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Liant Software Corporation

**Relativity**<sup>®</sup>

**Data Manager Installation Guide**

**First Edition**

**LIANT**

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# Preface

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## 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](#) (on 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.

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## Related Relativity Documentation

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

- **Relativity Client/Server Installation Guide.** A document (one for UNIX and one for Windows NT) 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 NT 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 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 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 Documentation.** An online 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, and the Server Administrator.
- **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.

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## 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 and form titles.
<b>Bold</b>	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.
<b><i>Bold Italic</i></b>	Variables.

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## Registration

Please take a moment to fill out and mail (or fax) the registration card you received with Relativity. You can also complete this process by registering 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 website. Check back often for updated content.

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# 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 on the media label, registration card, or 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](#) (on page 8) and provides the instructions on how to install the Relativity Data Manager software on a Windows-based workstation (on page 8).

This chapter also discusses the following topics:

<b>How to</b>	<b>See page</b>
Verify that the installation was successful by configuring a data source.	16
Access Relativity data sources from Microsoft SQL Server via OLE DB.	21
Remove the Relativity Data Manager software component.	22

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# System Requirements

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

Component	Requirement
Computer	Pentium-class processor or higher.
Operating System	Microsoft Windows 98 or Windows 98 Second Edition (SE), Windows Millennium Edition (Me), Windows NT 4.0 or later (Service Pack 6 or higher recommended), Windows 2000, Windows XP, or Windows Server 2003.
Memory	4 MB; 8 MB is recommended.
Disk Space	A hard drive with at least 5 MB of free disk space.
Installation Media	Internet access and/or one CD-ROM drive and one 3.5" diskette drive.
Monitor	800x600 resolution is required. Higher resolution is recommended.
Internet Browser	A browser (for example, Netscape or Microsoft Internet Explorer) capable of viewing HTML files, such as the README text or other documents that are available in this format.

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## Installing the Relativity Data Manager

**Note** If you have a version of Relativity that supports the uninstall process, you should remove it prior to installing a newer version. See [Removing the Relativity Data Manager](#) (on page 22).

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

- [CD-ROM Installation](#) (on page 9)
- [Electronic Software Delivery Installation](#) (on page 10)
- [Network Installation from a Windows Server](#) (on page 12)
- [Diskette Installation](#) (on page 15)

To verify the installation is successful, see [Verifying the Installation](#) (on page 16).

## CD-ROM Installation

To install the Relativity Data Manager software from the CD-ROM:

1. Start Windows.
2. Insert the product CD in the appropriate CD-ROM drive.
3. Do one of the following:
  - If the installation program starts automatically, proceed to Step 4.
  - If the installation program does not start automatically, click **Start**, and then click **Run**. In the Run dialog box, in **Open**, type

`d:autorun`

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

4. If the installation starts automatically or if you start it using the **autorun** command, you will be presented with a list of installation options. Choose from the following:
  - Click the **View the README file** option to review important, last-minute information about Relativity.
  - Click the **View the Installation Documentation** option to read or install the documentation for this product that is provided on the CD-ROM.
  - Click the **Install the Relativity Data Manager** option to begin the actual installation process.
5. Follow the instructions presented by the installation program.
6. When the Software License Agreement dialog box opens, you must click **Yes** in order to continue with the installation.
7. When the Liant License File dialog box opens, enter the complete filename of the license file, **liant.lic**, which contains the license certificate for this product. (This license file is included on the license diskette that came as part of the installation media.) If your machine has a diskette drive, insert the license diskette into drive A and continue to follow the instructions presented on your screen.

**Note 1** If you are using a drive other than A, be sure to correct the location of the license file in the Liant License File dialog box.

**Note 2** If necessary, the **liant.lic** license file can be copied to a location on a hard drive and that location can be specified during installation.

**Note 3** If the Old Relativity Driver Options dialog box appears, the Relativity installation has detected data sources associated with a previous version of Relativity. If you uninstalled this version of Relativity prior to installation, you must select the **Move old Data Sources to the new driver** option in order to access the old data sources from the current version of Relativity.

8. When the File Manager dialog box opens, select the types of files that the Relativity Data Manager will support. You can select both RM/COBOL and MF COBOL files.

9. When the Setup Type dialog box opens, select the type of installation you want from the following options:
    - a. **Typical.** This option installs all Relativity components: the Relativity Data Manager, Driver, MF and RM Samples, RM/COBOL-to-Btrieve Adapter, and RM/InfoExpress clients.
    - b. **Compact.** This option installs only the Relativity Data Manager.
    - c. **Custom.** This option installs the Relativity Data Manager and allows you to choose whether you want to install the other Relativity components (Driver, MF and RM Samples, RM/COBOL-to-Btrieve Adapter, and RM/InfoExpress clients).
- Note** The Destination Directory area indicates the location on your hard drive where Relativity will be installed. If you wish to change this location, click the **Browse** button.
10. When the Select Program Folder dialog box opens, specify the program folder name that will appear on the Windows Start menu.
  11. When the Setup Complete dialog box opens, select the check box to register your product online or click **Finish** to close the dialog box.

## Electronic Software Delivery Installation

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

The Relativity Data Manager software is available as a download from the Liant Electronic Software Delivery website in two formats: ISO CD Image and Windows Self-Extracting EXE. Simply follow the instructions on the website for downloading and decompressing the file for the format method selected.

- **ISO CD Image.** The download format for ISO CD Image contains the full product. 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 the [CD-ROM Installation](#) (on page 9) section to install your product.
- **Windows Self-Extracting EXE.** The download format for Windows Self-Extracting EXE does *not* contain a full product. In order to reduce the size of the download file, the AutoPlay and Adobe Reader software, normally available on the CD, are not present. Furthermore, the Relativity installation guides are included in the deliverable download file but not the installation script to install these guides. The installation guides, formatted as PDF files, can be installed simply by copying them to the desired location.

After the deliverable has been downloaded and uncompressed, and the installation components have been created from the Windows Self-Extracting EXE format, follow the instructions below to install the Relativity Data Manager software:

1. Start Windows.
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 and open the **DManager** directory.



4. Click on the file, **Setup**, and then click **Open**.
5. In the Run dialog box, click **OK**.
6. Follow the instructions presented on the installation dialog boxes.
7. When the Software License Agreement dialog box opens, you must click **Yes** in order to continue with the installation.
8. When the Liant License File dialog box opens, enter the complete filename of the license file, **liant.lic**, which contains the license certificate for this product. (The license file was attached to the original electronic software delivery e-mail.)

**Note** If the old Relativity Driver Options dialog box appears, the Relativity installation has detected data sources associated with a previous version of Relativity. If you uninstalled this earlier version of Relativity prior to installation, you must select the **Move old data sources to the new driver** option in order to access the old data sources from the current version of Relativity.

9. When the File Manager dialog box opens, select the type of files that the Relativity Data Manager will support. You can select both RM/COBOL and MF COBOL files.
10. When the Setup Type dialog box opens, select the type of installation you want from the following options:
  - a. **Typical.** This option installs all Relativity components: the Relativity Data Manager, Driver, MF and RM Samples, RM/COBOL-to-Btrieve Adapter, and RM/InfoExpress clients.
  - b. **Compact.** This option installs only the Relativity Data Manager.
  - c. **Custom.** This option installs the Relativity Data Manager and allows you to choose whether you want to install the other Relativity components (Driver, MF and RM Samples, RM/COBOL-to-Btrieve Adapter, and RM/InfoExpress clients).

**Note** The Destination Directory area indicates the location on your hard drive where Relativity will be installed. If you wish to change this location, click the **Browse** button.

11. When the Select Program Folder dialog box opens, specify the program folder name that will appear on the Windows Start menu.
12. When the Setup Complete dialog box opens, select the check box to register your product online or click **Finish** to close the dialog box.

## Network Installation from a Windows Server

For those sites where installation from CD-ROM is unavailable, the Relativity Data Manager can be installed on a Windows server. The Windows workstations can then perform the installation across the network.

**Note** To facilitate network installation, the Data Manager installation procedure can be automated. See [Automated Installation of the Relativity Data Manager from a Network](#) (on page 13).

1. Install the Relativity Data Manager on the Windows server by following these steps:
  - a. Create a folder on the Windows server in a location where the Windows workstations can access it. This can be a folder that is already shared, or it can be a folder that can be shared after creation.
  - b. To share the folder:
    - 1) In Windows Explorer, right-click the folder. A shortcut menu appears.
    - 2) Click **Sharing**. A Properties dialog box opens for the selected folder.
    - 3) If necessary, select the **Sharing** tab, and then click **Shared As**. (The defaults for the fields are usually sufficient. If not, modify them as necessary.)
    - 4) In the **Share Name** text box, type the name of the shared folder for use with the Windows workstation installation (this procedure is described in Step 2).
    - 5) Click **OK** to apply the changes you have made and close the dialog box.
  - c. Copy the contents of the **DManager** folder from the Relativity Data Manager's installation CD into the shared folder created in Step 1b.
2. Perform the installation across the network from the Windows workstation by following these steps:
  - a. Click **Start**, and then click **Run**.
  - b. In the Run dialog box, in **Open**, type
    - ```
\\ServerName\ShareName\setup
```
    - where *ServerName* is the name of the Windows server on which the Data Manager was installed, and
    - *ShareName* is the name of the shared folder into which the Data Manager installation was copied as described in Step 1.
  - c. Click **OK**.
  - d. Follow the instructions provided by the installation procedure.

## ***Automated Installation of the Relativity Data Manager from a Network***

You can 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 product. This is useful for network installations. To automate the installation, use a set of options that predefine answers to the installation prompts. The predefined answers are supplied as arguments on the command line to the **setup** command. You can also configure the installation not to prompt for questions at all.

**Note** It is also possible to create a shortcut in a folder on Windows clients of a Windows server to encapsulate the automated installation options and thus quickly start the installation program. See [Creating a Windows Shortcut](#) (on page 15).

The following set of command line options can be used to change the initial default values for the installation prompts presented to the user. Note that the `-_AUTO` option is used to prevent any prompting by the Relativity Data Manager installation program. In order for the calling installation program to wait for the Data Manager installation program, you must add the `-SMS` option as the very last option on the command line. This option allows the calling installation program to determine when the Relativity Data Manager installation program completes.

**Note** Option values that contain spaces must be enclosed in quotes (“ ”) or square brackets ([ ]).

- **-\_AUTO=Y.** This option specifies automatic installation without prompting. The default is to prompt the user during installation.
- **-\_BTRIEVE=N.** This option specifies that support for the RM/COBOL-to-Btrieve Adapter program should not be installed. The default is to install the Btrieve support.
- **-\_DELETE=Y.** This option specifies that any previous Relational DataBridge or Relativity Data Managers that are found on the machine should be deleted. The default is to leave the previous Data Managers.
- **-\_DRIVER=*driver name*.** This option specifies the driver name with which the Relativity Data Manager is to be installed. This is the name that will appear in the ODBC Administrator dialog box when creating new data sources. The default is Relativity (\***.rcg**). This option is useful when several different versions of the Relativity Data Manager need to be installed at the same time. When installing multiple versions of Relativity, be sure to install them in separate directories.
- **-\_FILEMGR=*file managers*.** This option specifies that support for the listed file managers should be installed. The choices are MF, RM, or both MF and RM (separated by a comma). There is no default.
- **-\_FOLDER=*folder*.** This option specifies *folder* as the folder for icons. The default is Relativity.
- **-\_INFOEXPRESS=N.** This option specifies that support for RM/InfoExpress should not be installed. The default is to install the RM/InfoExpress support.

- **-\_LICENSE=license file.** This option specifies that *license file* is the location of the license file. The default is A:\liant.lic.

**Note** If necessary, the **liant.lic** license file can be copied to a location on a hard drive and that location can be specified during installation.

- **-\_MFFH=Micro Focus file handler DLL.** This option specifies the fully qualified filename of the *Micro Focus file handler DLL (mffh.dll)* that will be used to access Micro Focus COBOL files. Specify this option when the MF file manager support is being installed. The default is to use the Micro Focus file handler that is installed on this machine. If a Micro Focus file handler is not detected on this machine, a Micro Focus NetExpress version 3.0 file handler will be installed in the Relativity installation directory and used instead.
- **-\_MOVE=Y.** This option specifies that any previous Relational DataBridge and Relativity data sources that are found on the machine should be moved to the Relativity driver. The default is to leave the previous data sources.
- **-\_ORG=organization.** This option specifies *organization* as the name of the user's organization. The default is blank.
- **-\_SAMPLES=N.** This option specifies that the sample files should not be installed. The default is to install the samples.
- **-SMS.** This option, which allows the calling installation program to determine when the Relativity Data Manager installation program completes, must be entered as the last option on the command line.
- **-\_STARTMTR=N.** This option specifies that the Relativity Data Manager Monitor not be started automatically when Windows is started. Specifying this option causes the Monitor, which is required for license use count compliance, to start whenever the first Relativity data source is opened. The default is to start the Monitor at the same time Windows is started.
- **-\_TARGETDIR=directory.** This option specifies *directory* as the installation directory. The default is C:\Program Files\Relativity.
- **-\_USERNAME=user name.** This option specifies *user name* as the name of the user installing the Data Manager. The default is blank.

**Note** The default values for most of these options are generally sufficient. However, the **-\_LICENSE** option is particularly useful in order to specify another location for the license file other than the diskette drive.

## Creating a Windows Shortcut

It is also possible to create a shortcut in a folder on Windows clients of a Windows server to encapsulate the automated installation options and thus quickly start the installation program.

To create a Windows shortcut:

1. Install the **DManager** folder, as described in Step 1 of [Network Installation from a Windows Server](#) (on page 12).
2. In Windows Explorer, click the name of the folder you created in Step 1 of those same instructions.
3. On the File menu, point to **New**, and then click **Shortcut**. The Create Shortcut wizard opens.
4. In the Command line box, enter the command line for the **setup** command.
  - Be sure to use network names so that the Windows workstations will not require that drive letters be mapped to the Windows server. For example, type `\\ServerName\ShareName\setup`. See Step 2 of [Network Installation from a Windows Server](#) (on page 12).
  - Following the **setup** command, specify the options to automate installation, as described in [Automated Installation of the Relativity Data Manager from a Network](#) (on page 13).
5. Click **Next**. The Select a Title for the Program dialog box opens.
6. Enter a descriptive name. For example, type **Install**.
7. Click **Finish** to close the dialog box.

The Windows workstations can now simply double-click the Install shortcut instead of performing the installation by invoking `\\ServerName\ShareName\setup` from the Run dialog box.

## Diskette Installation

For those sites where neither CD-ROM nor network installation is available, it will be necessary to place the Relativity Data Manager installation on diskettes.

1. On a machine with a CD-ROM drive, install the Relativity Data Manager by following these steps:
  - a. Format three floppies and label them diskette 1, diskette 2, and diskette 3.
  - b. Insert the Relativity Data Manager installation CD in the CD-ROM drive.
  - c. In Windows Explorer, open the CD-ROM drive, and then open the folder, **DManager**.
  - d. Copy all files from the **DManager** folder *except* **DISK2.ID**, **RELDDBMS.2**, **DISK3.ID**, and **RELDDBMS.3** to diskette 1.

**Note** The file **Defects.htm** may be too large to fit on a floppy with the remaining files. If there is not enough room on the floppy, put another **.htm** file in its place. For example, copy **Readme.htm** to the floppy again, this time with the name **Defects.htm**.
  - e. Copy **DISK2.ID** and **RELDDBMS.2** to diskette 2.

- f. Copy **DISK3.ID** and **RELDDBMS.3** to diskette 3.

Once the diskettes have been made, they can be used to install the Data Client on the Windows workstations as described in the next step.

2. On the Windows workstation, install the Relativity Data Manager from diskettes as follows:
  - a. Insert diskette 1 into a diskette drive.
  - b. Click **Start**, and then click **Run**.
  - c. In the Run dialog box, in Open, type

`d:setup`

where *d* is the drive letter of the diskette drive. Click **OK**.

- d. Follow the instructions provided by the installation procedure.

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## 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, a standard ODBC program distributed with Relativity, 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. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. From the Control Panel, double-click **ODBC Data Sources (32bit)**.
3. In the ODBC Data Source Administrator dialog box, select the **User DSN** tab and click **Add**.



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



- 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.



- 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.
- Optionally, in the Description box, type a description of the data source.



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



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





11. 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**.



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



13. In the File Name box, type or select **Verify.rcg** for the catalog file.
14. 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.



15. 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.



16. 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
```

---

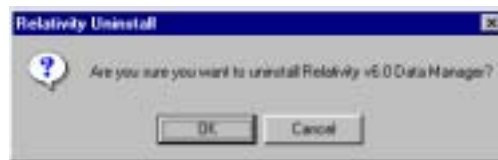
## Removing the Relativity Data Manager

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. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click Add/Remove Programs.
3. Close the Windows Control Panel. (This step is necessary in order to remove the Relativity Data Manager applet.)
4. In the Add/Remove Programs Properties dialog box, click the **Install/Uninstall** tab.
5. In the list box, select **Relativity vX.Y Data Manager** where X.Y indicates the version number.
6. Click the **Add/Remove** button to proceed with the uninstall.
7. In the Relativity Uninstall message box, click **OK** to proceed with the uninstall.



The Uninstall Relativity Data Manager message box is then displayed, detailing the progress of the uninstall.



8. Click **OK** to close the Add/Remove Programs Properties dialog box.
9. Check for any errors in the Uninstall Relativity window when the uninstall is complete. It may be necessary to select this window from the task bar first in order to bring it to the front of other windows. The operations involved in the uninstall process will be recorded in the **uninsRel.log** file located in the temporary folder on the Windows workstation.

**Note** Removing the Relativity Data Manager will not remove the Micro Focus license database, even if it was created by the Relativity Data Manager installation.



# 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 **recover1** utility is shipped on the Relativity CD-ROM for those installations in which RM/COBOL is not already installed on the Windows machine.

To install **recover1**:

1. Start Windows.
2. Insert the product CD in the appropriate CD-ROM drive.
3. If the installation program for the Relativity Data Manager starts automatically, terminate it by clicking **Finish**.
4. Click **Start**, and then click **Run**.
5. In the Run dialog box, in **Open**, type

```
d:\recover1\setup
```

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

6. Follow the instructions provided by the installation procedure.
7. When the Software License Agreement dialog box opens, you must click **Yes** in order to continue with the installation.

8. When the Liant License File dialog box opens, enter the complete filename of the license file, **liant.lic**, which contains the license certificate for this product.  
**Note** This license file is included on the license diskette that came as part of the CD-ROM installation media, or it was attached to the original electronic software delivery e-mail. See [CD-ROM Installation](#) (on page 9) or [Electronic Software Delivery Installation](#) (on page 10).
9. When the Select Destination Directory dialog box opens, note that the Destination Folder box indicates the location on your hard drive where **recover1** will be installed.
10. When the Select Program Folder dialog box opens, specify the program folder name that will appear on the Windows Start menu.
11. When the installation is complete, click **Finish**.

---

## Using the Recovery Utility Program

By default, the **recover1** utility will be installed in the directory, **c:\Program Files\RMCOBOL**. From an MS-DOS Prompt 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.

**Note 1** 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.

**Note 2** 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 (see page 29). 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 27). Options are specified with letters that must be



preceded with a hyphen (-) or a slash (/). Option letters may be specified in upper or lower case. 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 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<sub>nx</sub>**) 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 return code is set to 0. If a problem is discovered, the return 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 in the method used by the RM/COBOL 7.5 runtime system for calculating the block size. See the warning on page 27 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 (see page 30). *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

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.

**Note 1** 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**.

**Note 2** 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.

**Note 3** 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.

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.

## 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
           9.0n.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 on page 32 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 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

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**) 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 9.0n.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 9.0n.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 |
  | Found | Corrupt | Corrupt | Corrupt |
Block Type |
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 9.0n.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 9.0n.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~~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.) 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 9.0n.00

Index File: master.inx

Last error was 98,38 at 9:29 on 03-21-2004

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 9.0n.00

Index File: master.inx

Last error was 98,38 at 9:29 on 03-21-2004

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 32. 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.