed File Recovery utility (**recover1**) to recover an RM/COBOL indexed file.

In addition, your Relativity package contains the document, *The Theory of Relativity, A Primer*, which defines specific terminology and provides a comprehensive overview of the Relativity software tools and their functions. Before you install this Relativity product, be sure to read this book, paying particular attention to the single-tier data source topic.

Related Relativity Documentation

In addition to the *Relativity Data Manager Installation Guide* and *The Theory of Relativity, A Primer*, the complete Relativity documentation set consists of the following items:

- **Relativity Client/Server Installation Guide.** A document (one for UNIX and one for Windows) that is intended for a System Administrator. It describes the following:
 - How to install the Relativity Data Server software component on a computer running either a UNIX or Windows operating system and verify that the installation was successful.
 - How to:
 - Install the Relativity Data Client software component on a secure Windows workstation (such as the workstation belonging to a Database Administrator) for the purpose of catalog development.
 - Install the Relativity Server Administrator utility program in order to define a server for the client and configure a server data source.
 - Verify communications between the client and the server.
 - How to install the Relativity Data Client software component on an end user's Windows workstation and verify that the installation was successful by configuring a client data source and associating it with a server data source.
 - How to run the RM/COBOL Indexed File Recovery utility (**recover1**) to recover an RM/COBOL indexed file.
- **Relativity Data Client for UNIX Installation Guide.** A document that describes how to install and verify the Relativity Data Client software component on a UNIX-based server or workstation. It also describes the utilities for creating client and server data sources.
- **UNIX Driver Managers Build Guides.** A pair of HTML documents, located in the UDrvMan directory of the Relativity Data Client for UNIX Electronic Software Delivery download file and on the Relativity Data Server product CD, that give instructions on how to build the two ODBC Driver Managers for UNIX (unixODBC and iODBC) on the various UNIX platforms that the Relativity Data Client for UNIX supports. Note that these documents should be referenced only if you decide to rebuild the Liant-supplied versions of these Driver Managers.
- **Relativity Designer Installation Guide.** A document that describes how to install the Relativity Designer software component and verify that the installation was successful.
- **Relativity DBA Installation Guide.** A document that describes how to install the Relativity DBA (Database Administrator) software component on a Windows-based workstation and verify that the installation was successful.
- **Relativity Java Client User's Guide.** An HTML document, located in the JDBC directory of the Relativity Java Client Electronic Software Delivery download file and on the Relativity product CD, that describes the installation and verification of the Relativity Java Client as well as information about deploying it with Java applications and applets, and setting up data source connections. The Java Client is a Java Database Connectivity (JDBC) component that resides in a Java runtime environment (JRE).

- **Relativity Online Help.** An online HTML help documentation system that provides fast access to detailed information on Relativity features and options. The help system also contains step-by-step presentations on how to accomplish specific tasks with Relativity and an extensive glossary. A separate help file is provided for each of the various Relativity tools: the DBMS (Data Client and Data Manager), the Designer, the DBA, the Relativity Configuration Utility, and the Server Administrator. For more details, see [Using Online Help](#) (described below).
- **Relativity README Files.** A set of online HTML documents that lists any changes to the Relativity documentation since its publication and contains new technical information that supplements the documentation.
- **LiantInstall Program User's Reference.** A document that describes how to configure and control the installations of Liant products, including Relativity.

Using Online Help

The Relativity Data Manager comes with online assistance in the form of Windows HTML Help files. This section describes the help files available for the Relativity Data Manager as well as how to access and use these help file systems.

Relativity Data Manager Help Files

Two help files are available for the Relativity Data Manager:

- **Relativity Data Manager Help.** This help file describes how to use the Relativity Data Manager for all users, advanced users, and programmers, and it also includes information on the following:
 - Creating Relativity data sources.
 - Connecting to a Relativity data source.
 - The SQL grammar supported by Relativity.
 - The Error Messages produced by Relativity.
 - The Relativity stored procedures.
- **Relativity Configuration Help.** This help file describes the configuration of Relativity using the Relativity Control Panel applet. It contains information on the following:
 - Using the Relativity Configuration Utility to set options that apply to all Relativity data sources.
 - Configuring Relativity to use RM/InfoExpress.

Accessing the Relativity Data Manager Help Files

Use any of the following methods to access the Relativity Data Manager Help file:

- **Start Menu.** From the Windows Start menu, navigate to the **Liant** programs folder and then to the **Relativity vx**, folder (where vx is the version number of the installed Relativity product), and then select **Data Manager Help**.
- **Data Source Setup.** In the Relativity Data Source Administrator, click the **Help** button.
- **Designer.** From the Help menu in the Relativity Designer main window, click **DBMS Help File**.
- **DBA.** From the Help menu in the Relativity DBA main window, click **DBMS Help File**.

Use any of the following methods to access the Relativity Configuration Utility Help file:

- **Relativity Configuration.** In the Relativity Configuration Utility, click the **Help** button.
- **Designer.** From the Help menu in the Relativity Designer main window, click **Relativity Configuration Help File**.
- **DBA.** From the Help menu in the Relativity DBA main window, click **Relativity Configuration Help File**.

Using the Relativity Help files

A Relativity help file consists of two panes: the navigation pane and the topic pane. The left side of the Help window (the navigational pane) contains the **Contents**, **Index**, **Search**, and **Favorites** tabs. The right side of the Help window (the topic pane) displays the currently selected Help topic. Across the top of the Help window is a group of buttons that help you navigate through the Help contents and perform other operations, such as printing a topic in the Help file.

- **To browse through topics grouped by subject:** Click the **Contents** tab. From here, you can go directly to more specific information and a list of all the Help topics by double-clicking any closed book icon. Then select the topic of interest from the expanded list and click the topic. The Help window for that topic appears in the topic pane.
- **To see a list of alphabetized index entries (or keywords):** Click the **Index** tab to find specific topics listed alphabetically (the online index is arranged just like a book index). Type an entry or the first few letters of the word you want to search for, or scroll through the list. Then select the topic and click the **Display** command button. The content of the Help topic opens in the Help window.
- **To search for words or phrases that may be contained in a Help topic:** Click the **Search** tab. Follow the instructions on your screen to complete this task.
- **To create a list of preferred Help topics:** Click the **Favorites** tab. Follow the instructions on your screen to complete this task. Note that, by default, the contents of this tab is empty until you select topics to populate it. The content of the Favorites tab is automatically saved between sessions.

You can exit Relativity online Help from the Help window by clicking the **Close** button on the title bar or double-clicking the **Control Menu** icon at the left end of the title bar.

Conventions Used in this Document

This document contains visual cues to help the reader identify important information.

Table Convention	Indicates
Initial Capitals	Menu names, command names, and dialog box windows, and form titles.
Bold	Menu, command, and button names. Other elements to be selected or typed to accomplish an action. Label on input media used during installation.
<i>Italic</i>	Reference to a topic in the current document or another Relativity document. Reference to another document. Emphasis.
<i>Bold Italic</i>	Variables.

Registration

Please take a moment and register your Liant product online at: <http://www.liant.com>.

Registering your product entitles you to the following benefits:

- **Customer support.** Free 30-day telephone support, including direct access to support personnel and 24-hour message service.
- **Special upgrades.** Free media updates and upgrades within 60 days of purchase.
- **Product information.** Notification of upgrades or revisions to Relativity when they are released.

You can also receive up-to-date information about Liant and all its products via our web site. Check back often for updated content.

Technical Support

Liant Software Corporation is dedicated to helping you achieve the highest possible performance from the Liant family of products. The technical support staff is committed to providing you prompt and professional service when you have problems or questions about your Liant products.

Technical support services are subject to Liant's prices, terms, and conditions in place at the time the service is requested.

While it is not possible to maintain and support specific releases of all software indefinitely, we offer priority support for the most current release of each product. For customers who elect not to upgrade to the most current release of the products, support is provided on a limited basis, as time and resources allow.

Support Guidelines

When you need assistance, you can expedite your call by having the following information available for the technical support representative:

- Company name and contact information.
- Liant product serial number (found in the Electronic Software Delivery email, on the media label, or in the product banner message).
- Liant product version number.
- Operating system and version number.
- Type of files (RM/COBOL or Micro Focus COBOL) being used when the problem occurred.
- Hardware, related equipment, and terminal type.
- Exact message appearing on screen.
- Concise explanation of the problem and process involved when the problem occurred.

Test Cases

You may be asked for an example (test case) of the source that demonstrates the problem.

- The smaller the test case is, the faster we will be able to isolate the cause of the problem.
- Do not send full applications.
- Reduce the test case to the smallest possible combination of components required to reproduce the problem.
- If you have very large data files, write a small program to read in your current data files and to create new data files with as few records as necessary to reproduce the problem.
- Test the test case before sending it to us to ensure that you have included all the necessary components to run the test case.

When submitting your test case, please include the following items:

1. **README text file that explains the problems.** This file must include information regarding the hardware, operating system, and versions of all relevant software (including the operating system and all Liant products). It must also include step-by-step instructions to reproduce the behavior.
2. **Program source files.** We require source for any program that is called during the course of the test case. Be sure to include any copy files necessary for recompilation.
3. **Data files required by the programs.** These files should be as small as possible to reproduce the problem described in the test case.

Chapter 1: Installation and Verification of Relativity Data Manager

This chapter lists the [system requirements](#) (see page 8) and provides the instructions on how to install the Relativity Data Manager software on a Windows-based workstation (see page 9).

This chapter also discusses the following topics:

How to	See page
Verify that the installation was successful by configuring a data source.	12
Access Relativity data sources from Microsoft SQL Server via OLE DB.	17
Remove the Relativity Data Manager software component.	18

System Requirements

Installation of the Relativity Data Manager software on a Windows-based workstation requires the following minimum software and hardware.

Component	Requirement
Computer	An IBM PC or compatible machine with a Pentium-class processor or higher.
Operating System	Microsoft Windows 2000, Windows XP, Windows Server 2003, Windows Vista, or Windows Server 2008.
Memory	64 MB is recommended.
Disk Space	A hard drive with at least 11 MB of free disk space.
Installation Media	Internet access and/or one CD-ROM drive and one 3.5" diskette drive.
Monitor	800 x 600 resolution is required. Higher resolution is recommended.
Internet Browser	A browser (for example, Mozilla Firefox or Microsoft Internet Explorer) capable of viewing HTML files, such as the README text or other documents that are available in this format.
Adobe Reader	This software, available free from Adobe.com, allows you to view (and print) the Portable Document Format (PDF) documents.

Note Relativity no longer supports earlier Microsoft Windows versions, including Microsoft Windows 98, Microsoft Windows 98 SE, Microsoft Windows Me, and Microsoft Windows NT 4.0.

Installing the Relativity Data Manager

Note If you have a previous version of Relativity installed, you should remove it prior to installing a newer version. See [Removing the Relativity Data Manager](#) (on page 18).

The Relativity Data Manager can be installed on a Windows workstation by using either of the following methods:

- [Electronic Software Delivery Installation](#) (as described below)
- [CD-ROM Installation](#) (see page 11)

Additionally, the Relativity Data Manager can be installed on a Windows server. This method is helpful for system administrators who need to install the Data Manager on a large number of Windows workstations where ESD and CD-ROM installations would be impractical. The Windows workstation clients can then perform the installation across the network. For more information about a network install, navigate to www.liant.com/docs.html, and refer to the “Administrative Network Installations” section of the *LiantInstall Program User's Reference* documentation.

You may also automate the installation program for the Relativity Data Manager, which allows the installation of the Data Manager to be incorporated with the installation of your application. For more information, navigate to www.liant.com/docs.html, and refer to the “Relativity Data Manager Installation Details” section of the *LiantInstall Program User's Reference* documentation.

To verify that the installation is successful, see [Verifying the Installation](#) (on page 12).

Note The instructions that follow refer to an installation components directory, which is the directory to which the deliverable file via electronic software delivery was downloaded and decompressed.

Electronic Software Delivery Installation

Note You must have an Internet connection and an Internet browser installed to proceed with this method of installation.

The email containing notification of your Electronic Software Delivery contains an attachment, a file named **liant.lic**. This file is a license certificate authorizing you to install the purchased software. We recommend that you create a directory on your machine to store the license certificates for your Liant products and save the **liant.lic** attachment to this directory with a name that is meaningful to you.

The Relativity Data Manager is available as a download from the Liant Electronic Software Delivery web site in two formats: Windows Self-Extracting EXE and ISO CD Image. From the web site, simply follow the download and decompress instructions for the file format selected, and then perform the installation instructions for that format, as outlined below.

- **Windows Self-Extracting EXE.** The download format for Windows Self-Extracting EXE contains *only* the Relativity Data Manager product. After downloading and decompressing the deliverable, and creating the installation components directory from the Windows Self-Extracting EXE format, follow these steps to install the Relativity Data Manager software:

Note When the Windows Self-Extracting EXE is decompressed and the installation components directory is created, the **LiantInstall** program should start automatically. If this is the case, proceed to step 6. Otherwise, begin with step 1.

1. Place a copy of your Relativity Data Manager license certificate, **liant.lic**, in the directory containing the installation components.
2. Click **Start**, and then click **Run**. In the Run dialog box, click the **Browse** button.
3. In the Browse dialog box, navigate to the directory containing the installation components.
4. Click on the file, **LiantInstall**, and then click **Open**.
5. In the Run dialog box, click **OK**.
6. The **LiantInstall** program begins executing. Follow the instructions presented on the screen and press the **Next** button to advance through the various pages.
7. On the Software License Agreement page, you must click “I accept the terms in the license agreement” in order to continue with the installation.
8. On the License Certificates page, the license certificate file for the product being installed is displayed. Do one of the following:
 - If the license certificate for the Relativity Data Manager software being installed is present in the list area, press the **Next** button.
 - If the license certificate for the Relativity Data Manager software being installed is *not* present in the list area:
 - a. Press the **Add** button.
 - b. In the Select License Certificates dialog box, navigate to the directory containing the license certificate file for the Relativity Data Manager being installed and select the filename for the license certificate. (This license file, named **liant.lic**, is attached to the original electronic software delivery email for the product.)
 - c. Press the **Open** button and then press **Next**.
9. On the Installation Type page, do one of the following:
 - Select the “Standard Installation” option to install all the components of all the license certificates listed on the License Certificates page immediately, using their default settings. Press the **Install** button.
 - Select the “Custom Installation” option to select specific components (for those products with multiple components) of all the license certificates listed on the License Certificates page, and install them, changing their default installation settings, as necessary.

Follow the custom installation instructions presented on the remaining pages. On the Ready to Begin Installations page, press the **Install** button.

When the installation for the Relativity Data Manager program starts, follow the additional instructions presented by the installation program.
10. When either the standard or custom installation is complete, click the **Finished** button on the Installation Status page.
 - **ISO CD Image.** The download format for ISO CD Image contains the full Relativity product CD, including the Relativity Data Manager and the other Relativity products. Use CD-ROM Burning software, such as Nero (<http://www.nero.com>) or Roxio’s Easy CD Creator (<http://www.roxio.com>), to create the physical CD-ROM media and then follow the instructions contained in [CD-ROM Installation](#) (see page 11) to install your product.

CD-ROM Installation

After downloading and decompressing the deliverables, and creating the installation components directory from the ISO CD Image format, follow these steps to install the Relativity DBA software from the CD-ROM:

1. Insert the product CD in the appropriate CD-ROM drive.
2. Do one of the following:
 - If the installation program starts automatically, proceed to Step 3.
 - If the installation program does not start automatically, click **Start**, and then click **Run**. In the Open text box of the Run dialog box, type the following:

```
d:LiantInstall
```

where, *d* is the drive letter of the CD-ROM drive. Click **OK**.

3. The **LiantInstall** program begins executing. Follow the instructions presented on the screen and press the **Next** button to advance through the various pages.
4. On the Software License Agreement page, you must click “I accept the terms in the license agreement” in order to continue with the installation.
5. On the License Certificates page, the license certificate file for the product being installed is displayed. Do one of the following:
 - If the license certificate for the Relativity Data Manager software being installed is present in the list area, press the **Next** button.
 - If license certificates for any products you do *not* wish to install are present in the list area, select them and press the **Remove** button. Then, press the **Next** button.
 - If the license certificate for the Relativity Data Manager software being installed is *not* present in the list area:
 - a. Press the **Add** button.
 - b. In the Select License Certificates dialog box, navigate to the directory containing the license certificate file for the Relativity Data Manager and select the filename for the license certificate.

This license file, usually named **liant.lic**, is included on the license diskette that came as part of the installation media.
 - c. Press the **Open** button and then press **Next**.

Note The **liant.lic** license certificate file can be copied from the diskette to a location on a hard drive and that location can be specified during installation. We recommend that you create a separate directory on your machine to store the license certificate files for all your Liant products and save those files with a name that is meaningful to you.

- If there are license certificates for *any* other products that you wish to install at this time, press the **Add** button again to add them; otherwise, press the **Next** button.

6. On the Installation Type page, do one of the following:
 - Select the “Standard Installation” option to install all the components of all the license certificates listed on the License Certificates page immediately, using their default settings. Press the **Install** button.
 - Select the “Custom Installation” option to select specific components (for those products with multiple components) of all the license certificates listed on the License Certificates page, and install them, changing their default installation settings, as necessary.

Follow the custom installation instructions presented on the remaining pages. On the Ready to Begin Installations page, press the **Install** button.

When the installation for the Relativity Data Manager program starts, follow the additional instructions presented by the installation program.

7. When either the standard or custom installation is complete, click the **Finished** button on the Installation Status page.

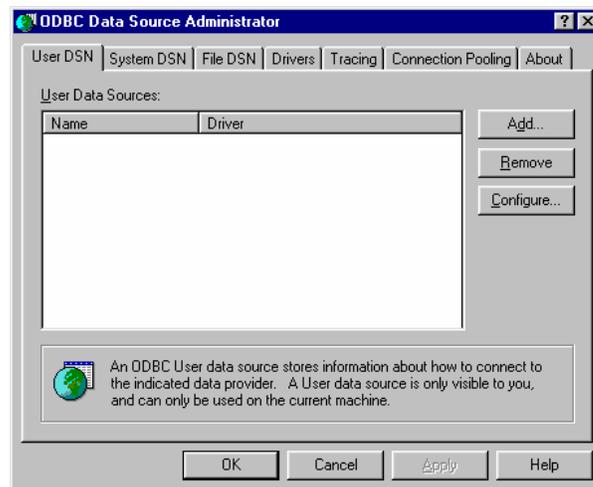
Verifying the Installation

The verification procedure consists of the successful configuration of a Relativity data source. Before you configure the Relativity data source, you must first start the ODBC Data Source Administrator. The ODBC Data Source Administrator is accessible from the Windows Control Panel. The ODBC Data Source Administrator is used to create and maintain ODBC data sources.

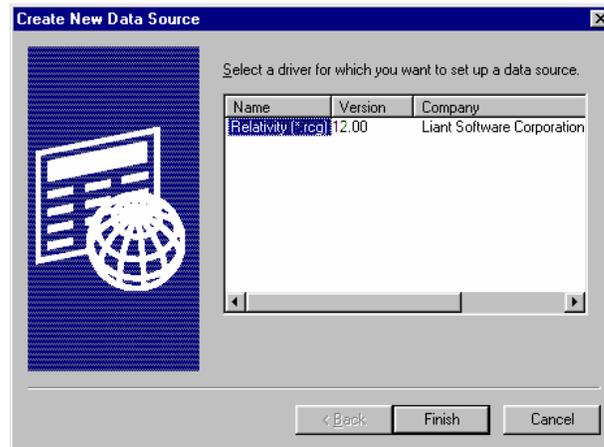
Note A data source also can be configured from within the Relativity Designer. (See the Relativity Designer online help file for more information.)

To configure a Relativity data source:

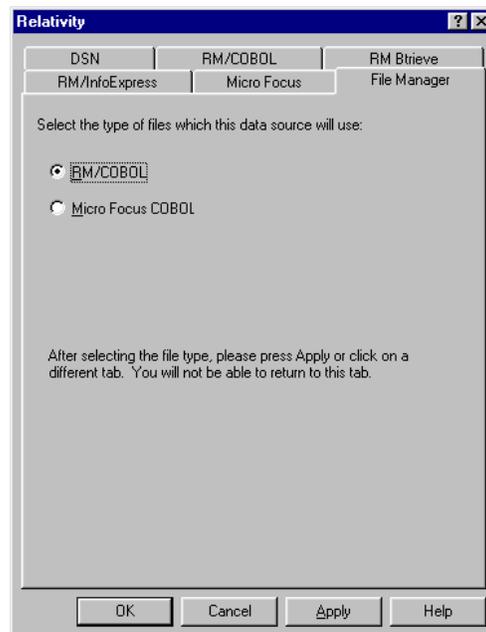
1. Open the Windows **Control Panel**.
2. In the Control Panel, double-click **Administrative Tools**.
3. On the Administrative Tools page, double-click **Data Sources (ODBC)**.
4. In the ODBC Data Source Administrator dialog box, select the **User DSN** tab and click **Add**.



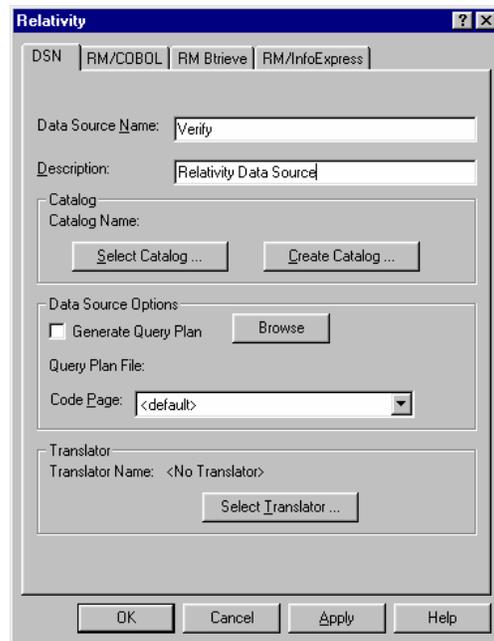
5. In the Create New Data Source dialog box, double-click the driver named **Relativity (*.rcg)**.



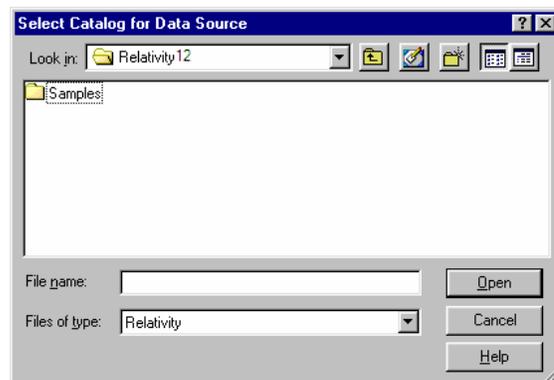
6. If support for both Micro Focus COBOL and RM/COBOL files is installed, in the File Manager tab of the Relativity dialog box, select the desired type of files.



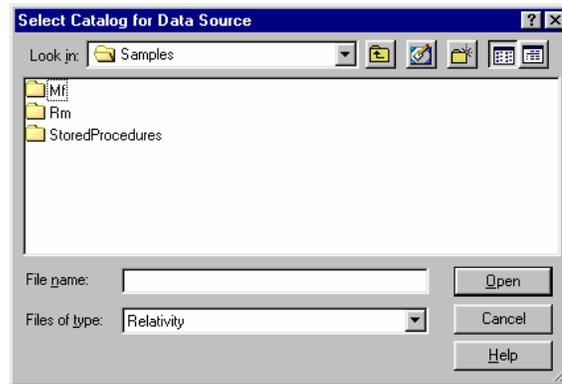
7. Click the DSN tab of the Relativity dialog box and type **Verify** as the name of the data source in the Data Source Name box.
8. Optionally, in the Description box, type a description of the data source.



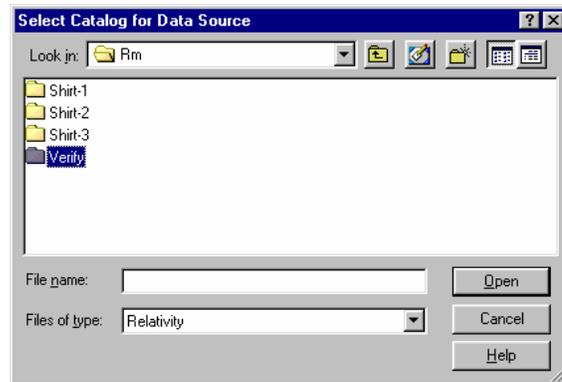
9. Click **Select Catalog**. The Select Catalog for Data Source dialog box is displayed.
10. In the Look in list, locate the folder where Relativity was installed.



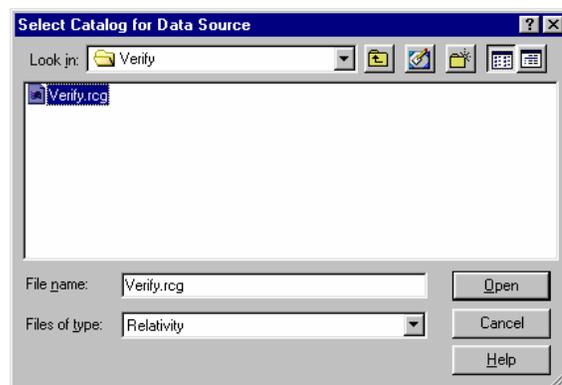
11. Double-click the **Samples** folder.



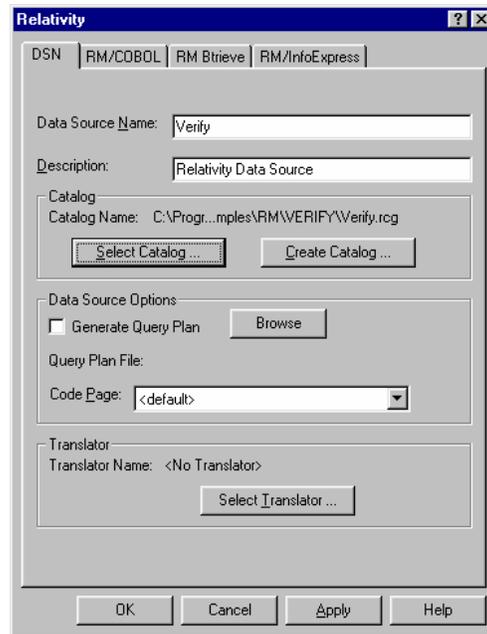
12. Double-click the appropriate folder. The RM/COBOL files are located in the folder named **Rm**. The Micro Focus COBOL files are located in the folder named **Mf**.



13. Double-click the **Verify** folder.

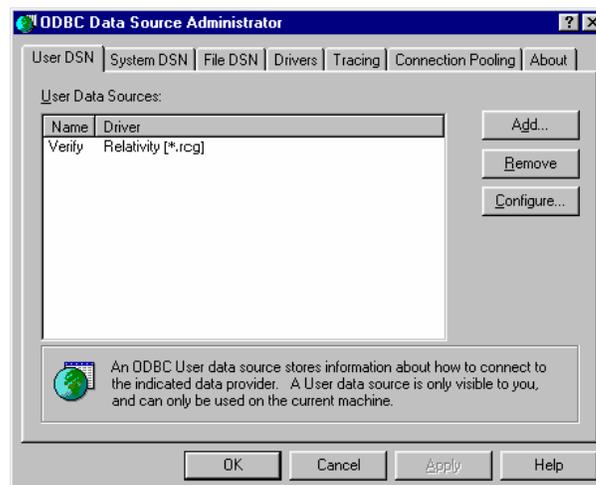


14. In the File Name box, type or select **Verify.rcg** for the catalog file.
15. Click **Open**. The Relativity dialog box is displayed. This action also accesses the Relativity Data Manager, which opens the catalog file and verifies that the catalog is valid.



16. Click **OK** to dismiss the Relativity dialog box. You have successfully created a new data source and associated it with an existing catalog.

The ODBC Data Source Administrator dialog box is displayed with Verify listed as a user data source in the User DSN tab.



17. Click **OK** to dismiss the ODBC Data Source Administrator dialog box.

In this verification procedure the data source refers, indirectly through the Relativity catalog, to the sample Relativity database named Verify. If you wish to further verify the installation, the Relativity Verify database can be accessed from any ODBC-enabled application. The Verify database contains a single table named BackOrder, which may be viewed with the ODBC-enabled application.

Note To see an example of accessing the Verify data source from an ODBC-enabled application, see either the Relativity DBA or Relativity Designer installation guides.

Accessing Relativity Data Sources from Microsoft SQL Server via OLE DB

It is possible to access Relativity data sources from Microsoft SQL Server via OLE DB (Microsoft's set of interfaces for data access). The following procedures describe how to access the Relativity sample database, Verify, using the Relativity Data Manager and the Microsoft OLE DB Provider for ODBC drivers.

1. On the Windows machine running SQL Server, create a Relativity Data Manager data source named **Verify** using the System DSN tab in the ODBC Data Source Administrator dialog box.
2. Using the SQL Server Enterprise Manager, navigate to the Console Root\Microsoft SQL Servers\SQL Server Group\YourServer'sName\Security\Linked Servers option.
3. Right-click on **Linked Servers** and select **New Linked Server**. The Linked Server Properties - New Linked Server dialog box opens.
4. In the Linked Server field, enter the name of the database that is to be used by your ADO application. For this example, use **TESTLINK**.
5. Select the **Other Data Source** option button.
6. From the Provider Name list box, select **Microsoft OLE DB Provider for ODBC Drivers**.
7. In the Data Source field, enter the name of the Relativity Data Manager data source created in Step 1 (Verify). (Alternatively, you can leave the Data Source field blank and place a connection string in the Provider String field.)
8. Click **OK**.
9. To query this table, you must provide a four-part table name having the following format:

LinkedServerName.Catalog.Owner.ActualTableName.

where,

LinkedServerName is the name specified in the Linked Server field in Step 4 (TESTLINK).

Catalog is the name of the Relativity Data Manager data source specified in Step 1 (Verify).

Note When accessing Relativity data sources from Microsoft SQL Server, it is not obvious that the Relativity Data Manager data source name is what is required in *Catalog*. However, if you return to the SQL Server Enterprise Manager, navigate to Linked Servers again, select the linked server name and under that, select Tables, a list of

all the tables in the Relativity data source is displayed on the right. A column labeled *Catalog* is also displayed. This is the value that should be placed in the *Catalog* field of the four-part table name. Take note, however, that for Relativity Data Manager data sources, this value is the Data Base Qualifier, which is a value that Relativity automatically generates as a unique name for the data source. (Usually, this is similar to the data source name but with spaces replacing the underscores.) Again, check the *Catalog* column in the Linked Servers display to determine the value.

Owner is the user name to open the data source and can be left blank.

ActualTableName is the name of the table to be queried in the Relativity data source.

For example, to query the Backorder table in the sample database, Verify, use the following SELECT statement:

```
select * from TestLink.Verify..Backorder
```

Removing the Relativity Data Manager

The Relativity Data Manager can be removed from the Windows workstation on which it was installed. This may be necessary if the Relativity Data Manager is to be moved to a different machine or if a new release of the Relativity Data Manager is to be installed on the same machine.

Removing an existing version of the Relativity Data Manager prior to installing a new one ensures accurate use counts on shared files and enables all files to be properly removed during a later uninstall process.

To remove the Relativity Data Manager:

1. Open the Windows Control Panel.
2. In the Control Panel, do one of the following:
 - On Windows 2000, XP, or Server 2003, double-click **Add or Remove Programs**.
 - On Windows Vista or Server 2008, double-click **Programs and Features**.
3. In either the Add or Remove Programs window or the Programs and Features window, select **Liant Relativity vx Data Manager** from the list of currently installed programs and updates. (vx is the version number of the product to be removed.)
4. Do one of the following to start the uninstall process:
 - On Windows 2000, XP, or Server 2003, click the **Remove** button.
 - On Windows Vista or Server 2008, click the **Uninstall** button.
5. In the message box, click **Yes** to proceed with the uninstall process.
6. The Liant Relativity vx Data Manager dialog box is then displayed, detailing the progress of the uninstall.

When the uninstall is successfully completed, click **OK**.
7. Click **OK** to close either the Add or Remove Programs window or the Programs and Features window.
8. Close the Windows Control Panel.

Appendix A: Indexed File Recovery Utility (*recover1*) for RM/COBOL

RM/COBOL indexed files that have become corrupted can be recovered using the RM/COBOL Indexed File Recovery utility (**recover1**).

This appendix provides instructions for using the **recover1** utility when opening a Relativity RM/COBOL catalog or data file results in a 98, “File is Broken”, error.

Installing the Recovery Utility Program

The RM/COBOL Recover1 Utility (**recover1**) utility program is generally installed with a Relativity Data Manager, a Relativity Data Server, or an RM/COBOL development system on the Windows machine.

However, if this is not the case, navigate to www.liant.com/docs.html, and refer to the “RM/COBOL Recover1 Utility Installation Details” section of the *LiantInstall Program User's Reference* documentation for information on how to install this utility using the license-driven install program on Windows.

Using the Recovery Utility Program

By default, the RM/COBOL Recover1 Utility (**recover1**) will be installed in the directory, **c:\Program Files\Liant\RMCOBOLvx** (where vx represents the version number). From a command window, change your Windows directory to be the directory into which **recover1** was installed and invoke the **recover1** command as described in the instructions that follow.

The **recover1** utility recovers data stored in an RM/COBOL indexed file. It is a standalone program; that is, it does not require use of the RM/COBOL Runtime Command (**runcobol**) to be executed.

Notes

- In order to recover data stored in a Btrieve file, use the Btrieve File Manager (either the Windows interactive version, **wbmanage.exe**, or the command line version, **butil.exe**). Refer to the appropriate Btrieve installation and operation manual for complete information about the utility.
- If the output window of the Windows version of the **recover1** program disappears upon successful completion and you want that window to remain visible, set the Persistent property to TRUE for the **recover1.exe** program.

Recovery Command

The Indexed File Recovery utility (**recover1**) is executed by issuing the following command:

```
recover1 indexed-file drop-file [options] ...
```

indexed-file is the filename of the indexed file to be recovered. The name is not resolved through any environment variables.

drop-file is the name of the file where **recover1** places any unrecoverable records found in the indexed file (as described in [Recovery Process Description](#) on page 23). If *drop-file* specifies an environment variable name, the environment variable value will be resolved before opening the dropped record file.

option is zero or more command line options as described in [Recovery Command Options](#) (on page 21). Options are specified with letters that must be preceded with a hyphen (-) or a slash (/). Option letters may be specified in uppercase or lowercase. Certain option letters allow an optional pathname as part of the option format. The presence or absence of the pathname is determined by whether or not the next non-white space character following the option letter is a hyphen or slash, whichever one was used preceding the option letter.

Note The option introducer character slash is supported for Windows compatibility and should not be used on UNIX, where it can be confused with an absolute pathname; that is, a pathname that begins with a slash. Nevertheless, either the hyphen or the slash may be used to introduce option letters on Windows and UNIX. In the option formats given in this document, only the hyphen is shown, but the hyphen may be replaced with a slash.

WARNING Because of several changes introduced in the RM/COBOL 7.5 runtime system, it is possible that an indexed file created by performing an OPEN OUTPUT in a COBOL program using the RM/COBOL 7.5 runtime system may have a different block size than a file

you are attempting to recover. This may happen even though you specify the same file control entry and file description entry for the template file as when you initially created the file with an earlier version of RM/COBOL. Attempting to use this new file with a different block size as a template file may result in a loss of a large percentage of the recoverable records. You should verify that the block size of your template file is correct by using the Map Indexed File (**rmmapinx**) utility. (Note that the Map Indexed File utility is not included in Relativity; it is available in the RM/COBOL development or runtime system.) You can also avoid this problem by creating the template file with a version of RM/COBOL prior to 7.5 or by using a backup copy of the undamaged file. Keywords **MINIMUM-BLOCK-SIZE** and **ROUND-TO-NICE-BLOCK-SIZE** of the **RUN-INDEX-FILES** configuration record may also be used to cause the runtime to create a file with a block size that matches releases prior to 7.5.

Recovery Command Options

Note These options may also be placed into the registry (on Windows) or the resource files (on UNIX). In the Windows registry, the Command Line Options property provides command line options for the Indexed File Recovery utility when “Recovery” is selected on the Select File tab of the RM/COBOL Properties dialog box. In UNIX resource files, the Options keyword provides command line options for the Indexed File Recovery utility in the global resource file, */etc/default/recover1rc*, and the local resource file, *~/recover1rc*. For more information, see Chapter 2: *Installation and System Considerations for UNIX* and Chapter 3 *Installation and System Considerations for Windows*, in the *RM/COBOL User’s Guide*.

The following Recovery Command options may be specified on the command line to modify the behavior of the Indexed File Recovery utility (**recover1**):

- **I Option.** The I option causes **recover1** to test only the file integrity and then stop. The file will not be modified in any way. Specifying the I option causes both the T and Z options to be ignored. If no problems are discovered, the exit code is set to 0. If a problem is discovered, the exit code is set to 1. The default is for **recover1** to do a complete recovery of the indexed file if the file is marked as needing recovery. See the Y and Z options for additional options that modify the behavior of the Indexed File Recovery utility.

Note The integrity scan is a quick test of the file and is not comprehensive. Some problems, such as records with invalid duplicate keys, will not be detected. Indexed files with no errors detected by the integrity scan may still receive “98” errors or other I/O errors.

- **K [*template-file*] Option.** The K option is used to indicate that the Key Information Block (KIB) should be assumed to be invalid and, optionally, to specify a template file (*template-file*) for recovering the KIB. If no *template-file* is specified, the user will be prompted either for a template file or for enough information to rebuild the KIB. If *template-file* is specified, it should be the name of a valid indexed file with the same format as the file being recovered. This file will be used as a template. The required KIB information is read from the KIB of the template file. The template file can be a backup copy of the file being recovered, if the backup occurred before the file was damaged, or, it can be a file created by performing an OPEN OUTPUT in a COBOL program with the proper file control entry and file description entry for the file being recovered. An OPEN OUTPUT must have been performed on the template file, but it need not contain any records. A template file must be specified if the KIB is corrupt and the file uses either an enumerated code set or an enumerated collating sequence. The default is to check the KIB for validity and, if it is found to be invalid, prompt for either a template file or

information to rebuild the KIB. The name of the template file is not resolved through any environment variables.

WARNING A template file with the wrong block size can cause the loss of a large percentage of the recoverable records in your file. This can happen because of changes introduced in RM/COBOL 7.5 in the method used by the runtime system for calculating the block size. See the warning on page 20 for additional information.

- **L [*log-file*] Option.** The L option is used to write information about errors encountered while recovering the file to a log file (*log-file*). Only the first 100 errors will be logged. In addition to errors, a number of informational lines about the indexed file and its recovery are written to the log file, including information about sort memory (see the M option regarding sort memory). If *log-file* specifies an environment variable name, the environment variable value will be resolved before opening the log file; this allows the use of the name PRINTER to send the log information to the print device. If *log-file* is omitted in the L option, the default value of *log-file* is PRINTER. If the L option is not specified, the default is not to write a log file.
- **M [*MB-of-memory*] Option.** The M option is used to specify the number of megabytes of memory (*MB-of-memory*) to allocate to the sort algorithm used in phase 4, [build node blocks](#) (on page 23). *MB-of-memory* is a number in the range 0 to 500. Allocating more memory generally results in faster execution of **recover1** and causes fewer node blocks to be built. If this option is not specified, a suitable number will be computed. When a log file is written (see the L option), a line is written into the log file to show the maximum effective sort-memory size.

Note Specifying a number for *MB-of-memory* that is too large for your system may result in very poor system performance.

- **Q Option.** The Q option causes **recover1** to perform its work without displaying information or asking the operator questions. If the file is marked as needing recovery, or has a non-zero Open For Modify Count, then it will be recovered. Otherwise, no action occurs. This behavior can be modified by using the Y option. The default is to display information and ask questions, which must be answered by the operator.
- **T Option.** The T option is used to indicate that unused space should be truncated and returned to the operating system. Specifying the T option will result in a minimal size indexed file, but may reduce performance if records are subsequently added to the indexed file. The default is not to truncate the file. When the file is not truncated, any empty blocks remain part of the file and are available for use in adding new records to the file.

Note Some versions of UNIX do not support the operating system call required to truncate a file.

- **Y Option.** The Y option causes **recover1** to assume that the operator wants to answer “y” to all possible questions and therefore not stop to wait for a response. Using the Y option will cause a file to be recovered even if it is not marked for recovery, including the case of when the Q option is also specified. The default is to wait for a response from the operator after a question is displayed.
- **Z Option.** The Z option is used to reset the Open For Modify Count to zero, without performing a full recovery. If the file is marked as needing recovery, the Z option is ignored. The default is to treat a non-zero Open For Modify Count as indicating that the file needs recovery.

Note Use the Z option with caution. Resetting the Open For Modify Count to zero without performing a full recovery may leave the file in a corrupted state.

Recovery Process Description

If the **recover1** program is successful, the exit code is set to 0. If the **recover1** program is canceled by the operator, the exit code is set to 2. Otherwise, the exit code is set to 1.

You may produce a list of the support modules loaded by the **recover1** program by defining the environment variable `RM_DYNAMIC_LIBRARY_TRACE`. The listing will indicate which Terminal Interface support module is used and whether the Automatic Configuration File module is present. This information is most helpful when attempting to diagnose a problem with support modules.

Note The information will be visible only if you enter the **recover1** command without any parameters. In this case, **recover1** will show the proper form for the command and the list of support modules.

The **recover1** program attempts to recover the indexed file in place; that is, the program rebuilds the internal file structure in the actual file being recovered. If necessary, the Key Information Block (KIB) is rebuilt and any corrupted data blocks are repaired. Corrupt data blocks may result in loss of some data records. Because of this feature, it is strongly recommended that you either backup the file or copy the indexed file to be recovered to some other directory or pathname as additional security. Any records that cannot be successfully reindexed into the file due to invalid duplicate key values, or invalid record sizes, are decompressed (if compression is selected for the file), converted to the native code set, and then written to *drop-file*. **recover1** should be able to handle most kinds of indexed file corruption problems, but some fatal errors may still cause the recovery to fail. Any fatal error is displayed and causes the program to terminate. Broken hardware should be suspected in many of these cases.

drop-file can be in fixed- or variable-length format; this is set by **recover1** based on whether *indexed-file* is fixed- or variable-length format. Records placed in *drop-file* were those undergoing change at the time of the system failure that required recovery or have invalid record sizes. Investigate any records appearing in *drop-file* and make the appropriate corrections to *indexed-file*.

The **recover1** program's processing consists of up to four separate phases, which are run in the following order:

1. **Integrity Scan.** If the Q option or Y option is specified, the Integrity Scan phase is disregarded unless it is forced to occur by the specification of the I option or L option. This phase reads the entire file in a forward direction checking for simple errors, and produces a summary report showing the state of the file and an estimate of the number of records **recover1** can recover. The indexed file is not modified during this phase.
2. **Repair Blocks.** The Repair Blocks phase, which is always run, reads and writes the file in a backward direction repairing corrupt data blocks, converting non-data blocks to empty blocks, and rebuilding some internal file structures.
3. **Move Data Blocks.** The Move Data Blocks phase is run only when the truncate file option (T) is specified. This phase reads and writes parts of the file moving high-numbered data blocks (near the end of the file) to lower-numbered available blocks to maximize the amount of space at the end of the file that can be truncated and returned to the operating system when **recover1** finishes.
4. **Build Node Blocks.** The Build Node Blocks phase, which is always run, reads data blocks and writes node blocks in the file in a forward direction rebuilding the entire node structure for each key of the file.

Notes

- After the Integrity Scan phase, if the Estimated Recoverable records value is zero or very low, and the number of corrupt data blocks is very close to the total number of data blocks found, the number of keys that allow duplicates may be incorrect, either because the KIB is corrupt or the user provided incorrect key information to **recover1**.
- After the Integrity Scan phase, if most of the blocks are invalid, the Disk Block Size or the Disk Block Increment may have been incorrectly specified or the KIB may be corrupt.
- During the Repair Blocks phase, a count of blocks that could be read but not written may be displayed. This count may indicate the presence of a hardware problem with your disk.

Recovery Support Module Version Errors

During initialization, the Indexed File Recovery utility (**recover1**) locates and loads various support modules, including the automatic configuration module, and, on UNIX, either the terminfo or the termcap Terminal Interface support module. Also, at initialization, the **recover1** utility verifies that each support module is the correct version for the utility. If a support module is not the correct version, the following message is displayed:

```
RM/COBOL:  module-name version mismatch, expected
           12.0n.nn, found n.nn.nn.
```

When the previous message is displayed, the **recover1** utility terminates with the following message:

```
Recover1:  Error invoking mismatched recover1
           and support module.
```

Example

An example run through the Indexed File Recovery utility is described below. The **recover1** session is started in this example by the following command:

```
recover1 master.inx dropout1
```

[Figure 1: File Recovery Verification](#) (see page 25) shows information about the file, **master.inx**.

Under the name of the file to be recovered, a description of the state of the file is displayed. Any of the following messages may appear:

- This file has not been marked as needing recovery!
- The Open For Modify Count for this file is not zero: *count*
- File has been marked as corrupted due to a previous error.
- KIB is corrupt. Using template file: *template-file*
- KIB is corrupt. Enter a template filename (press Enter for manual entry).

WARNING Because of several changes introduced in the RM/COBOL 7.5 runtime system, it is possible that an indexed file created by performing an OPEN OUTPUT in a COBOL program using the RM/COBOL 7.5 runtime system may have a different block size than a file you are attempting to recover. This may happen even though you specify the same file control entry and file description entry for the template file as when you initially created the file with an earlier version of RM/COBOL. Attempting to use this new file with a different block size as a template file may result in a loss of a large percentage of the recoverable records. You should verify that the block size of your template file is correct by using the Map Indexed File (**rmmapi****nx**) utility. (Note that the Map Indexed File utility is not included in Relativity; it is available in the RM/COBOL development or runtime system.) You can also avoid this problem by creating the template file with a version of RM/COBOL prior to 7.5 or by using a backup copy of the undamaged file. Keywords MINIMUM-BLOCK-SIZE and ROUND-TO-NICE-BLOCK-SIZE of the RUN-INDEX-FILES configuration record may also be used to cause the runtime to create a file with a block size that matches releases prior to 7.5.

If the KIB is corrupt, and a template filename is not entered, **recover1** will prompt the user for the required KIB information before continuing.

If more keys exist than can appear on this screen, as many as possible appear, after which you are asked if you want to see the remaining key descriptors. This continues until all keys are shown. You are then asked to verify that this is the file you want to recover. Entering N terminates the program. Entering Y continues the program.

Figure 1: File Recovery Verification

```
Indexed File Recovery Utility
Recover1 Version 12.0n.00

Index File: master.inx

This file has not been marked as needing recovery!

Disk Block Size:          1024   Minimum Record Length:    80
Disk Block Increment:    1024   Maximum Record Length:    80
Number of Index Blocks:  170    Number of Records:        150

  Key Position Size  Remarks
PRIME      1        8
  1         9        8
  2        17        8  duplicates allowed

Is this the file you wish to recover (y/n)?
```

[Figure 2: Recover1 Summary](#) shows a summary of the information that is gathered during the file integrity scan. You are then asked if you would like to proceed with the recovery process. Entering N terminates the program. Entering Y continues the program.

The “Average record length” is computed by adding the length of all the records in the file and dividing by the number of records. The “Average data size” is computed by adding the size that the record actually occupies in the file and dividing by the number of records. This size allows you to determine how much your data can be compressed.

Figure 2: Recover1 Summary

```
Indexed File Recovery Utility
Recover1 Version 12.0n.00

Index File: master.inx
Drop File: dropout1

This file has not been marked as needing recovery!

Disk Block Size:      1024      Minimum Record Length:      80
Disk Block Increment: 1024      Maximum Record Length:      80
Number of Index Blocks: 170      Number of Records:          150
Phase: Integrity Scan      Estimated Recoverable:      150

      | Total | Total | First | Last |
Block Type | Found | Corrupt | Corrupt | Corrupt |
KIB      |      1 |      0 |      |      |
Data     |     102 |      0 |      |      |
Node     |      61 |      0 |      |      |
Empty    |      6 |      0 |      |      |
Invalid  |      0 |      0 |      |      |
Unreadable |      0 |      0 |      |      |

Average data size: 14, Average record length: 80

Do you wish to proceed with recovery (y/n)?
```

[Figure 3: Recover1 Statistics](#) shows the information that is displayed while **recover1** is rebuilding the node blocks for the prime key.

Figure 3: Recover1 Statistics

```
Indexed File Recovery Utility
Recover1 Version 12.0n.00

Index File: master.inx
Drop File: dropout1
This file has not been marked as needing recovery!

Disk Block Size:          1024      Minimum Record Length:   80
Disk Block Increment:    1024      Maximum Record Length:  80
Number of Index Blocks:  170      Number of Records:      150
Phase: Build Node Blocks      Estimated Recoverable:  150

Key being processed:                PRIME
Records recovered:                   100
Records written to drop file:
Block being processed:                13
Number of data blocks moved (for truncate):  5
```

[Figure 4: Recover1 Finished Successfully](#) shows the information that is displayed after **recover1** terminates successfully. The two lines regarding truncation are shown only when the T option is specified.

Figure 4: Recover1 Finished Successfully

```
Indexed File Recovery Utility
Recover1 Version 12.0n.00

Index File: master.inx
Drop File: dropped
This file has not been marked as needing recovery!

Disk Block Size:          1024      Minimum Record Length:  126
Disk Block Increment:    1024      Maximum Record Length:  126
Number of Index Blocks:  120      Number of Records:      100
Phase: Build Node Blocks      Estimated Recoverable:  100

Key being processed:                PRIME
Records recovered:                   100
Records written to drop file:
Block being processed:                120
Truncate option specified - number of data blocks moved:  4
Truncate action successful - new Number of Index Blocks: 112

Recovery successful.
```

[Figure 5: Entering Key Information](#) shows that the KIB of the file has been corrupted and that key information must be entered for the file to be recovered. Key information can be obtained from the output of the Map Indexed File (**rmmapi~~n~~x**) utility. (Note that the Map Indexed File utility is not included in Relativity; it is available in the RM/COBOL development or runtime system.) Underlined characters have been entered by the user.

The **recover1** session is started by the following command:

```
recover1 master.inx dropout1 -k
```

Note Entering incorrect information about how many keys, or which keys, can have duplicate values may cause unpredictable results.

Figure 5: Entering Key Information

```
Indexed File Recovery Utility
Recover1 Version 12.0n.00

Index File: master.inx

Last error was 98,38 at 9:29 on 03-21-2008

Are any of the keys in this file segmented (split) (y/n)? y
Key #: PRIME Segment #: 2 Starting Position? 10 Length? 5
      Another Segment (y/n)? n
      Total Key Length = 13 Duplicates Permitted (y/n)? n
Another Key (y/n)? n
```

[Figure 6: Entering KIB Information](#) shows an example of entering the remainder of the KIB information. Underlined characters have been entered by the user.

Figure 6: Entering KIB Information

```
Indexed File Recovery Utility
Recover1 Version 12.0n.00

Index File: master.inx

Last error was 98,38 at 9:29 on 03-21-2008

Minimum Record Length (in bytes)? 80
Maximum Record Length (in bytes)? 80
Disk Block Size (in bytes)? 1024
User Block Size (1=none/2=in bytes/3=in records)? 1
Data Compression (y/n)? y Space Character Value? 32
Zero Character Value? 48
Key Compression (y/n)? y Space Character Value? 32
File Version Number (0,2/3/4)? 4 Atomic I/O Enabled (y/n)? y
File Lock Limit (in GB)? 2
Disk Block Increment (in bytes)? 1024
Allocation Increment (in blocks)? 8
Force Write Data Blocks (y/n)? n Force Write Index Blocks (y/n)? n
Force to Disk (y/n)? n Force File Closed (y/n)? n
Code Set (1=none/2=ASCII/3=EBCDIC)? 1
Collating Sequence (1=none/2=ASCII/3=EBCDIC)? 1

Is this information correct (proceed with recovery) (y/n)? y
```

After the key and KIB information has been successfully entered, the recovery process proceeds the same as before, as illustrated in [Figure 1: File Recovery Verification](#) on page 25. If a template file had been specified on the command line or a template filename had been entered when prompted, the screens prompting for the key and KIB information would not have been displayed. A template file must be specified if the KIB is corrupt and the file uses either an enumerated code set or an enumerated collating sequence.

Recovery Program Error Messages

Error *status* initializing file manager

recover1 was unable to initialize the RM/COBOL file management system for the reason indicated by *status*. The usual cause for this error is that a buffer pool has been configured that is too large to be allocated.

Truncate option not supported

recover1 detected that the truncated function was not supported on the system when the user requested file truncation. Truncation of the file is not possible.

recovery terminating - no records recoverable!

recover1 detected corruption in the indexed file and no records could be recovered. In this case, **recover1** terminates at the end of the integrity scan to protect the user from erroneously deleting all the records from the file. This error may indicate that the block size, the block size increment, or the number of keys that allow duplicates has been incorrectly specified, or the KIB may be corrupt.

Error *status* on template file

recover1 detected an error in the KIB of the template file specified by the user. The user may enter another template file, may enter the KIB information manually, or may enter a Ctrl-C to terminate **recover 1**.

Cannot write near end of file - check "ulimit"

recover1 detected that blocks near the end of the file can be read but not written, but other blocks of the file may be both read and written. This error may indicate that the operating system file size limit (*ulimit*) may be smaller than the size of the file. Set the file size limit correctly or use an account with sufficient privileges and run **recover1** again.