Micro Focus
Relativity Client/Server for Windows

Installation

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Preface

Introducing Relativity Client/Server for Windows

The Relativity Data Server and Data Client components are used in the two-tier (or client/server) configuration of Relativity. In the two-machine configuration, the Data Server component of the Relativity Database Management System (DBMS) resides on a remote Microsoft Windows server machine, called the Windows server, close to the data files that the DBMS accesses. The Data Client component of the Relativity DBMS resides on the Windows workstation machine, called the Windows client, close to the ODBC-enabled application that needs to access the data.

Note In this document, the term "Windows server" refers to these operating systems: Windows XP, Windows 7 and higher.

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. Moreover, using Relativity, you do not have to rewrite or migrate any of your working applications in order to benefit from a client/server environment.

This manual, the *Relativity Client/Server for Windows Installation Guide*, which is part of the Relativity document set listed in Related Relativity Documentation (on page 2), is intended for a System Administrator and describes the following procedures:

- How to install the Relativity Data Server software component on a computer running a Windows operating system and verify that the installation was successful; start and stop the Data Server; troubleshoot problems; and configure a Data Server data source on the Windows server.

- 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, select a Windows server for the Windows client, and configure a Data Server data source; and ensure that the installation was successful by configuring a Data Client data source and associating it with the Data Server data source in order to verify communications between the Data Client and the Data 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 Data Client data source and associating it with a Data Server data source.

- How to run the RM/COBOL Indexed File Recovery utility (**recover1**) to recover an RM/COBOL indexed file.

Note The two chapters in this documentation that refer to the Relativity Data Client are ODBC-specific. For information related to the implementation, installation, verification, and deployment of the Relativity Java Client component, refer to the HTML document, *Relativity Java Client User's Guide*, located in the JDBC directory of the Relativity Java Client Electronic Software Delivery download file and on the Relativity product CD.

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 two-tier (or client/server) topic.

Related Relativity Documentation

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

- **Relativity Client/Server for UNIX Installation Guide.** A document similar to this manual that is intended for a System Administrator installing Relativity Client/Server for UNIX.

- **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.

- **Relativity Data Manager Installation Guide.** A document that describes how to install the Relativity Data Manager software component on a Windows-based workstation and verify that the installation was successful.

- **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 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.

- **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.

- **RMInstall Program User's Reference.** A document that describes how to configure and control the installations of RM/COBOL products, including Relativity.

Using Online Help

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

Relativity Data Server and Data Client Help Files

Two help files are available for the Relativity Data Server:

- **Relativity Data Server Help.** This help file describes how to use the Relativity Data Server 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 administration of Relativity using the Relativity Control Panel applet. It includes 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.

Two help files are available for the Relativity Data Client:

- **Relativity Data Client Help.** This help file describes how to use the Relativity Data Client for all users, advanced users, and programmers, and it also contains information on the following:

  - Creating Relativity client 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 Server Administrator Help.** This help file describes how to use the Relativity Server Administrator, and it also includes information on the following:

  - Creating Relativity server data sources.

  - Administering a Relativity Data Server.

Accessing the Relativity Data Manager Help Files

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

- **Start Menu.** From the Windows Start menu, navigate to the **RMCOBOL** programs folder and then to the **Relativity v***xx* folder (where v*xx* 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**.

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

- **Start Menu.** From the Windows Start menu, navigate to the **RMCOBOL** programs folder and then to the **Relativity v***xx* folder (where *vxx* is the version number of the installed Relativity product), and then select **Data Client 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 **Data Client Help File**.

- **DBA.** From the Help menu in the Relativity DBA main window, click **Data Client Help File**.

Use any of the following methods to access the Relativity Server Administrator Help file:

- **Relativity Server Administrator.** In the Relativity Server Administrator utility, click the **Help** button.

- **Designer.** From the Help menu in the Relativity Designer main window, click **Server Admin Help File**.

- **DBA.** From the Help menu in the Relativity DBA main window, click **Server Admin 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, windows, and dialog box 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.
Italic	Reference to a topic in the current document or another Relativity document.
	Reference to another document.
	Emphasis.
Bold Italic	Variables.

Technical Support

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

Technical support services are subject to Micro Focus'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, there is free support available on the Micro Focus Community Forum: community.microfocus.com

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.

- Micro Focus product serial number (found in the Electronic Product Delivery email, or in the License Certificate.

- Micro Focus product version number.

- Operating system and version number.

- 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 Micro Focus 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 Server for Windows

This chapter lists the system and setup requirements (on page 9) and describes the procedures for installing the Relativity Data Server for Windows (on page 11) software on a computer running Microsoft Windows.

This chapter also discusses the following topics:

System and Setup Requirements

Installation of the Relativity Data Server for Windows software 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	Windows XP, Windows 7, or higher.
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.
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.

The installation of a Relativity Data Server for Windows requires the following:

- The person installing the software must have Administrator privileges, either locally or on the domain.

- A user account must exist that has the desired permissions for the Relativity Data Server for Windows, unless it is to be installed to run under the "system account." See User Account and Permissions for the Relativity Data Server for Windows (on page 10) for more information.

Note Only a single version of Relativity Data Server for Windows can exist on a single Windows server machine. Any previously installed Relativity Data Server for Windows must be uninstalled prior to installing a different version. See Removing the Relativity Data Server for Windows (on page 16).

If a version of the Relativity Data Server for Windows has been installed and is currently running as a Windows service, the service will be stopped automatically when you install a different version.

User Account and Permissions for the Relativity Data Server for Windows

The Relativity Data Server for Windows runs as a Windows service. Most services run under a special account called the "system account" that has access to all files on the machine. If the Relativity Data Server for Windows is installed to run under a user account, it will have all of the permissions of that account. The account that the Relativity Data Server for Windows runs under must have the permissions to meet the needs of all clients that will connect to it. Micro Focus recommends that the Relativity Data Server for Windows be a given a separate user account.

File Access Permissions

The account under which the Data Server runs must have the following permissions to access files:

- Read and write permissions to all Relativity catalogs to which the Windows client application must have access.

- Read permission to all data files referenced by the Relativity catalogs.

- Write access to any data files that are referenced by the Relativity catalogs via tables that can be updated.

Directory Access Permissions

The account under which the Data Server runs must have the following permissions to access directories (folders):

- Read permission to the following types of directories:

  - Directories containing COBOL data files to be accessed by the Windows client applications.

  - A directory that is the current working directory for the Data Server process. This is normally the directory where the Relativity Data Server for Windows was installed. The account also must have write permission to this directory.

- Write permission to the directories where catalogs are to be created if the creation of new Relativity catalogs is permitted.

- Write permission to the directory containing the catalog if the creation of tables is permitted from the ODBC-enabled application. The data files created for the new tables are placed in the same directory as the catalog.

End-User Permissions

If other user accounts on the Windows server are to have access to the data files created for new tables, the user account of the Data Server must be set up to do the following:

1. Create the new files with read and write permissions.

2. Give read and write permissions to other users in the Windows server domain.

Installing the Relativity Client/Server for Windows

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 Server for Windows (on page 16).

The Relativity Client/Server for Windows can be installed on a Windows workstation using the following methods:

- Electronic Product Delivery Installation (as described below)

- CD-ROM Installation (see page 12)

You may also automate the installation program for the Relativity Client/Server for Windows, which allows the installation of the DBA to be incorporated with the installation of your application. For more information, navigate to http://supportline.microfocus.com/productdoc.aspx and refer to the "Relativity DBA Installation Details" section of the *RM-Install Program User's Reference* documentation.

To verify that the installation is successful, see Verifying Installation of the Relativity Data Server for Windows (on page 15).

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 Product Delivery Installation

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

All Relativity orders generate an Electronic Product Delivery (EPD) email that contains links to download the product. It also contains a link to download the product's License Certificate (also called the license file) for the order, which will be necessary to install the product. Finally, there are instructions about how to decompress the download file and begin the installation. This section will elaborate on the process of downloading the order and preparing to install the product.

All Relativity EDP orders contain links to download the product as a CD-ROM image, in the form of a compressed .iso file, and to download a smaller installation, in the form of a self-extracting compressed file. And you can also elect to have a physical CD-ROM shipped to you. (You can also use a CD-ROM burner drive to create your own physical CD-ROM using the .iso file, if you do not wish to wait for it to be shipped.) The CD-ROM (both .iso and physical) contains installation files for all the supported platforms. The smaller self-extracting compressed file version contains the installation for only the platform purchased by the order.

(Although using the CD-ROM image is not common, this section will cover it, for sake of completeness.)

The process begins with the arrival of a <u>Micro Focus Electronic Product Delivery</u> email which was generated when your order was complete. There is a link in this email on which to click to browse to the Electronic Product Delivery website. Once you have clicked on that link, a login page will appear in your browser. Use this page to login with your Micro Focus account. There will be an individual Invoice line for each item in your order. Locate the invoice line for the *Relativity Data Server*, and click on the + in the left hand column. The invoice line will expand, displaying three tabs: **Software/Licenses**, **Documentation**, and **Legal Information**, with **Legal Information** selected. After you review the End User License Agreement in the Legal Information tab, click on the checkbox in Step 2 at the beginning of the email. (This is necessary to acknowledge the acceptance of the End User License Agreement. You will not be able to proceed until the checkbox has been checked.) Next, select the **Software/License** tab and click on the + to the left of the serial number. You will then be presented with the lines for downloading the complete CD-ROM image (ISO), for downloading a smaller self-extracting installation file, and for downloading the license key.

At a minimum, click on the "here" in "Please click here to download your license key" to obtain the License Certificate file. This will download the certificate file on your browser's download directory with the name **liant-*xx-nnnn-nnnnn*-ID*nnnnnn*.lic**. Copy this file to a safe place in case you need to install the product again, and place it in an easily accessible location on the target machine.

The next two sections deal with downloading, decompressing, and installing the desired installation media.

Installing CD-ROM Media

If you elected to receive physical media, insert the media into the machine's CD-ROM drive and close the drive. Windows will automatically detect the media's presence and mount it. If the machine is configured for AutoPlay, the RM-Install program will begin running and start the installation. If the machine is not configured for AutoPlay, open a Windows Explorer window. In the left hand pane, under

Computer, locate the entry for the CD-ROM drive (it should have the volume name RMRelativity12xx), and right-click on it. In the pop-up menu, select **RM Install**. Proceed to the **Installing the Relativity Client/Server for Windows** section below.

If you elected to download the compressed ISO file, it will be compressed using gzip and will need to be decompressed before installation, although the Chrome browser may decompress it automatically. (Click on the **Documentation** tab in your EDP order to obtain up to date details on this process. Use the "Installation Guide to Installing an ISO Image" instructions.) The downloaded file will have a name similar to **rmrelativity12*xx*.igz**.

Note: The following instructions assume that the gzip utility has been installed on the machine and is in your PATH. (If the following instructions are unclear to you, please use the Installing from Self-Extracting Executable option below.)

From the Start menu, open a Command Prompt window, change directory to the directory where the .igz was downloaded, and rename the file's extension from .igz to iso.gz.

```
ren rmrelativity12xx.igz rmrelativity12xx.iso.gz
```

Then decompress the file with the command:

```
gunzip rmrelativity12.iso.gz
```

If this command results in an error, then the .igz file has already been decompressed by the browser, in which case, all that needs to be done is rename the file without the .gz extension.

```
ren rmrelativity12.iso.gz rmrelativity12.iso
```

An .iso file is useful for burning a CD with Relativity installation. Use the .iso image burning feature included with Windows 10 or later, or third-party CD-ROM Burning software, such as Nero (http://www.nero.com) or Roxio's Easy CD Creator (http://www.roxio.com), to create physical media.

On Windows 10 and later, to create physical media, open a file explorer window on the folder that contains the .iso image file, then right-click on the file and select **Burn Disk Image** from the menu and follow the directions. (Note that **Burn Disk Image** is not the same as burning a CD with the .iso file on it.)

After you create a CD, follow the instructions at the beginning of this section for how to start the installation.

Alternatively, on Windows 10, .iso files can also be mounted as a virtual CD. Simply open Windows Explorer, navigate to the directory containing the ISO file. Right click on the .iso file and select **Mount** from the pop-up menu. This may be done with Windows 7, but additional software will need to be installed first, such as Virtual CloneDrive.

After the .iso file has been mounted, follow the instructions at the beginning of this section for how to start the installation.

Installing from Self-Extracting Executable

The most common case is to use the .exe file download. When downloaded, the file will have a name similar to **rmrelativity12xx_dserver_win_32.exe**. (Where 12*xx* is the version of Relativity.) If it is not there already, copy the .exe file to the target Windows machine. Then double click on the .exe to start the installation. The file will be decompressed into a temporary directory on the target machine, and the RM-Install program automatically started. Proceed to the **Installing the Relativity Data Server for Windows** section below.

Installing the Relativity Data Server for Windows

At this point in the installation:

- The License Certificate file has been downloaded from the EDP order and is available on the target machine.

- You have the CD-ROM (or .iso file) mounted and RM-Install is running, or you have executed the Self-Extracting Executable, it has extracted itself into a temporary directory, and RM-Install is running.

Next, follow the instructions below to install the **Relativity Data Server for Windows** software.

1. Follow the instructions presented on the pages of RM-Install and press the **Next** or **Back** button to advance through the various pages.

2. On the **Software License Agreement** page, you must click "I accept the terms in the license agreement" in order to continue with the installation.

3. 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 Server** software being installed is present in the list area, press the **Next** button.

   - If the license certificate for the **Relativity Data Server** 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 Client/Server for Windows software being installed and select the filename for the license certificate. (This license file is downloaded from the EDP page for the order.)

     c. Press the **Open** button and then press **Next**.

4. 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 Server for Windows program starts, follow the additional instructions presented by the installation program.

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

Starting the Relativity Data Server for Windows

After installation is successfully completed, you can start running the Relativity Data Server for Windows by one of two methods:

*   **At Windows Startup.** By default, the Relativity Data Server for Windows will start automatically every time Windows starts. You may change this behavior by using the Services applet in the Windows Control Panel.

*   **Manually.** You may manually start the Relativity Data Server for Windows by using the Services applet in the Windows Control Panel.

Verifying Installation of the Relativity Data Server for Windows

These instructions assume that the Relativity Data Server for Windows is running, as described in .

To verify the installation of the Relativity Data Server for Windows:

1. On the Windows task bar, click the **Start** button, and then click **Control Panel**.

2. In the Windows Control Panel, click on **Administrative Tools**.

3. In the Administrative Tools windows, double-click the **Services** applet.

4. In the Services applet, look for the service named "Relativity Data Server."

5. If the service status does not indicate "Started", click **Start**. If the status does not change to "Started", check the contents of the Windows Application Log.

Terminating the Relativity Data Server for Windows

The Relativity Data Server for Windows may be terminated by any of the following methods:

*   If Relativity Data Server for Windows starts automatically at Windows server startup, it will automatically stop when the Windows server operating system is shut down.

*   Use the Services applet in the Windows Control Panel to manually stop the Relativity Data Server for Windows.

- Use the Relativity Server Administrator program from a Windows client workstation to shut down the Relativity Data Server for Windows.

Removing the Relativity Data Server for Windows

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

To remove the **Relativity Data Server for Windows**:

1. Open the Windows Control Panel.

2. In the Control Panel, do one of the following:

   - On Windows XP, double-click **Add or Remove Programs**.

   - On Windows 7 or Server 2008, double-click **Programs and Features**.

3. In either the Add or Remove Programs window or the Programs and Features window, select **RM Relativity v12.xx Data Server** from the list of currently installed programs and updates, where *xx* is the version number of the product to be removed.

4. Do one of the following to start the uninstall process:

   - On XP, click the **Remove** button.

   - On Windows 7 or Server 2008, click the **Uninstall** button.

5. In the message box, click **Yes** to proceed with the uninstall process.

6. The RM Relativity v12*xx* Data Server 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.

Troubleshooting the Relativity Data Server for Windows Server Problems

The Relativity Data Server for Windows writes messages to the Windows Application Log. These may be viewed with the Event Viewer application provided with Windows. The Relativity Data Server for Windows also writes a history of all connections in a file named **connect.log** in the working folder from which it is run.

If you receive one of these messages and require assistance, contact Micro Focus Technical Support.

Event Log Messages

The following error messages can be written in the Application Log by the Relativity Data Server for Windows.

SimbaServer started.

This message indicates that the Data Server has started.

Key SimbaServer.SvrPort not found.
Run 'SimbaExpress Configuration' program to set port.

This message indicates that the Data Server port number has not been set properly in the Windows Registry. The server port number is established during the Data Server installation. To correct this problem, reinstall the Data Server.

StartServiceControlDispatcher failed.

This message indicates that the Data Server could not be started as Windows service.

SetServiceStatus failed.

This message indicates that the Data Server encountered an error updating its service status.

SQLAllocEnv returned error. Cannot continue. Check ODBC settings.

This message indicates that the call to SQLAllocEnv to allocate an environment handle for the Data Server failed.

pAgentCreate failed. Initial protocols: *protocol name* Secondary protocols: *protocol name*.

This is a debugging message.

Listener failed.

This is a debugging message.

Failed to establish connection (*client machine.server thread ID*) rc=*internal error code*.

This message indicates that a connection attempt from the Windows client machine failed.

Connection established (*client machine.server thread ID***).**

This message indicates that a connection attempt from the Windows client machine succeeded.

Failure in disconnect (*client machine***) rc=***internal error code***.**

This message indicates that a disconnect operation for the Windows client machine encountered an error.

Connection terminated (*client machine.server thread ID***).**

This message indicates that a disconnect operation for the Windows client machine succeeded.

Exception *eeeeeeee* **happened in the connection from client** *client machine* **to driver Relativity Server at address** *aaaaaaaa***. Number of parameters** *n***, parameter** *x = y***, ….**

This message indicates a serious problem with the Data Server. Capture this message and the accompanying Dr. Watson message in the event viewer and report them to Liant Technical Support.

The value *eeeeeeee* is the type of exception. The value *aaaaaaaa* is the address of the instruction that caused the exception. The value *n* is the number of parameters associated with the exception. The value *x* indicates the parameter number, and the value *y* is the value of the parameter. Parameter *x = y* will be repeated for each parameter, up to *n*.

pMemAlloc error. Failed to allocate *number* **bytes.**

This message indicates that a memory allocation error occurred in the server.

SQLAllocConnect failed.

This message indicates that a call to SQLAllocConnect on the server failed.

Failed to allocate memory for connect.

This message indicates that a memory allocation error occurred in the server.

Failed connecting to driver. Connection string: *connection string***.**

This message indicates that the server's attempt to connect to the Relativity driver failed.

Failed to allocate memory for statement.

This message indicates that a call to SQLAllocStmt on the server failed.

Failure in *internal function name***.**

This message indicates that a server function failed.

Maximum number of connections to server exceeded.

This message indicates that the number of clients connecting to the server exceeded the maximum, as set by the license.

Configuring a Relativity Data Server Data Source on the Windows Server

A Relativity Data Server data source may be configured on the Windows server by one of the following methods:

- The Relativity Server Administrator may be run on a Windows client machine. See Using the Relativity Server Administrator to Configure a Relativity Data Server Data Source on the Windows Server (on page 37).

- Configure Data Server data sources from installation scripts using the Relativity installation kit DLL. For more details, see Configuring Relativity Data Server Data Sources from Catalog Developer Installation Scripts (on page 47).

- The ODBC Data Source Administrator may be run on the Windows server machine to configure a system data source.

This section describes the latter procedure. Before you configure the Relativity Data Server data source, however, you must first start the ODBC Data Source Administrator. The ODBC Data Source Administrator, a standard ODBC program distributed with Relativity, is accessed from the Windows Control Panel. The ODBC Data Source Administrator is used to configure and maintain ODBC data sources. Because the Relativity Data Server is a 32-bit program, the 32-bit ODBC Data Source Administrator must be used. This is not straight-forward on a 64-bit version of Windows 7. The details for starting the ODBC Data Source Administrator is detailed for several environments below:

Starting the ODBC Data Source Administrator on Windows 7 (32-bit)

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)**.

Starting the ODBC Data Source Administrator on Windows 7 (64-bit)

1. Open the Windows Explorer.
2. Navigate to C:\Windows\SysWOW64.

3.   Open ODBCAD32.

Note It is recommended that you create a short-cut from the desktop to the C:\Windows\SysWOW64\ODBCAD32.EXE in order to facilitate starting the ODBC Administrator.

Starting the ODBC Data Source Administrator on Windows 10

1.   Click on the Windows Start icon.

2.   Click on the Settings icon.

3.   In the Settings window, in the **Find a setting** text box, type **ODBC**.

4.   Below the **Find a setting** search box, two search results will be displayed. Click on **Set up ODBC data sources (32-bit)**.

Creating a new Data Source using the ODBC Data Source Administrator

Once the ODBC Data Source Administrator is started, to configure a Data Server data source on the Windows server, use the following steps:

1. In the ODBC Data Source Administrator dialog box, select the **System DSN** tab and click **Add**.

    Note Relativity data sources are normally created as user data sources. However, because the Relativity Data Server for Windows runs as a Windows service, Windows data sources must be system data sources.
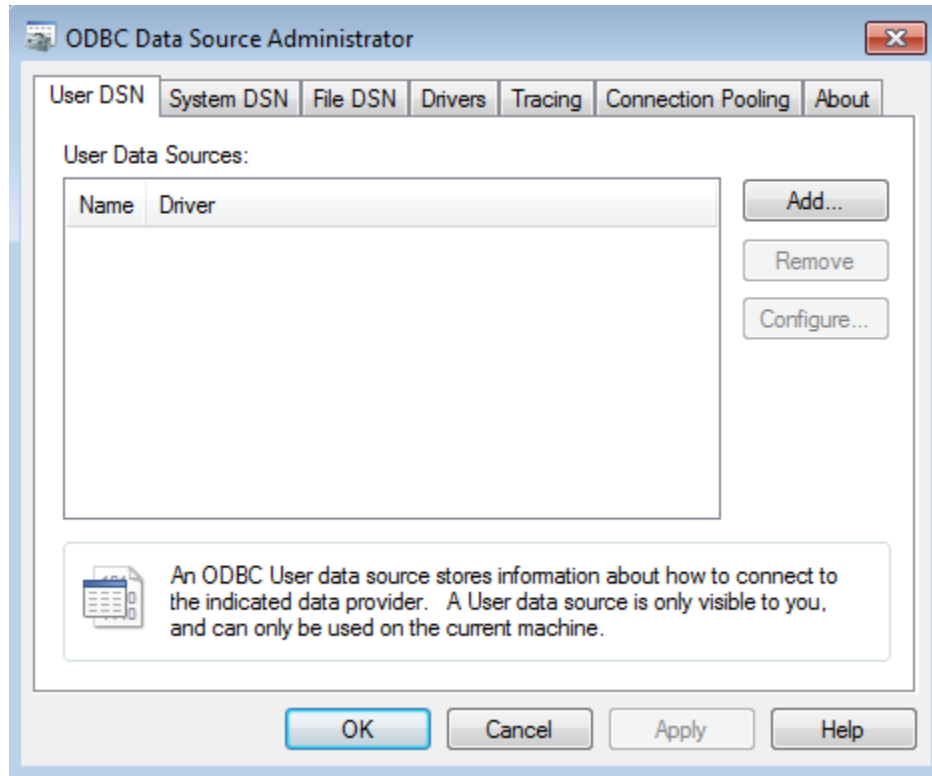
2. In the Create New Data Source dialog box, double-click the **Relativity Server** driver.

Create New Data Source

Select a driver for which you want to set up a data source.

Name	V
Microsoft Text-Treiber (*.txt; *.csv)	6
Microsoft Visual FoxPro Driver	1
Microsoft Visual FoxPro-Treiber	1
Relativity Client	1.
Relativity Client for ADO	1.
Relativity Server	1.
SQL Server	6

[< Back] [Finish] [Cancel]
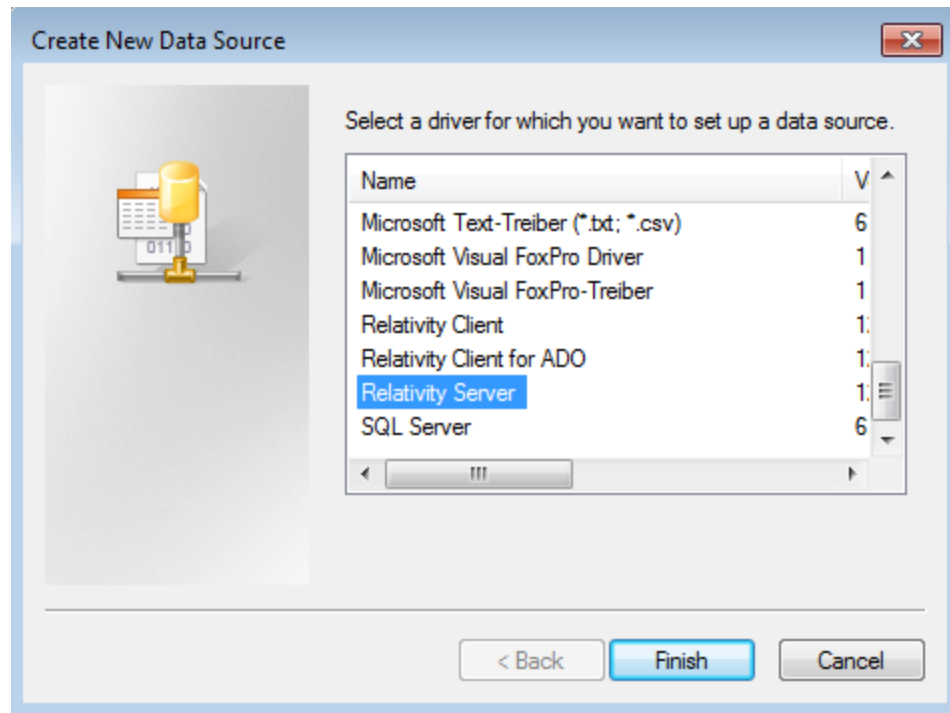
3. If support for both Micro Focus COBOL and RM/COBOL files is installed, in the **File Manager** tab of the Relativity dialog box, select the desired type of files.
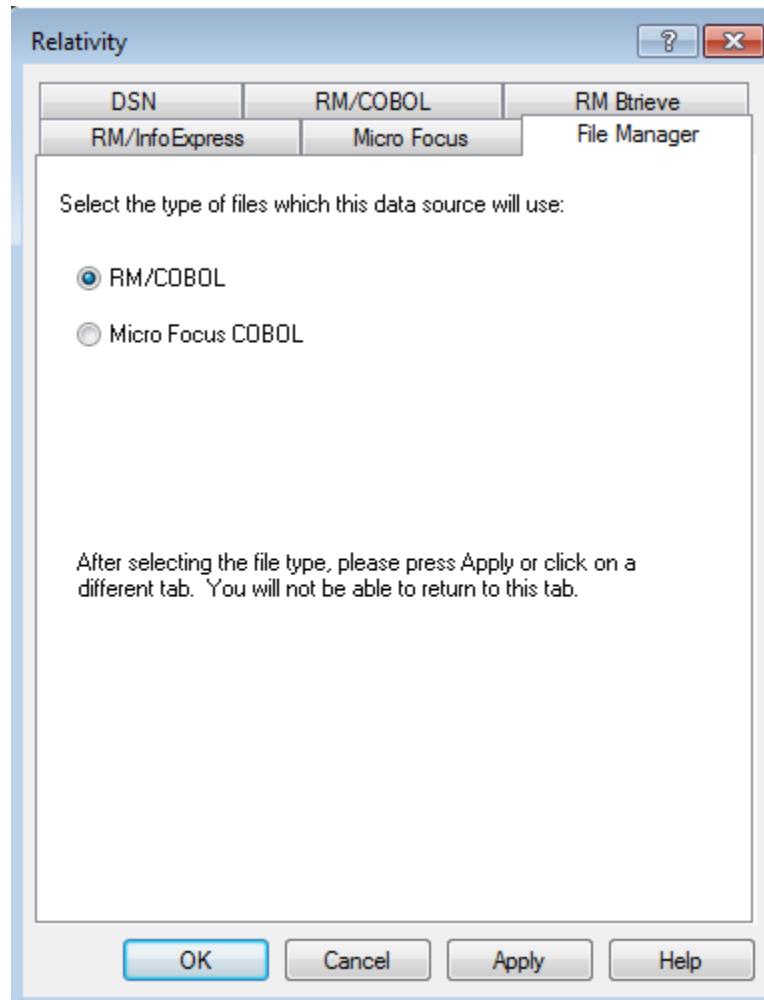
4. On the **DSN** tab in the Relativity dialog box, type the name of the data source in the Data Source Name box. For example, type **Verify**.

    A valid data source name must have a length within the range of 1 through 32 characters. The characters [ ] { } ( ) , ; ? * = ! @ \ must not appear in a data source name. The data source name must also begin with a letter.

5. Optionally, in the Description box, type a description of the data source. For example, type **Relativity C/S for Windows Data Source**.
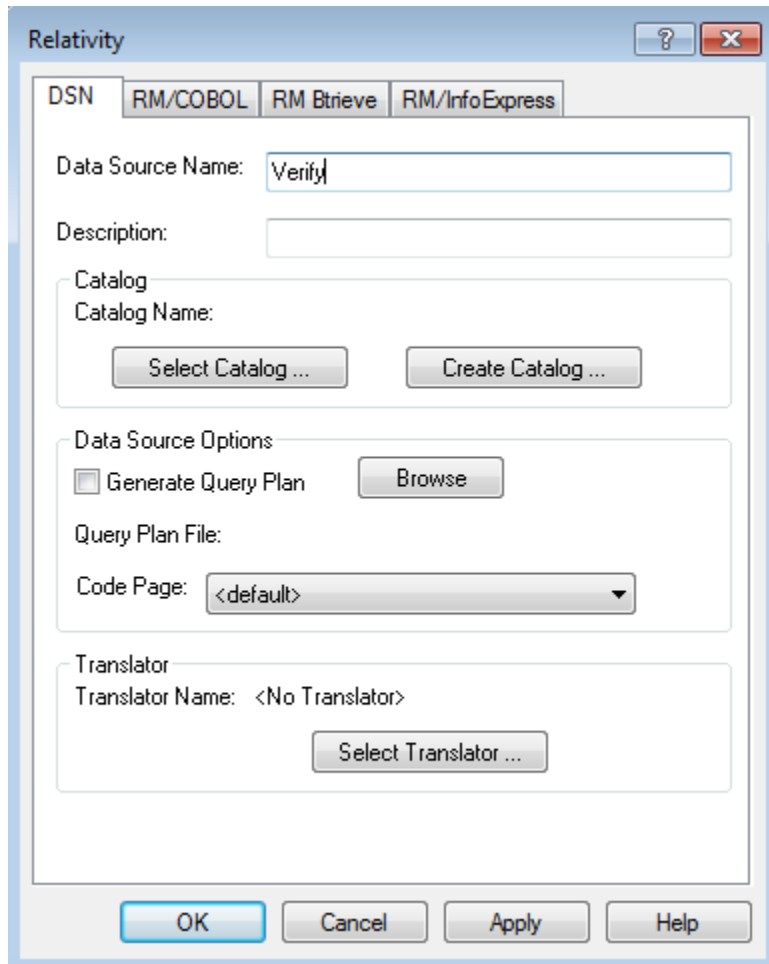
6. Click **Select Catalog**. The Select Catalog for Data Source dialog box is displayed. (Alternatively, you can click **Create Catalog** and the Create Catalog for Data Source dialog box is displayed.)
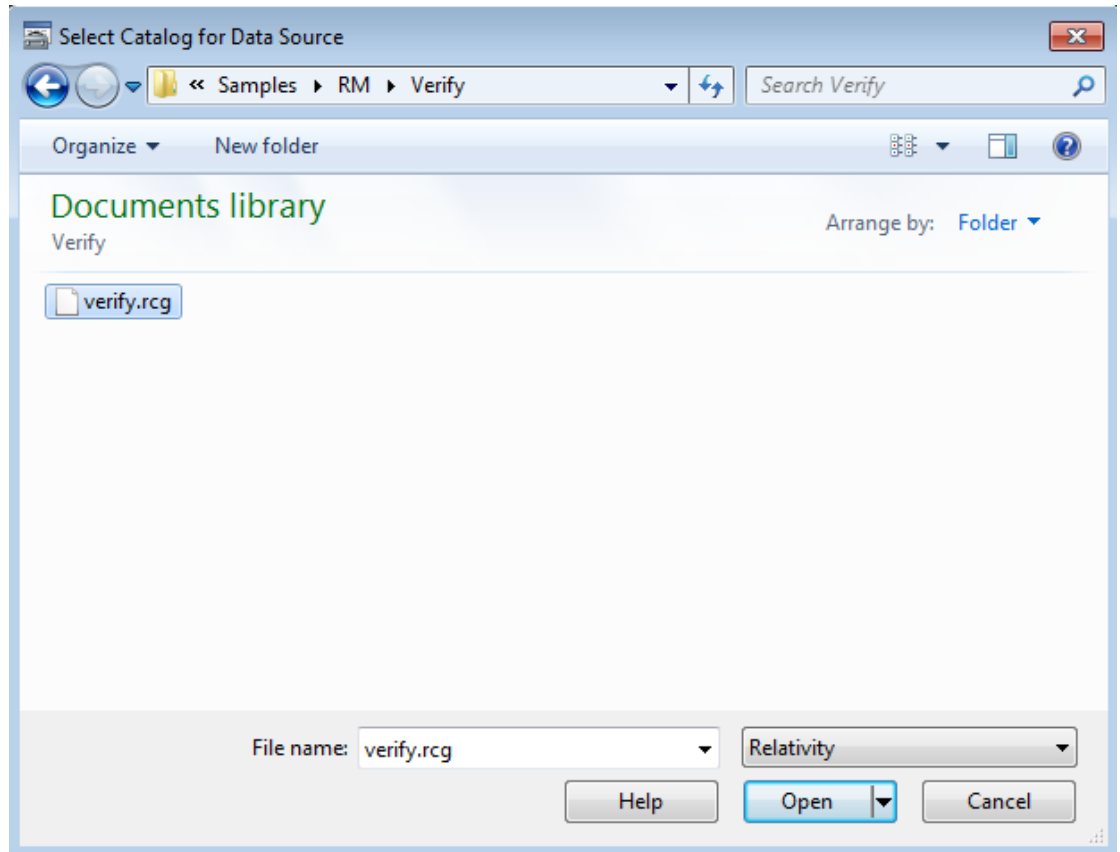
7. In the Select Catalog for Data Source window, navigate to the folder where the Relativity samples were installed, **C:\Users\Public\Documents\Micro Focus\RM\Relativity\Samples\RM\Verify**.

8. In the File name box, type or select the name of the catalog file. The filename extension is **.rcg**.

9. Click **Open**. The Select Catalog for Data Source dialog box closes and the pathname of the selected catalog appears in the Relativity dialog box.
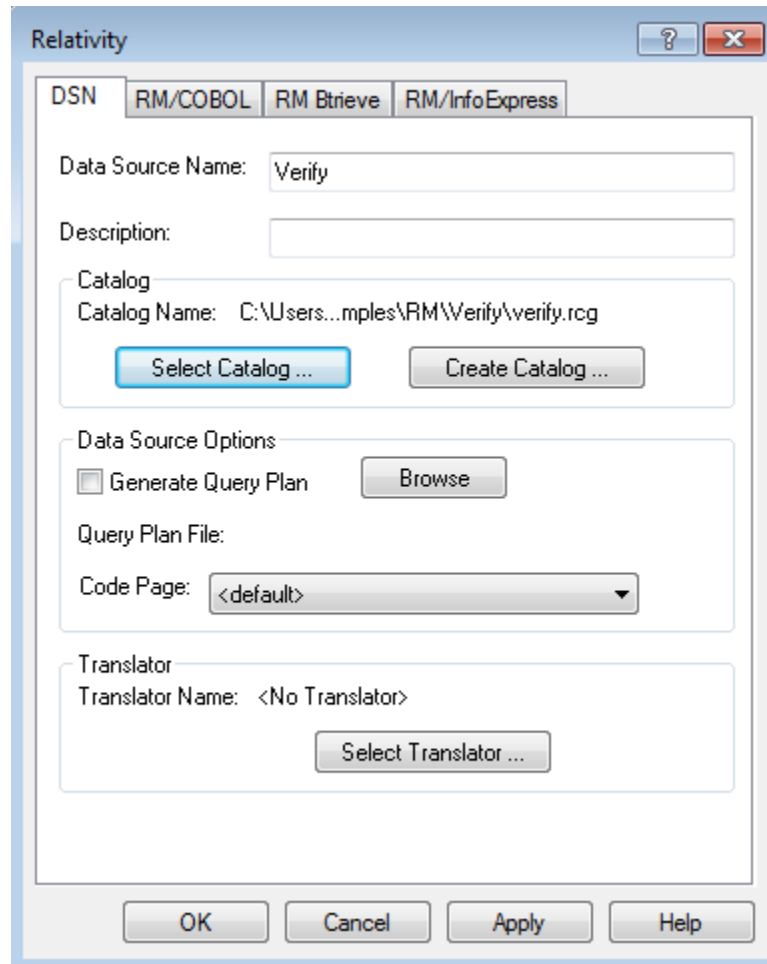
10. Click **OK** to close the Relativity dialog box. You have successfully configured a Relativity Data Server data source.

    The ODBC Data Source Administrator dialog box is displayed with the new data source listed as a system data source in the System DSN tab.
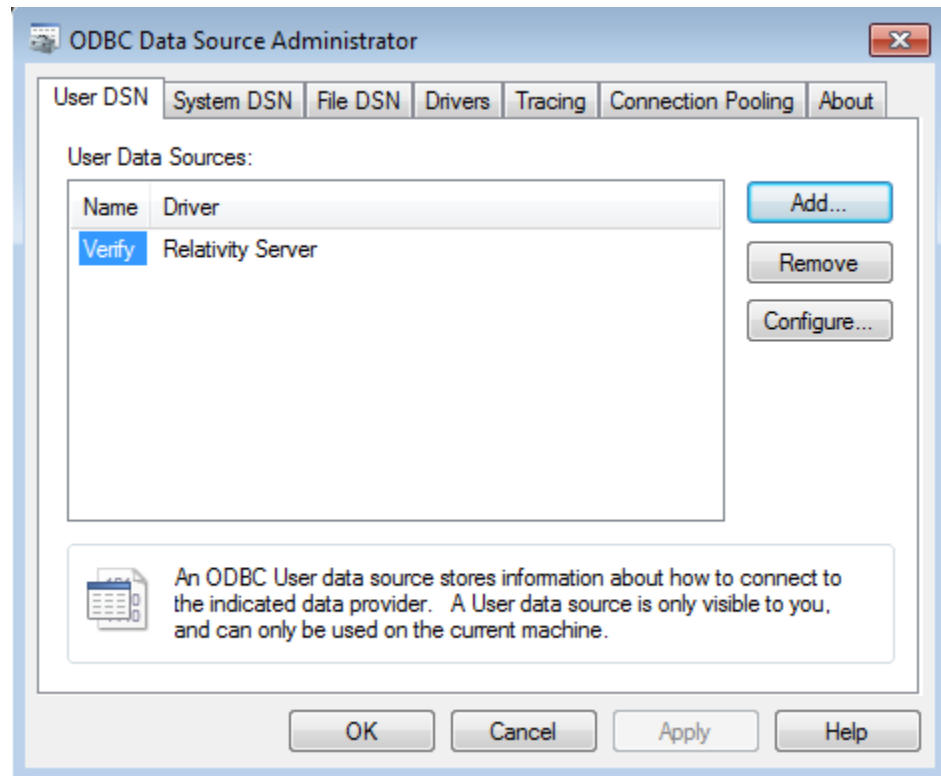
11. Click **OK** to close the ODBC Data Source Administrator dialog box.

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 Client and the Microsoft OLE DB Provider for ODBC drivers.

Note These procedures assume that you have installed the Relativity Data Client software client on the Windows server running SQL Server. For more information, see Chapter 2: Installation and Verification of Relativity Data Client for Catalog Development (on page 29) and Chapter 3: Installation and Verification of Relativity Data Client for End Users (on page 59).

1. Create a Relativity Data Server data source for the Verify database and name the data source **Verify**.

2. On the Windows server machine running SQL Server, create a Relativity Data Client data source named **NTVerify** using the System DSN tab in the ODBC

Data Source Administrator dialog box and connect it to the Data Server data source (Verify) created in Step 1.

3. Using the SQL Server Enterprise Manager, navigate to the Console Root\Microsoft SQL Servers\SQL Server Group\YourServer'sName\Security\Linked Servers option.

4. Right-click on **Linked Servers** and select **New Linked Server**. The Linked Server Properties - New Linked Server dialog box opens.

5. 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**.

6. Select the **Other Data Source** option button.

7. From the Provider Name list box, select **Microsoft OLE DB Provider for ODBC Drivers**.

8. In the Data Source field, enter the name of the Relativity Data Client data source created in Step 2 (NTVerify). (Alternatively, you can leave the Data Source field blank and place a connection string in the Provider String field.)

9. Click **OK**.

10. 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 5 (TESTLINK).

Catalog is the name of the Relativity Data Server 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 Server 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.

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
```

Chapter 2: Installation and Verification of Relativity Data Client for Catalog Development

This chapter lists the system requirements and provides the instructions for the System Administrator on how to install the Relativity Data Client software and the Relativity Server Administrator utility program (see page 30) on a secure Windows client workstation (such as the workstation belonging to a Database Administrator) for the purpose of catalog development.

This chapter also discusses the following topics:

How to	See page
Ensure that the installation was successful by configuring a Relativity Data Client data source and associating it with the Relativity Data Server data source in order to verify communications between the Windows client and the Windows server.	34
Remove the Relativity Data Client and Server Administrator software components.	34
Configure Relativity Data Server data sources from catalog developer installation scripts using the installation kit DLL.	47

System Requirements

Installation of the Relativity Data Client software on a Windows client 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 XP, Windows7, or higher.
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.
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.

Installing the Relativity Data Client and Server Administrator

Note If you have a version of the Relativity Data Client installed, you should remove it prior to installing a newer version. See Removing the Relativity Data Client and Server Administrator (on page 34).

The Relativity Data Client and Relativity Server Administrator can be installed on a Windows workstation using either of the following methods:

- Electronic Product Delivery Installation for Data Client and Server Administrator (see page 31)

- CD-ROM Installation for Data Client and Server Administrator (see page 31)

Additionally, the Relativity Data Client can be installed on a Windows server. This method is helpful for system administrators who need to install the Data Client on a large number of Windows workstations where EPD and CD-ROM installations would be impractical. The Windows workstation clients can then perform the installation across the network. For more information about network install, navigate to www.microfocus.com/documentation/rm-cobol/ and refer to the "Administrative Installations" section of the *RM-Install Program User's Reference* documentation.

To verify that the installation is successful, see Verifying Client/Server Communications Using the Server Administrator (on page 34).

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

Electronic Product Delivery Installation for Data Client and Server Administrator

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

All Relativity orders generate an Electronic Product Delivery (EPD) email that contains links to download the product. It also contains a link to download the product's License Certificate (also called the license file) for the order, which is necessary to install Data Server, although it is not necessary to install a Data Client. Finally, there are instructions about how to decompress the download file and begin the installation. This section will elaborate on the process of downloading the order and preparing to install the product.

All Relativity EDP orders contain links to download the product as a CD-ROM image, in the form of a compressed .iso file, and links to download a smaller installation, in the form of a Windows Installer Package (.msi). And you can also elect to have a physical CD-ROM shipped to you. (You can also use a CD-ROM burner drive to create your own physical CD-ROM using the .iso file, if you do not wish to wait for it to be shipped.) The CD-ROM (both .iso and physical) contains installation files for all the supported platforms. The smaller Windows Installer Package contains the installation only for the Windows platform.

The process begins with the arrival of a Micro Focus Electronic Product Delivery email which was generated when your order was complete. There is a link in this email on which to click to browse to the Electronic Product Delivery website. Once you have clicked on that link, a login page will appear in your browser. Use this page to login with your Micro Focus account. After a successful login, a page will display containing your order, on which there will be an individual invoice line for each item in the order. Locate the invoice line for the *Relativity Data Server* (the Data Client download is bundled with the Data Server), and click on the **+** in the left hand column. The invoice line will expand, displaying three tabs: **Software/Licenses**, **Documentation**, and **Legal Information**, with **Legal Information** selected. After you review the End User License Agreement in the Legal Information tab, click on the checkbox in **Step 2** at the beginning of the email. (This is necessary to acknowledge the acceptance of the End User License Agreement. You will not be able to proceed until the checkbox has been checked.) Next, select the **Software/License** tab and click on the **+** to the left of the serial number. You will then be presented with the lines for downloading the complete CD-ROM image (.iso), for downloading the Data Client on the UNIX platforms, lines for downloading the Data Client for Windows (both 32-bits and 64-bit), and for downloading the license key, although the License Certificate is not required to install a Data Client.

CD-ROM Installation for Data Client and Server Administrator

Note Although using the CD-ROM image is not common, this section will cover it, for sake of completeness.

If you elected to receive physical media, insert the media into the machine's CD-ROM drive and close the drive. Windows will automatically detect the media's presence and mount it. If the machine is configured for AutoPlay, the **RM-Install** program will begin running. As noted previously, the Data Client does not need a License Certificate to be installed, so the **RM-Install** program will not be used to control its installation, thus you can terminate the **RM-Install** program if it was automatically started by Windows. Instead, open a Windows Explorer window, in the left-hand pane, click on the CD-ROM drive. In the right hand pane, open the **DClient** directory, and then the **046** directory. If you are installing the 32-bit Data Client, double click on **DClient.msi**. If you are installing the 64-bit Data Client, double click on **DClient64.msi**. Then proceed to the **Installing the Relativity Data Client** section below.

If you elected to download the compressed ISO file, it will be compressed using gzip and will need to be decompressed before installation, although the Chrome browser may decompress it automatically. (Click on the **Documentation** tab in your EDP order to obtain up to date details on this process. Use the "Installation Guide to Installing an ISO Image" instructions.) The downloaded file will have a name similar to **rmrelativity12*xx*.igz**.

Note: The following instructions assume that the gzip utility has been installed on the machine and is in your PATH. (If the following instructions are unclear to you, please use the Installing from Windows Installer Package option below.)

From the Start menu, open a Command Prompt window, change directory to the directory where the .igz was downloaded, and rename the file's extension from .igz to iso.gz.

```
ren rmrelativity12xx.igz rmrelativity12xx.iso.gz
```

Then decompress the file with the command:

```
gunzip rmrelativity12.iso.gz
```

If this command results in an error, then the .igz file has already been decompressed by the browser, in which case, all that needs to be done is rename the file without the .gz extension.

```
ren rmrelativity12.iso.gz rmrelativity12.iso
```

An .iso file is useful for burning a CD with Relativity installation. Use the .iso image burning feature included with Windows 10 or later, or third-party CD-ROM Burning software, such as Nero (http://www.nero.com) or Roxio's Easy CD Creator (http://www.roxio.com), to create physical media.

On Windows 10 and later, to create physical media, open a file explorer window on the folder that contains the .iso image file, then right-click on the file and select **Burn Disk Image** from the menu and follow the directions. (Note that **Burn Disk Image** is not the same as burning a CD with the .iso file on it.)

After you create a CD, follow the instructions at the beginning of this section for how to start the installation.

Alternatively, on Windows 10, .iso files can also be mounted as a virtual CD. Simply open Windows Explorer, navigate to the directory containing the .iso file. Right click on the .iso file and select **Mount** from the pop-up menu. This may be done with Windows 7, but additional software will need to be installed first, such as Virtual CloneDrive.

After the .iso file has been mounted, follow the instructions at the beginning of this section for how to start the installation.

Installing from Windows Installer Package

The most common case is to use the .msi file download. When downloaded, the file will have a name similar to rmrelativity12*xx*_dclient_win_yy. (Where 12*xx* is the version of Relativity, and *yy* is 32 or 64.) If it is not there already, copy the .msi file to the target Windows machine. Then double click on the .msi to start the installation, and proceed to the **Installing the Relativity Data Client and Server Administrator** section below.

Installing the Relativity Data Client and Server Administrator

Note 1 These instructions assume that the Relativity Data Client is being installed for catalog development. For additional options, see Chapter 3: *Installation and Verification of Relativity Data Client for End Users* (on page 59).

At this in the installation:

- You have the CD-ROM (or .iso file) mounted and the desired Relativity Data Client (either 32-bit or 64-bit) Windows Installer Package running.

- Or, you have the downloaded the desired Relativity Data Client (either 32-bit or 64-bit) Windows Installer Package from the EDP order, and have it running.

Follow the additional instructions presented by the installation program.

1. Follow the instructions presented on the pages of the Data Client installation and press the **Next** or **Back** button to advance through the various pages.

2. On the **Software License Agreement** page, you must click "I accept the terms in the license agreement" in order to continue with the installation.

3. On the **Installation Type** page, do one of the following:

   - Select the "Standard Installation" option to install all the features of Relativity Data Client, including the Server Administrator. If this option is specified, proceed to step 7.

   - Select the "Custom Installation" option to specify which features of the Relativity Data Client to install, and change their defaults. If this option is specified, proceed to the next step.

4. On the **Custom Setup** page, disable installation of any feature you do not wish to install.

5. On the **Data Client Installation Type** page, select the Database Administrator option in order to install the Relativity Server Administrator utility program.

    The Server Administrator utility allows you to define a Windows server for the Data Client and configure a Relativity Data Server data source on the Windows server machine.

6. On the **Define Server** page, in the Server's Network Name box, enter the network name of the Windows server on which the Relativity Data Server was installed. The value in the Server Port box should match the service port number for the Windows server on which the Data Server was installed. The default is 1583.

7. On the **Ready to Install the Program** page, click the **Install** button to install the Relativity Data Client.

8. When the installation is complete, click the **Finish** button on the **Completed** page.

Removing the Relativity Data Client and Server Administrator

The Relativity Data Client, as well as the Relativity Server Administrator, can be removed from the Windows client workstation on which it was installed. This may be necessary if these components are to be moved to a different machine or if a new release of the product is to be installed on the same machine.

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

To remove the Relativity Data Client and Relativity Server Administrator from your system:

1. Open the Windows **Control Panel**.

2. In the Control Panel, do one of the following:

    *   On Windows XP, double-click **Add or Remove Programs**.

    *   On Windows 7 or Server 2008, double-click **Programs and Features**.

3. In either the Add or Remove Programs Properties window or the Programs and Features window, select **RM Relativity v** *12.xx* **Data Client** from the list of currently installed programs and updates. (*xx* is the version number of the product to be removed.)

4. Do one of the following to start the uninstall:

    *   On Windows XP, click the **Remove** button.

    *   On Windows 7 or Server 2008, click the **Uninstall** button.

5. In the message box, click **Yes** to proceed with the uninstall process.

6. The RM Relativity v*x* Data Client 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 windows or the Programs and Features window.

8. Close the Windows Control Panel.

Verifying Client/Server Communications Using the Server Administrator

The procedure for verifying communications between the Relativity Data Client and the Relativity Data Server includes the following tasks:

- Starting the Relativity Server Administrator (see page 35)

- Selecting a Windows Server (see page 36)

- Using the Relativity Server Administrator to Configure a Relativity Data Server Data Source on the Windows Server (see page 37)

- Configuring a Relativity Data Client Data Source on the Windows Client (see page 42)

Starting the Relativity Server Administrator

To start the Relativity Server Administrator:

1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.

2. From the Control Panel, double-click **Relativity Server** to open the Relativity Server Administrator utility program.
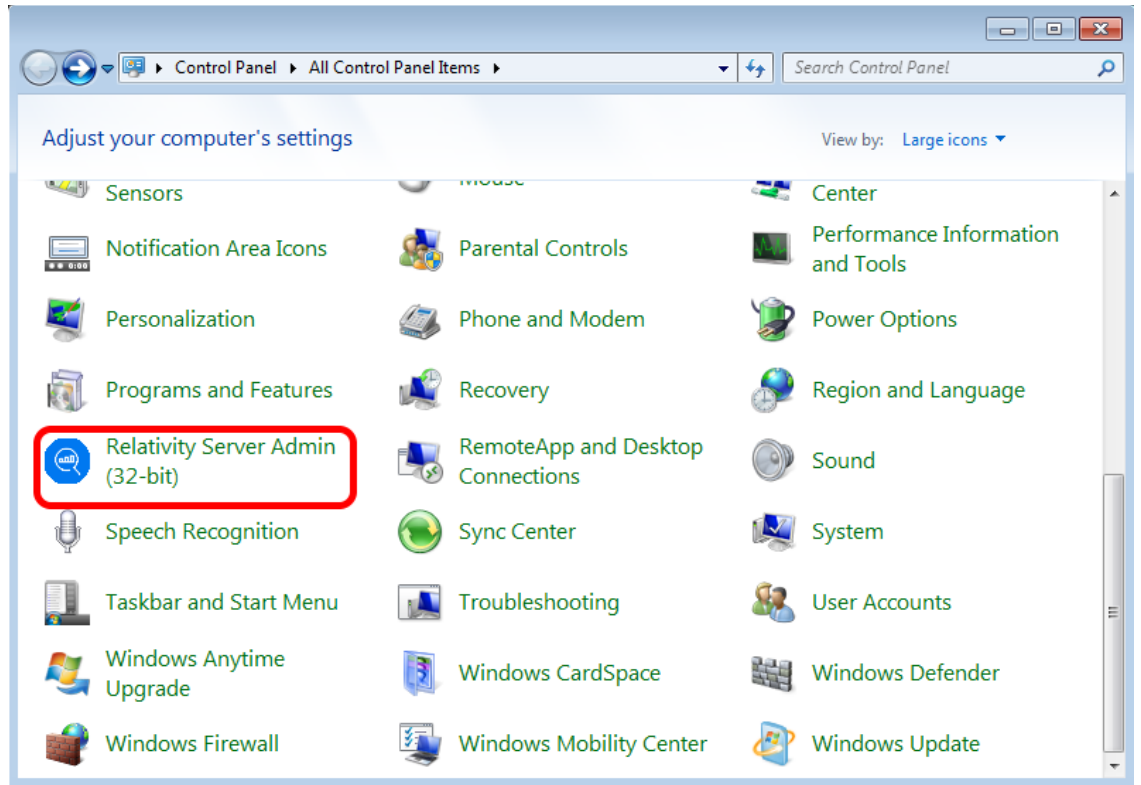
Using the Relativity Server Administrator, take the following steps:

1. Select a Windows server (see page 36).

2. Using the Relativity Server Administrator to configure a Data Server data source on the Windows server and select a catalog to be associated with the Data Server data source (see page 37).

Note For detailed information about the Relativity Server Administrator utility, see the Relativity Server Administrator online help file.

Selecting a Windows Server

To select a Windows server:

1. In the Select Server dialog box, select the server listed in the Server Name list.

   The server listed here is defined during the installation of the Relativity Data Client on the Windows client workstation.
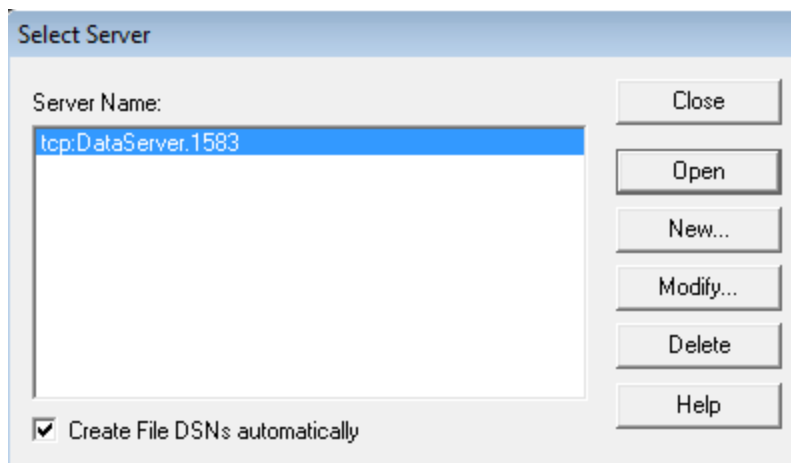
2. Click **Open**.

The Data Sources dialog box is displayed.
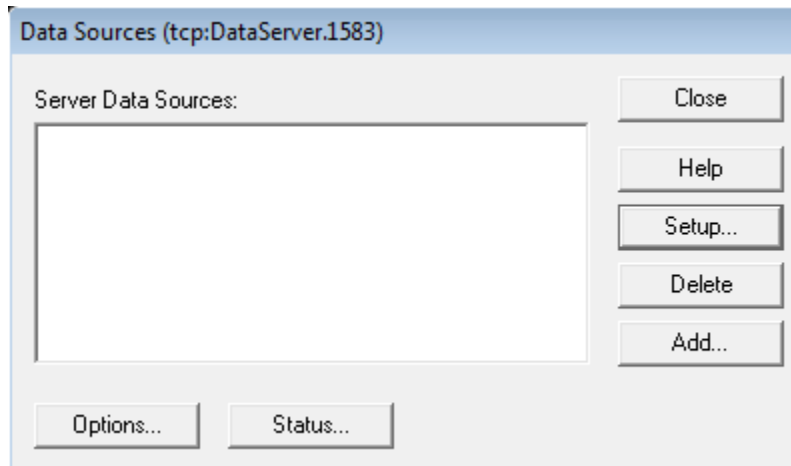
Using the Relativity Server Administrator to Configure a Relativity Data Server Data Source on the Windows Server

To configure a Relativity Data Server data source on the Windows server using the Relativity Server Administrator:

1. In the Data Sources dialog box, click **Add** to open the Relativity setup dialog box.

This dialog box allows you to configure a Data Server data source on the Windows server and select a catalog to associate with that data source.

Note The Relativity setup dialog box will vary depending on the type of COBOL files that the Data Server can access. The common options are displayed on the initial DSN tab with the file manager-specific options displayed in the remaining tab(s). This discussion will focus only on the common options of the DSN tab.
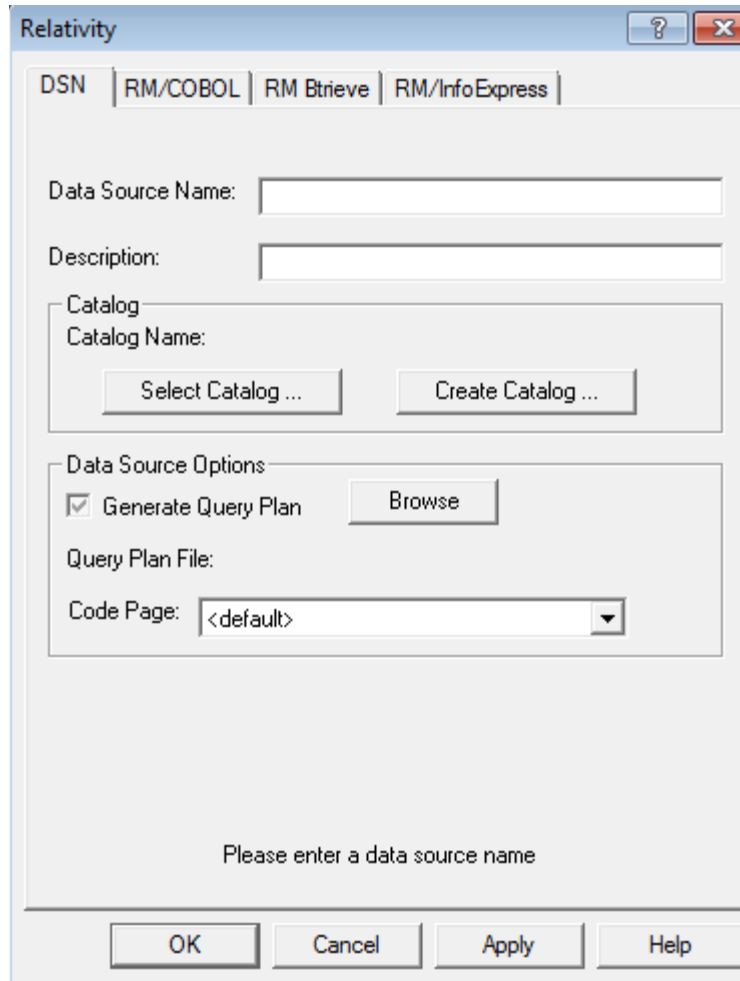
2. In the Data Source Name box, type **Verify** as the name of the Data Server data source.

    A valid data source name must have a length within the range of 1 through 32 characters. The characters [ ] { } ( ) , ; ? * = ! @ \ must not appear in a data source name. The data source name must also begin with a letter.

    Tip It is helpful to use the same name for the Data Client (see page 42) and Data Server data sources that will be associated with one another.

3. Optionally, in the Description box, type a description of the data source. For example, type **Relativity C/S for Windows Data Source**.
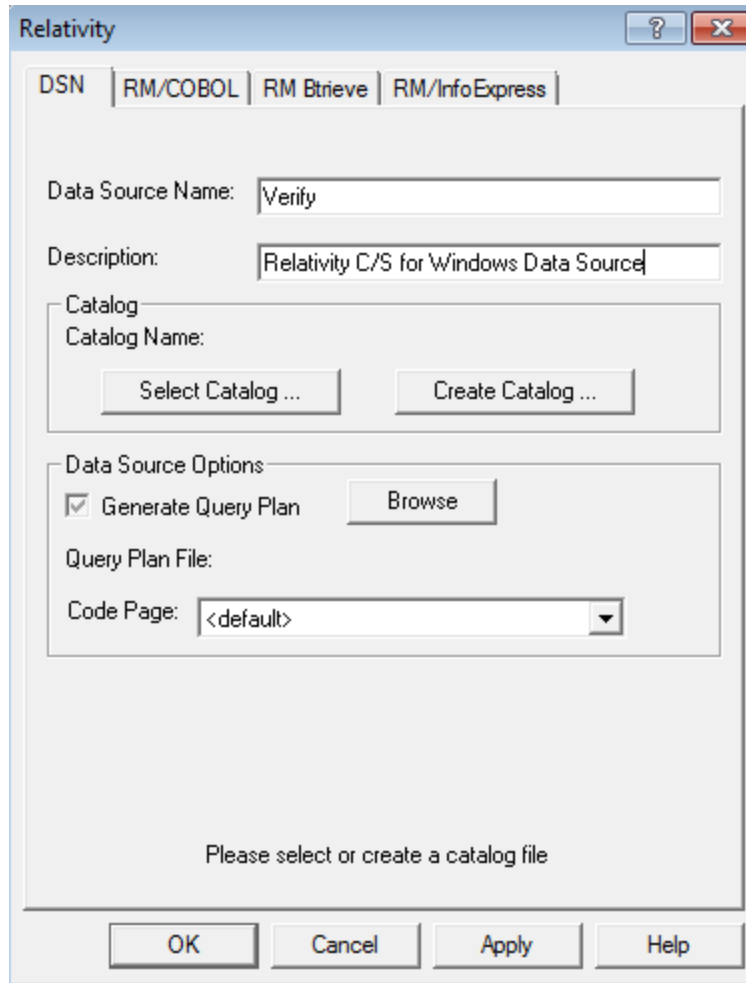
4. In the Catalog area, click **Select Catalog** to open the Select Catalog for Data Source dialog box.

5. A Select Catalog for Data Source window will be displayed. In the File Name text box, enter **C:\Users\Public\Documents\Micro Focus** and click OK.
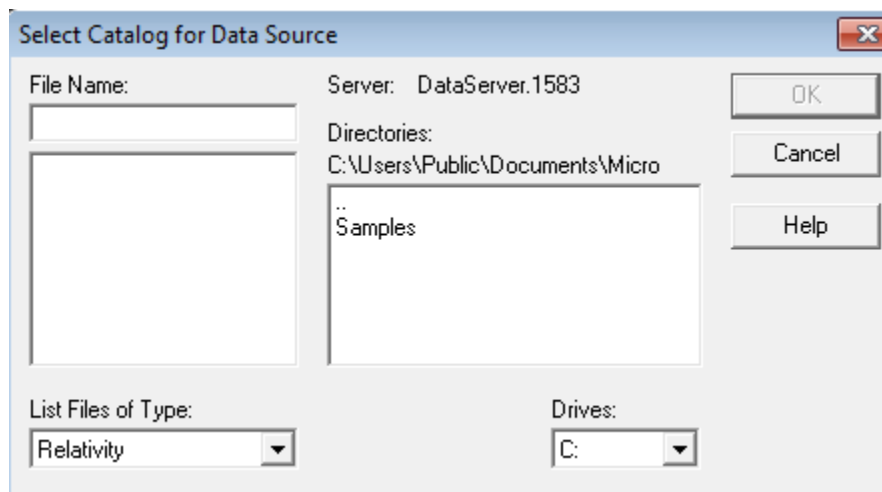
6. In the Directories list, double-click the **SAMPLES** folder.

Select Catalog for Data Source

File Name:

Server: DataServer.1583

Directories:
C:\Users\Public\Documents\Micro

..
MF
RM
StoreProcedures

OK

Cancel

Help

List Files of Type:
Relativity

Drives:
C:
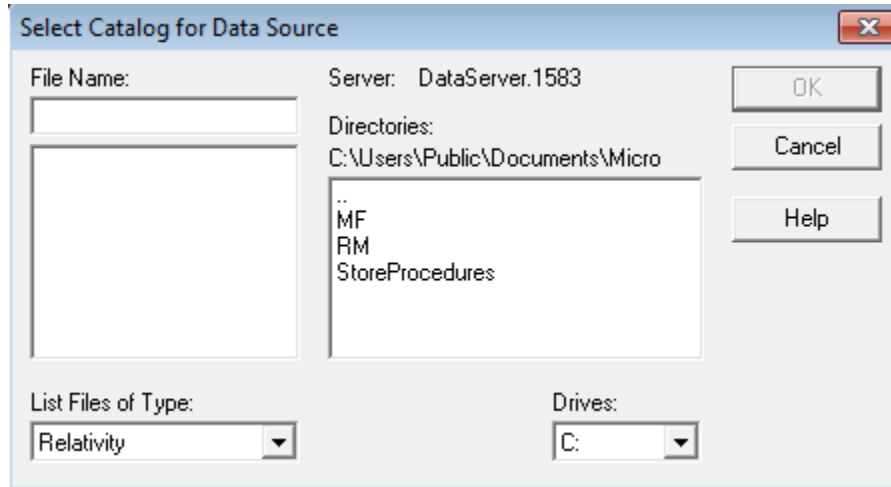
7. Next, double-click either the **RM** or **MF** folder and then double-click the **VERIFY** folder.

Select Catalog for Data Source

File Name:

verify.rcg

Server: DataServer.1583

Directories:
C:\Users\Public\Documents\Micro

..

OK

Cancel

Help

List Files of Type:
Relativity

Drives:
C:
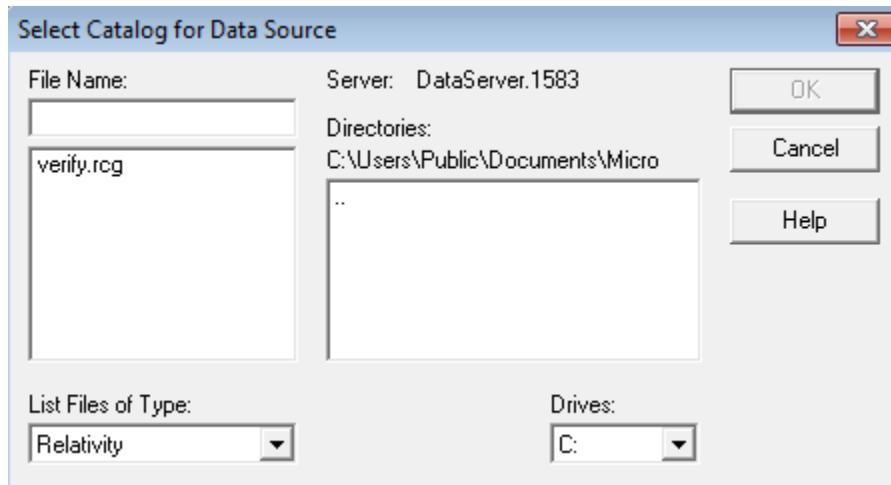
8. Select **VERIFY.RCG** in the File Name list.

Select Catalog for Data Source

File Name:
verify.rcg

verify.rcg

Server: DataServer.1583

Directories:
C:\Users\Public\Documents\Micro

..

OK

Cancel

Help

List Files of Type:
Relativity

Drives:
C:
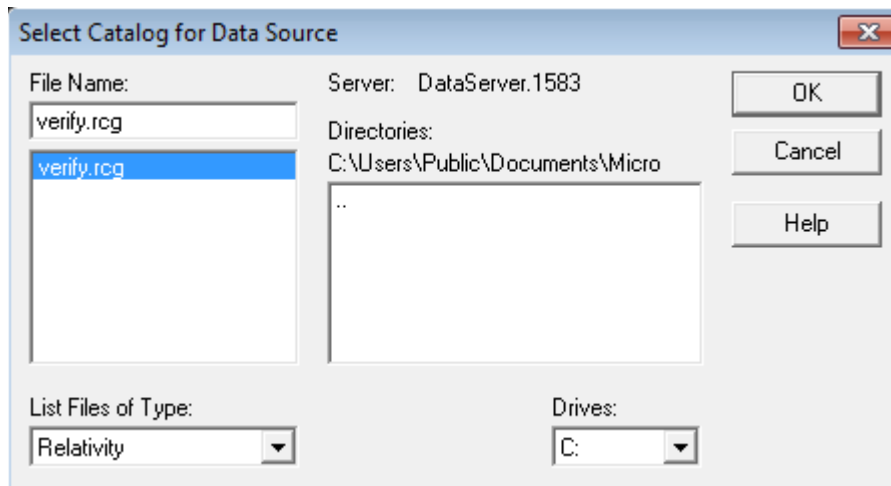
9. Click **OK**.

    The Select Catalog for Data Source dialog box closes and the pathname of the
    selected catalog appears in the Relativity setup dialog box.
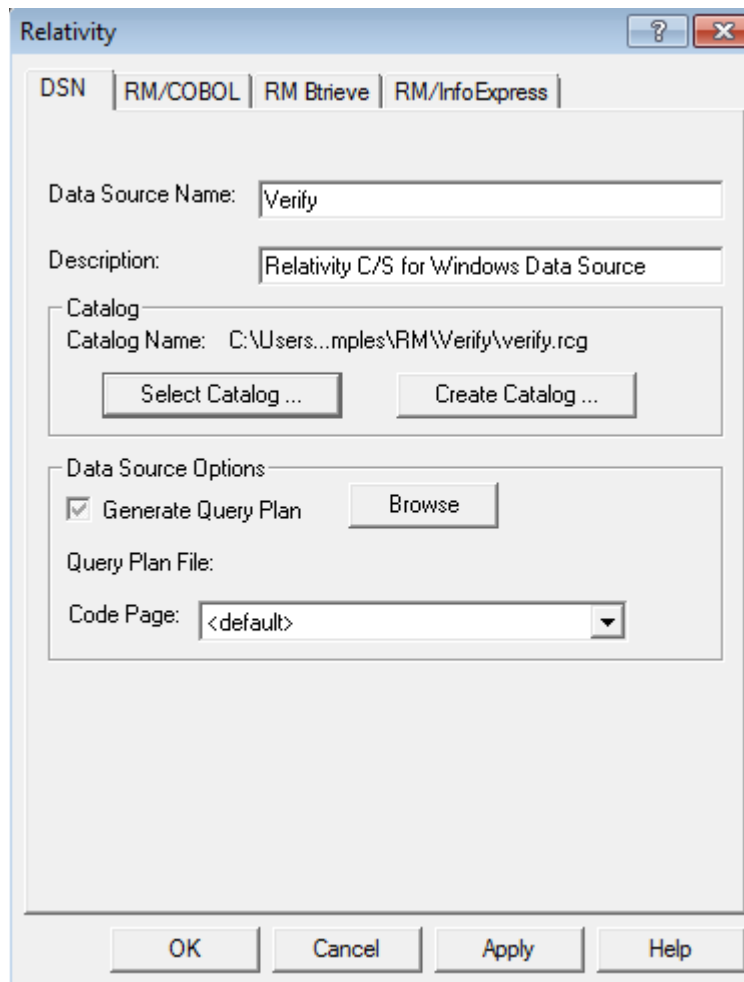
10. Click **OK** to exit the Relativity setup dialog box.

11. In the Data Sources dialog box, notice that the Server Data Sources list contains
    the data source name that you configured on the Data Server.
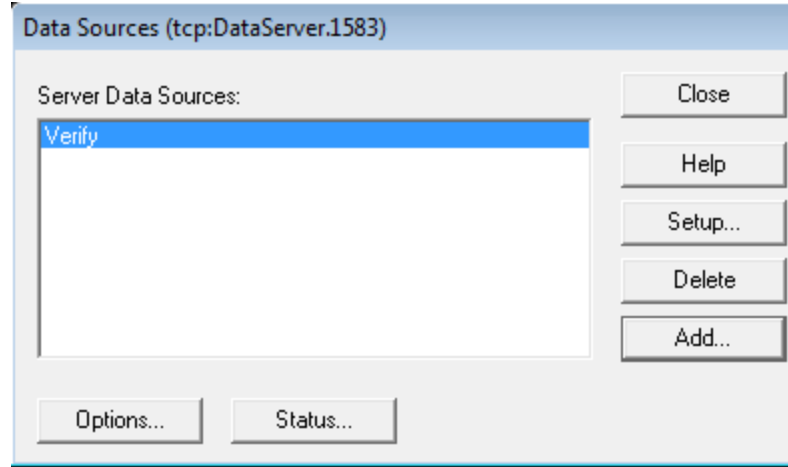
12. Click **Close** to exit the Data Sources dialog box.

13. In the Select Server dialog box, click **Close** to exit the Relativity Server Administrator utility program.
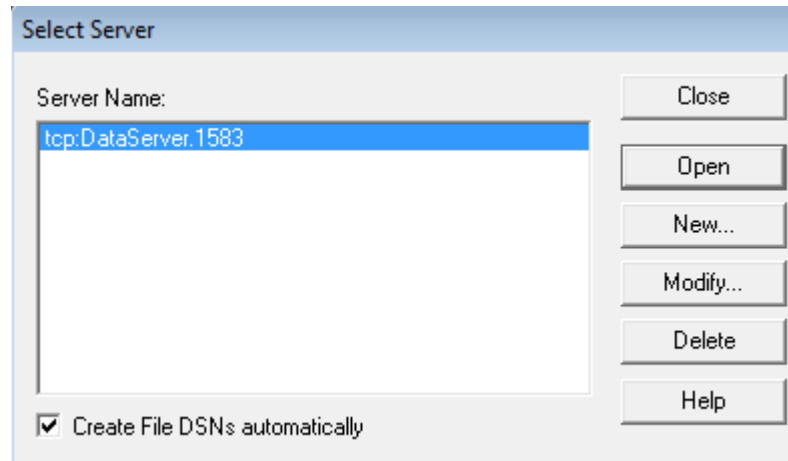
The Data Server data source that you configured is now available to all Windows client workstations on which the Data Client is installed.

Next, you must configure a Data Client data source on the Windows client and associate it with the Data Server data source on the Windows server in order to verify communications between the Data Client and the Data Server.

Note For information on how to configure Relativity Data Server data sources from a catalog developer installation script on the Windows server machine, see Configuring Relativity Data Server Data Sources from Catalog Developer Installation Scripts (on page 47).

Starting the ODBC Data Source Administrator

Before you configure the Relativity Data Client data source on the Windows client, you must first start the ODBC Data Source Administrator. The ODBC Data Source Administrator is used to configure and maintain ODBC data sources. If you are using

the 64-bit Data Client, you can use the ODBC Data Source Administrator from the Windows Control Panel. If you are using the 32-bit Data Client, the 32-bit ODBC Data Source Administrator must be used. Starting the 32-bit ODBC Data Source Administrator is not straight-forward on a 64-bit version of Windows 7. The details for starting the ODBC Data Source Administrator is detailed for several environments below:

Note A 32-bit Data Client data source also can be configured from within the Relativity Designer. See the Relativity Designer online help file for more information.

Starting the 32-bit ODBC Data Source Administrator on Windows 7 (32-bit)

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)**.

Starting the 64-bit ODBC Data Source Administrator on Windows 7 (64-bit)

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)**.

Starting the 32-bit ODBC Data Source Administrator on Windows 7 (64-bit)

1. Open the Windows Explorer.

2. Navigate to C:\Windows\SysWOW64.

3. Open ODBCAD32.

Note It is recommended that you create a short-cut from the desktop to the C:\Windows\SysWOW64\ODBCAD32.EXE in order to facilitate starting the ODBC Administrator.

Starting the ODBC Data Source Administrator on Windows 10

1. Click on the Windows Start icon.

2. Click on the Settings icon.

3. In the Settings window, in the **Find a setting** text box, type **ODBC**.

4. Below the **Find a setting** search box, two search results will be displayed. Click on **Set up ODBC data sources (32-bit)**.

Configuring a Relativity Data Client Data Source on the Windows Client

After the proper ODBC Data Source Administrator has been started, to configure a Relativity Data Client data source on the Windows client:

1. In the ODBC Data Source Administrator dialog box, select the **User DSN** tab and click **Add**.
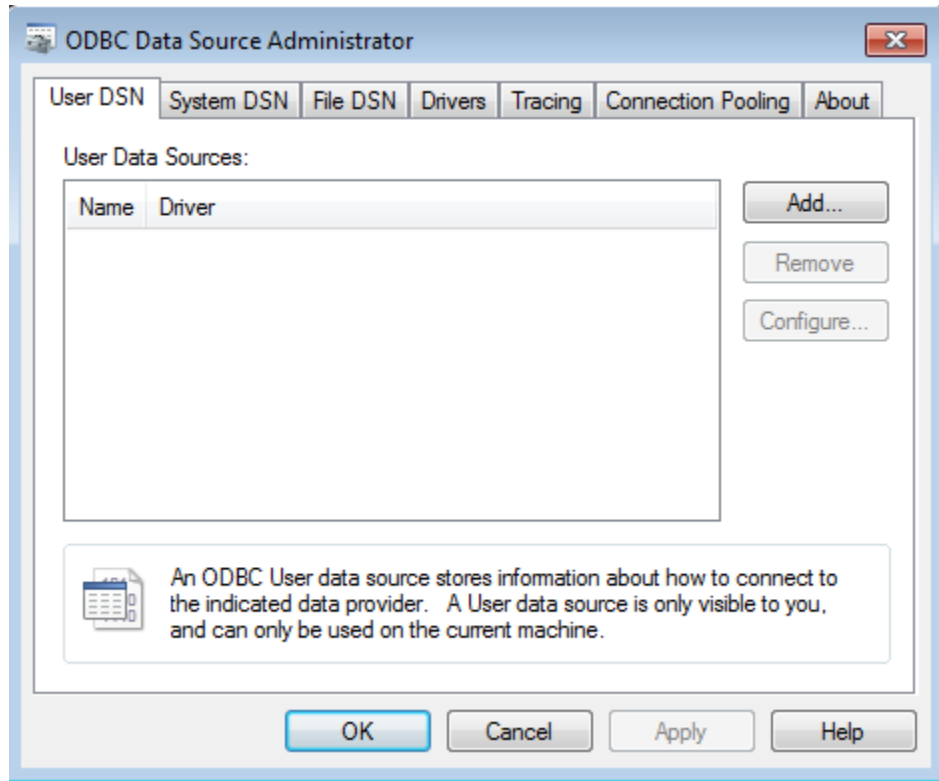
2. In the Create New Data Source dialog box, select a driver for which you want to configure a Data Client data source by double-clicking the driver name (**Relativity Client**).

3. In the ODBC Relativity C/S Setup dialog box, click the Windows server from the Server Name list. The Server DSN list box containing Data Server data sources for the selected Windows server will appear.

    Note The Data Server data source, Verify, which is listed in the Server DSN list, was configured previously using the Relativity Server Administrator (see page 37).
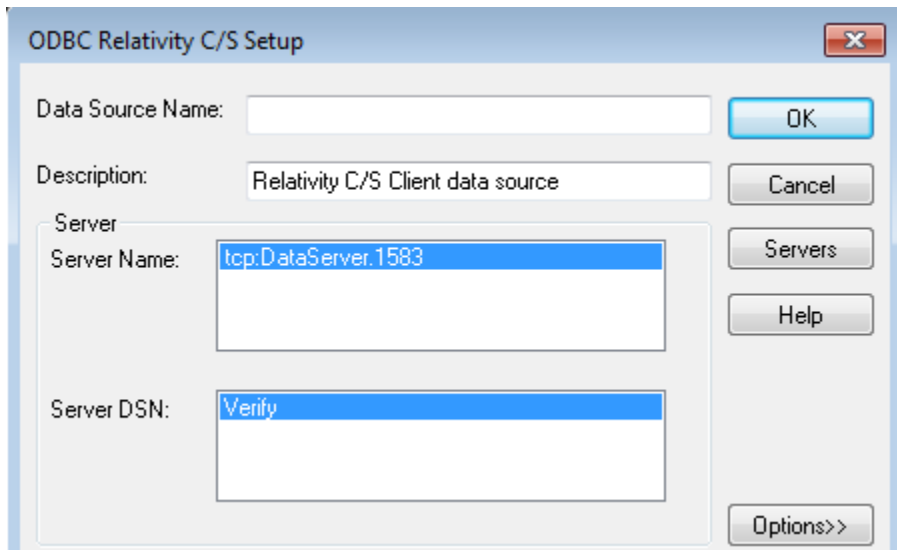
4. In the Data Source Name box, type **Verify** as the name of the Data Client data source with which you want to associate a Data Server data source from the Server DSN list.

A valid data source name must have a length within the range of 1 through 32 characters. The characters [ ] { } ( ) , ; ? * = ! @ \ must not appear in a data source name. The data source name must also begin with a letter.

Tip It is helpful to use the same name for the Data Client and Data Server data sources that will be associated with one another.

5. Optionally, in the Description box, type a description of the Data Client data source.

6. Click **OK** to close the ODBC Relativity C/S Setup dialog box.

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

The Data Client data source has now been associated with the Data Server data source.

In this verification procedure, the Data Client and Data Server data sources refer, indirectly through the Relativity catalog, to the sample Relativity database named Verify. Once the verification procedure has been successfully completed, the Relativity Verify database can be accessed from any ODBC-enabled application.

Configuring Relativity Data Server Data Sources from Catalog Developer Installation Scripts

Relativity provides an alternative to having your end users use either the Relativity Server Administrator utility or the ODBC Data Source Administrator to configure Relativity Data Server data sources on the Windows server, as described in Configuring a Relativity Data Server Data Source on the Windows Server (on page 19). The Relativity installation kit, a DLL that currently is shipped only with the Relativity Data Client, provides support during installation for the creation of Data Server data sources. This method may be used only after the Data Client has been installed by your installation script. Note that the configuration of the Data Server data sources by this method needs to be performed only once, after which you must create Data Client data sources that refer to the Data Server data sources.

The routines in the installation kit provide access to some of the functionality provided by the Server Administrator utility from installation tools such as Install Shield and Wise. These routines may also be called from a Microsoft Visual Basic or C program, although the interface is not well suited for calling them directly from Visual Basic.

The installation kit DLL, named **relink32.dll**, is installed in the installation directory when the Administrator option is selected during the Relativity Data Client installation.

For more information, see <u>Installing the Relativity Data Client and Server Administrator</u> (on page 30).

When calling the installation kit DLL, it is necessary first to load the DLL from the installation script and then call the LogInToServer function in order to establish connection to the Relativity Data Server. Then the remaining functions will use this connection until the LogOutFromServer function is called to disconnect from the Relativity Data Server.

Installation Kit Functions

The following descriptions of the installation kit functions use a C interface. Although the types used by these functions are all standard Windows types, three of them, in particular, deserve further explanation in order to be able to use them from your installation scripts.

- The **BOOL** type is a 32-bit integer that is either TRUE (nonzero) or FALSE (zero).

- The **HWND** type is a double word (32-bit) value.

- The **KEY_VAL** type is a C character-string containing keyword-value pairs. Keyword-value pairs have the form *keyword=value*, where *keyword* is the name of an attribute for a data source, and *value* is the value for that attribute. For example, to communicate the name for a data source to the Relativity Data Server, the keyword **DSN** is used. The value of this keyword is the actual name of the data source.

  Keyword-value pairs are placed into a single C (NUL-terminated) string and are delimited by semicolons (;). Semicolons within a *value* may be escaped with a backslash (\).

AddServerDefinition

The AddServerDefinition function adds a server definition to the list of server names available from the Server Administrator. This function is equivalent to pressing the New button from the Select Server window in the Server Administrator. If the server definition already exists, it is replaced.

The calling sequence is as follows:

```
BOOL WINAPI
AddServerDefinition (
    char    *pServerDefinition);
```

AddServerDefinition returns TRUE if successful or FALSE if not successful.

pServerDefinition contains the address of a NUL-terminated string that contains the server definition to be added. If the server definition is missing, the leading protocol, **tcp:**, and the trailing service port, **.1583**, will be added.

ConfigServerDataSource

The ConfigServerDataSource function manipulates Relativity Data Server data sources. This function can be used to add a new data source, delete an existing data source, or change an existing data source.

The calling sequence is as follows:

```
BOOL WINAPI
ConfigServerDataSource(
    HWND        hwndParent,
    int         Request,
    char        *pDriver,
    KEY_VAL     *pAttributes);
```

ConfigServerDataSource returns TRUE if successful or FALSE if not successful.

hwndParent contains a parent window handle. This parameter may be NULL (0) to indicate there is no parent handle.

Request contains the type of request and may contain one of the following values:

- The value 1, which adds a new data source.

- The value 2, which configures an existing data source.

- The value 3, which removes an existing data source.

pDriver contains the address of a NUL-terminated string that is the driver description. (This parameter is currently unused.)

pAttributes contains the address of a NUL-terminated string containing keyword-value pairs. For a complete list of keywords, see the SQLConfigDataSource Attribute Strings topic in the DBMS help file. The DSN, FileMgr, and Catalog keywords are required when creating a data source. The CreateCat keyword is useful for creating a catalog for the Relativity Data Server data source.

DefaultServerDefinition

The DefaultServerDefinition function sets a server definition as the default Data Server for the Server Administrator. This server definition will be selected first when the Select Server window is displayed.

Note When the user selects a different server name from the Select Server window, that server name becomes the new default.

The calling sequence is as follows:

```
BOOL WINAPI
DefaultServerDefinition (
    char    *pServerDefinition);
```

DefaultServerDefinition returns TRUE if successful or FALSE if not successful.

pServerDefinition contains the address of a NUL-terminated string that contains the server definition to be the default. If the server definition is missing, the leading protocol, **tcp:**, and the trailing service port, **.1583**, will be added.

GetConnectionInfo

The GetConnectionInfo function returns the information for one connection to the server. The GetServerInfo (see page 54) routine must be called prior to the GetConnectionInfo routine. The information returned by GetConnectionInfo represents the status of the connections at the time that GetServerInfo was called.

The calling sequence is as follows:

```
BOOL WINAPI
GetConnectionInfo (
    unsigned int    ConnectionID,
    unsigned int    *pProcessID,
    char            *pUserName,
    unsigned int    UserNameMax,
    unsigned int    *pUserNameLength,
    char            *pClientMachine,
    unsigned int    ClientMachineMax,
    unsigned int    *pClientMachineLength,
    char            *pApplication,
    unsigned int    ApplicationMax,
    unsigned int    *pApplicationLength);
```

GetConnectionInfo returns TRUE if successful or FALSE if not successful.

ConnectionID contains a value between 1 and the pNumOfConnections value returned by GetServerInfo, inclusive. This value indicates a distinct connection for which the information is to be returned.

pProcessID contains the address of a 32-bit unsigned integer in which to return the process ID of the connection indicated by ConnectionID.

pUserName contains the address of a buffer, at least 16 bytes in length, in which the user name of the connection, indicated by ConnectionID, is to be returned as a NUL-terminated string.

UserNameMax contains the length of the buffer indicated by pUserName, in bytes.

pUserNameLength contains the address of an unsigned 32-bit integer in which to return the length, in bytes, of the user name string.

pClientMachine contains the address of a buffer, at least 16 bytes in length, in which the name of the connection's client machine, associated with the connection indicated by ConnectionID, is to be returned as a NUL-terminated string.

ClientMachineMax contains the length of the buffer indicated by pClientMachine, in bytes.

pClientMachineLength contains the address of an unsigned 32-bit integer in which to return the length, in bytes, of the client machine name string.

pApplication contains the address of a buffer, at least 32 bytes in length, in which the name of the application associated with the connection indicated by ConnectionID, is to be returned as a NUL-terminated string.

ApplicationMax contains the length of the buffer indicated by pApplication, in bytes.

pApplicationLength contains the address of an unsigned 32-bit integer in which to return the length, in bytes, of the application name string.

GetDefaultServerDefinition

The GetDefaultServerDefinition function retrieves the default server definition for the Server Administrator.

The calling sequence is as follows:

```
BOOL WINAPI
GetDefaultServerDefinition (
    char            *pBuffer,
    unsigned int    BufMax,
    unsigned int    *pBufLength);
```

GetDefaultServerDefinition returns TRUE if successful or FALSE if not successful.

pBuffer contains the address of a memory area in which to return the default server definition as a NUL-terminated string.

BufMax contains the length of the memory area indicated by pBuffer, in bytes.

pBufLength contains the address of a 32-bit integer in which the length of the server definition, in bytes, is returned.

GetServerCharacterSetsList

The GetServerCharacterSetsList function retrieves the character sets defined on the server.

The calling sequence is as follows:

```
BOOL WINAPI
GetServerCharacterSetsList (
    char                *pBuffer,
    unsigned int        BufMax,
    unsigned int        *pBufLength);
```

GetServerCharacterSetsList returns TRUE if successful or FALSE if not successful.

pBuffer contains the address of a memory area in which to return the character sets entries. The server's characters sets are returned in a NUL-terminated string within which the character set entries are separated by semicolons. Each character set entry contains the number of the character set, delimited by a space, and then the description of the character set.

BufMax contains the length of the memory area indicated by pBuffer, in bytes.

pBufLength contains the address of a 32-bit integer in which the length, in bytes, of the character list is returned.

pBufLength returns the length of the data source list in bytes.

GetServerConfigString

The GetServerConfigString function mimics the Windows GetProfileString function to access Relativity Data Server configuration data stored on a Windows or UNIX server.

The calling sequence is as follows:

```
BOOL WINAPI
GetServerConfigString (
    char               *pSection,
    char               *pEntry,
    char               *pDefault,
    char               *pBuffer,
    unsigned int       BufMax),
    unsigned int       *pBufLength);
```

GetServerConfigString returns TRUE if successful or FALSE if not successful.

pSection contains the address of a NUL-terminated string that is the name of the file section.

pEntry contains the address of a NUL-terminated string that contains the keyword that identifies the desired value.

pDefault contains the address of a NUL-terminated string that is the default value to be used if the entry cannot be found.

pBuffer contains the address of the buffer that receives the desired value.

BufMax contains the size (in bytes) of the buffer at pBuffer.

pBufLength contains the address of a 32-bit integer in which the length, in bytes, of the data source entries is returned.

GetServerDataSource

The GetServerDataSource function returns the entries from an existing Relativity Data Server data source. This function is useful in replacing a data source with an updated one or looking for the directory in which the catalog for a data source is installed.

The calling sequence is as follows:

```
BOOL WINAPI
GetServerDataSource (
    char               *pDataSource,
    KEY_VAL            *pAttributes,
    unsigned int       AttrMax,
    unsigned int       *pAttrLength);
```

GetServerDataSource returns TRUE if successful or FALSE if not successful.

pDataSource contains the address of a NUL-terminated string that is the name of the data source whose entries are to be returned.

pAttributes contains the address of a memory area in which to return the entries. These entries are in a NUL-terminated string containing keyword-value pairs.

AttrMax contains the length (in bytes) of the memory area indicated by pAttributes.

pAttrLength contains the address of a 32-bit integer in which the length, in bytes, of the data source entries is returned.

GetServerDataSourceList

The GetServerDataSourceList function returns the current data sources defined on the Relativity Data Server. This function is useful in processing all the existing Data Server data sources.

The calling sequence is as follows:

```
BOOL WINAPI
GetServerDataSourceList (
    char              *pBuffer,
    unsigned int       BufMax,
    unsigned int      *pBufLength);
```

GetServerDataSourceList returns TRUE if successful or FALSE if not successful.

pBuffer contains the address of a memory area in which to return the entries. The Data Server data source names are returned in a NUL-terminated string and delimited by semicolons (;).

BufMax contains the length (in bytes) of the memory area indicated by pBuffer.

pBufLength contains the address of a 32-bit integer in which the length, in bytes, of the data source entries is returned.

GetServerDefinitionList

The GetServerDefinitionList function returns the current server definitions defined on the Server Administrator. This list of server names is displayed in the Select Server window.

The calling sequence is as follows:

```
BOOL WINAPI
GetServerDefinitionList (
    char              *pBuffer,
    unsigned int       BufMax,
    unsigned int      *pBufLength);
```

GetServerDefinitionList returns TRUE if successful or FALSE if not successful.

pBuffer contains the address of a memory area in which to return the server definitions, delimited by semicolons and NUL terminated.

BufMax contains the length of the memory area indicated by pBuffer, in bytes.

pBufLength contains the address of a 32-bit integer in which the length of the server definitions, in bytes, is returned.

GetServerFMSupport

The GetServerFMSupport function returns the set of file managers that the current server supports.

The calling sequence is as follows:

```
int WINAPI
GetServerFMSupport (
    void);
```

GetServerFMSupport returns a bit mask of the file managers that the Data Server supports. It may contain one of the following values:

- The value 0, if there is no current Data Server.

- The value 1, if the Data Server supports only RM/COBOL files.

- The value 2, if the Data Server supports only Micro Focus COBOL files.

- The value 3, if the Data Server supports both RM/COBOL and Micro Focus COBOL files.

GetServerInfo

The GetServerInfo function returns status information about the current server.

The calling sequence is as follows:

```
int WINAPI
GetServerInfo (
    char            *pStartTime,
    unsigned int    StartTimeMax,
    unsigned int    *pStartTimeLength,
    int             *pUseCount,
    int             *pUseLimit,
    unsigned int    *pNumOfConnections);
```

GetServerInfo returns TRUE if successful or FALSE if not successful.

pStartTime contains the address of a memory area, at least 36 bytes in length, in which to return the time that the server started.

pStartTime returns the time that the server started.

StartTimeMax contains the length of the memory area indicated by pStartTime in bytes.

pStartTimeLength contains the address of a 32-bit integer in which the length, in bytes, of the start time is returned.

pUseCount contains the address of a 32-bit integer in which to return the number of use counts. It returns the value -1 if the server does not support this function.

pUseLimit contains the address of a 32-bit integer in which to return the maximum number of uses the server's license permits. pUseLimit returns the value of -1 if the server does not support this function.

pNumOfConnections contains the address of a 32-bit integer in which to return the current number of connections to the server. Note that this value is not the same as the number of licenses in use, as one license can support multiple connections. This value represents the maximum value for the ConnectionID parameter in the GetConnectionInfo function.

LogInToServer

The LogInToServer function connects to a Relativity Data Server. This function must be called before any of the other installation kit functions and all subsequent calls apply to the Data Server contacted by this function.

The calling sequence is as follows:

```
BOOL WINAPI
LogInToServer (
    HWND     hwndParent,
    char     *pszServerAddr);
```

LogInToServer returns TRUE if the server is connected successfully or FALSE if the server is not connected successfully.

hwndParent contains the window handle of the owner dialog box.

pszServerAddr contains the address of a NUL-terminated string, in the form *ServerName.Port*, containing the UNIX or Windows server's network name (*ServerName*) or address and port on which Relativity is listening (*Port*). For example, to contact the Relativity Data Server running on service port 1583 of the machine RelServer, this argument is **RelServer.1583**.

LogOutFromServer

The LogOutFromServer function closes the connection to the current Relativity Data Server.

The calling sequence is as follows:

```
BOOL WINAPI
LogOutFromServer (
    HWND        hwndParent);
```

LogOutFromServer returns TRUE if the server logout was successful or FALSE if not successful.

hwndParent contains the window handle of the owner dialog box.

RemoveServerDefinition

The RemoveServerDefinition function removes a server definition from the **reldbms.ini** file on the local machine.

The calling sequence is as follows:

```
BOOL WINAPI
RemoveServerDefinition (
    char     *pServerDefinition);
```

RemoveServerDefinition returns TRUE if successful or FALSE if not successful.

pServerDefinition contains the address of a NUL-terminated string that contains the server definition to be removed. If the server definition is missing, the leading protocol, **tcp:**, and the trailing service port, **.1583**, will be added.

SetServerConfigString

The SetServerConfigString function mimics the Windows WritePrivateProfileString function to modify the Relativity Data Server configuration data stored on a Windows or UNIX server.

The calling sequence is as follows:

```
BOOL WINAPI
SetServerConfigString (
    char              *pSection,
    char              *pEntry,
    char              *pBuffer);
```

SetServerConfigString returns TRUE if successful or FALSE if not successful.

pSection contains the address of a NUL-terminated string that is the name of the file section.

pEntry contains the address of a NUL-terminated string that contains the keyword that identifies the desired value.

pBuffer contains the address of the buffer that contains the value for the keyword to be stored in the Relativity Data Server's configuration.

ShutdownServer

The ShutdownServer function requests that the current server cease operations and terminate.

The calling sequence is as follows:

```
BOOL WINAPI
ShutdownServer (
    int    ShutdownType);
```

ShutdownServer returns TRUE if successful or FALSE if not successful. Note that returning TRUE does not indicate that the server shut down successfully, only that the request to do so was transmitted successfully.

ShutdownType indicates the type of shut down to perform. If the value is 0, the server will terminate all of the current client connections and terminate. If the value is 1, the server will cease to accept new connections, and wait until all of the current connections have disconnected before terminating itself.

TerminateConnection

The TerminateConnection function requests that the current server terminate a specific client connection.

The calling sequence is as follows:

```
BOOL WINAPI
TerminateConnection (
    unsigned int    ProcessID);
```

TerminateConnection returns TRUE if successful or FALSE if not successful. Note that returning TRUE does not indicate that the connection was terminated successfully, only that the request to do so was transmitted successfully.

ProcessID contains a 32-bit integer with the process ID of the client connection to terminate. Use the GetConnectionInfo (see page 50) routine to retrieve a list of the current client connections and their process IDs.

Chapter 3: Installation and Verification of Relativity Data Client for End Users

This chapter lists the system requirements and provides the instructions on [how to install the Relativity Data Client software](#) (see page 60) on an end user's Windows client workstation.

This chapter also discusses the following topics:

How to	See page
Ensure that the installation was successful by configuring a Relativity Data Client data source and associating it with the Data Server data source in order to verify communications between the Windows client and the Windows server.	62
Remove the Relativity Data Client software component.	62

System Requirements

Installation of the Relativity Data Client software on a Windows client 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 XP, Windows 7, or higher.
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.
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.

Installation of the Relativity Data Client

Note If you have a version of the Relativity Data Client installed, you should remove it prior to installing a newer version. See Removing the Relativity Data Client (on page 62).

This chapter assumes that the Data Client installation media has been already been acquired when the Micro Focus Relativity Data Server was purchased, and is available as a Windows Installer Package or a CD-ROM.

The Relativity Data Client can be installed on an end user's Windows workstation from any of the following methods:

- Windows Installer Package (see page 61)

- CD-ROM Installation (see page 61)

To verify that the Relativity Data Client installation, see Verifying Client/Server Communications (on page 63).

Windows Installer Package

A Windows Installer Package (.msi) contains the complete installation of the Relativity Data Client and is available for download with the purchase of Relativity. If a Window Installer Package was downloaded from Micro Focus, it will have one of two names:

- rmrelativity12*xx*_dclient_win_32
- rmrelativity12*xx*_dclient_win_64

Where 12*xx* is the version of Relativity, and the 32 and 64 are for 32-bit and 64-bit applications. If you have a 32-bit version of Windows, install only the Windows Installer Package that ends in _32. If you have a 64-bit version of Windows, it is recommended that you install both versions.

To install from a Windows Installer Package, open or double click the desired Windows Installer Package, and proceed to Installing the Relativity Data Client on page

CD-ROM Installation

To install the Relativity Data Client on an end user's Windows workstation from the CD-ROM:

1. Insert the product CD with Relativity Data Client in the CD-ROM drive.

2. Do one of the following:

   - If the **RM-Install** starts automatically, proceed to Step 3.

   - If the installation program, **RM-Install**, does not start automatically, click **Start**, and then click **Run**. In the Open text box of the Run dialog box, type the following:

     ```
     d:RMInstall
     ```

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

3. The **RM-Install** program begins executing. Click on the **Browse CD** button.

4. A Windows Explorer window will open. Double click on the **DClient** folder.

5. Double click on the **046** folder.

6. Double click on the **DClient** Windows Installer Package and follow the instructions in **Installing the Relativity Data Client** below to install the product.

7. If you have a 64-bit version of Windows, double click on the **DClient64** Windows Installer Package and again follow the instructions in **Installing the Relativity Data Client** below to install the product.

8. Close the Windows Explorer window.

9. Close the RM-Install window.

Installing the Relativity Data Client

At this point in the installation, one of the Relativity Data Client installation Windows Installer Package programs, either 32-bit or 64-bit has been opened and is running.

1. Follow the instructions presented on the screen and press the **Next** button to advance through the various pages.

2. On the Software License Agreement page, you must click "I accept the terms in the license agreement" in order to continue with the installation.

3. On the Installation Type page select the "Custom Installation".

4. When the Data Client Installation Type dialog box opens, select the **End User** option.

5. When the Define Server dialog box opens, in the Server's Network Name box, enter the network name of the Windows server on which the Relativity Data Server was installed. The value in the Service Port box should match the service port number for the Windows server on which the Data Server was installed. The default is 1583.

6. When the Ready to Install the Program dialog box open, click the **Install** button to begin the installation.

7. When the custom installation is complete, click the **Finish** button on the Completed page.

Removing the Relativity Data Client

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

Removing an existing version of the Data Client 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 Client from your system:

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 Properties window or the Programs and Features window, select **Liant v**x **Relativity v**x **Data Client** from the list of currently installed programs and updates. (v*x* is the version number of the product to be removed.)

4. Do one of the following to start the uninstall:

   - 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 v*x* Data Client 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.

Verifying Client/Server Communications

The procedure to verify communications between the Relativity Data Client and the Data Server consists of successfully configuring a Relativity Data Client data source on the Windows client workstation.

Starting the ODBC Data Source Administrator

Before you configure the Relativity Data Client data source on the Windows client, you must first start the ODBC Data Source Administrator. The ODBC Data Source Administrator is used to configure and maintain ODBC data sources. If you are using the 64-bit Data Client, you can use the ODBC Data Source Administrator from the Windows Control Panel. If you are using the 32-bit Data Client, the 32-bit ODBC Data Source Administrator must be used. Starting the 32-bit ODBC Data Source Administrator is not straight-forward on a 64-bit version of Windows 7. The details for starting the ODBC Data Source Administrator is detailed for several environments below:

Note A 32-bit Data Client data source also can be configured from within the Relativity Designer. See the Relativity Designer online help file for more information.

Starting the 32-bit ODBC Data Source Administrator on Windows 7 (32-bit)

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)**.

Starting the 64-bit ODBC Data Source Administrator on Windows 7 (64-bit)

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)**.

Starting the 32-bit ODBC Data Source Administrator on Windows 7 (64-bit)

1. Open the Windows Explorer.
2. Navigate to C:\Windows\SysWOW64.
3. Open ODBCAD32.

Note It is recommended that you create a short-cut from the desktop to the C:\Windows\SysWOW64\ODBCAD32.EXE in order to facilitate starting the ODBC Administrator.

Starting the ODBC Data Source Administrator on Windows 10

1. Click on the Windows Start icon.
2. Click on the Settings icon.
3. In the Settings window, in the **Find a setting** text box, type **ODBC**.
4. Below the **Find a setting** search box, two search results will be displayed. Click on **Set up ODBC data sources (32-bit)**.

Configuring a Relativity Data Client Data Source on the Windows Client for End Users

After the proper ODBC Data Source Administrator has been started, to configure a Relativity Data Client data source on the Windows client:

1. In the ODBC Data Source Administrator dialog box, select the **User DSN** tab and click **Add**.
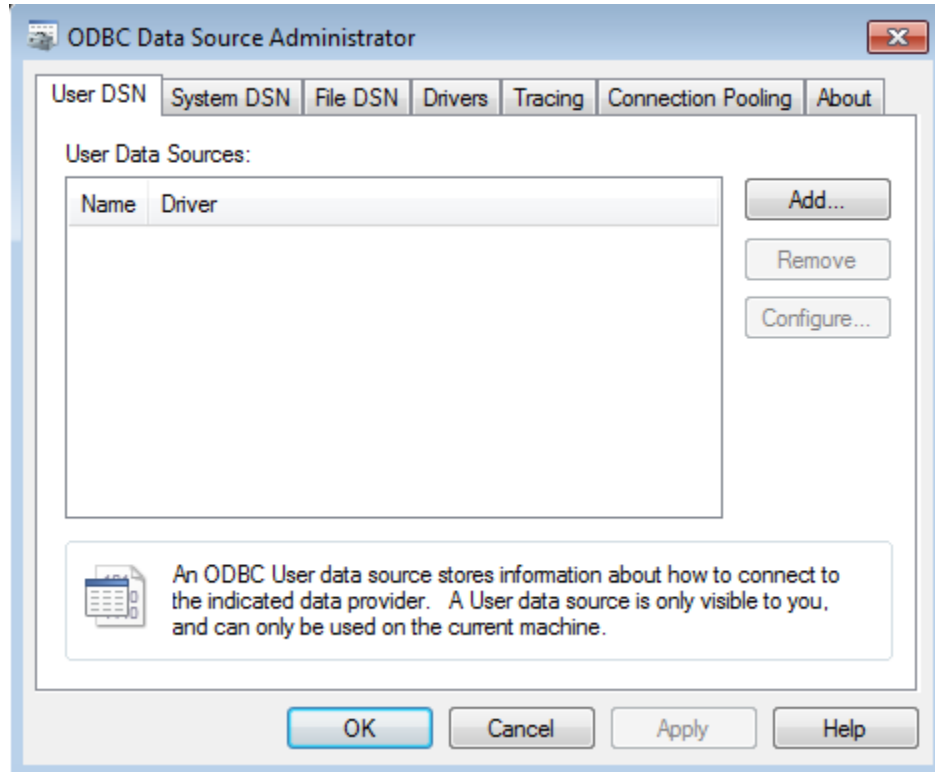
2. In the Create New Data Source dialog box, select a driver for which you want to configure a Data Client data source by double-clicking the driver name (**Relativity Client**).

3. In the ODBC Relativity C/S Setup dialog box, click the Windows server from the Server Name list.

   Note The Data Server data source, Verify, which is listed in the Server DSN list, was configured previously by the end user's System Administrator.
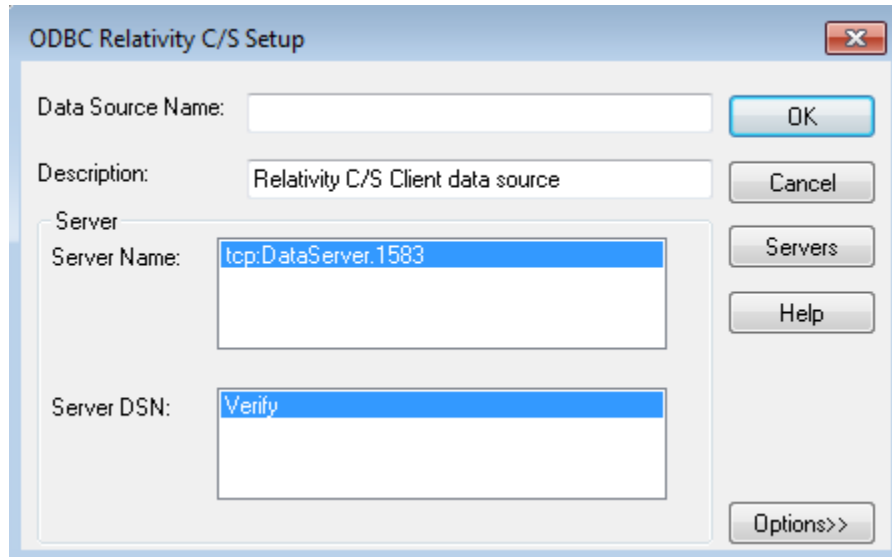
4. In the Data Source Name box, type **Verify** as the name of the Data Client data source with which you want to associate a Data Server data source from the Server DSN list.

   Tip It is helpful to use the same name for the Data Client and Data Server data sources that will be associated with one another.

5. Optionally, in the Description box, type a description of the Data Client data source.

6. Click **OK** to close the ODBC Relativity C/S Setup dialog box.

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

The Data Client data source has now been associated with the Data Server data source.
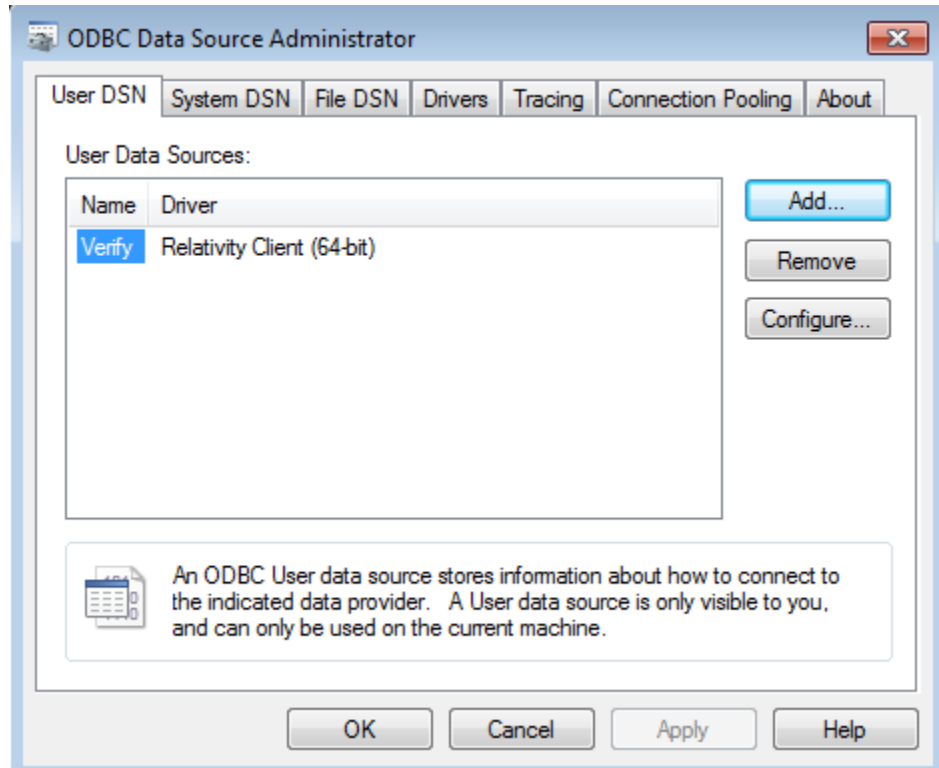
In this verification procedure, the Data Client data source refers, indirectly through the Data Server data source, to the sample Relativity database named Verify. Once the verification procedure has been successfully completed, the Relativity Verify database can be accessed from any ODBC-enabled application.

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.microfocus.com/documentation/rm-cobol/ and locate *RM-Install Program User's Reference* documentation. Refer to the "RM/COBOL Recover1 Utility Installation Details" section 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 (x86)\Micro Focus\RM\RMCOBOLv***x* (where v*x* 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 73). 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 71). 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 70 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 73). *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.nn.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
```

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 (**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.

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.nn

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.nn

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)?
```

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.nn

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
```

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.nn

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 (**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.) 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.nn

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.nn

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 75. 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.