
Liant Software Corporation

Relativity[®]

Client/Server for UNIX Installation Guide

First Edition

LIANT

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Preface

Introducing Relativity Client/Server for UNIX

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 UNIX machine, called the UNIX 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.

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 UNIX 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 UNIX operating system and verify that the installation was successful; start and stop the Data Server; troubleshoot problems; optionally customize the installation of the Data Server; and rebuild Micro Focus COBOL Windows catalogs.
- 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 UNIX 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.
- How to run the RelServerAdmin utility program to manage a Relativity Data Server from a client machine.

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 on the 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 Windows Installation Guide.** A document similar to this manual that is intended for a System Administrator installing Relativity Client/Server for Windows.
- **Relativity Data Client for UNIX Installation Guide.** A document that describes how to install and verify the Relativity Data Client software component on a UNIX-based server or workstation. It also describes the utilities for creating client and server data sources.
- **UNIX Driver Managers Build Guides.** A pair of HTML documents, located in the UDrvMan directory on the Relativity Data Server product CD, that give instructions on how to build the two ODBC Driver Managers for UNIX (unixODBC and iODBC) on the various UNIX platforms that the Relativity Data Client for UNIX supports. Note that these documents should be referenced only if you decide to rebuild the Liant-supplied versions of these Driver Managers.
- **Relativity 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 (Database Administrator) software component on a Windows-based workstation and verify that the installation was successful.
- **Relativity Java Client User's Guide.** An HTML document, located on the Relativity product CD, that describes the installation and verification of the

Relativity Java Client as well as information about deploying it with Java applications and applets, and setting up data source connections. The Java Client is a Java Database Connectivity (JDBC) component that resides in a Java runtime environment (JRE).

- **Relativity Online Documentation.** An online help documentation system that provides fast access to detailed information on Relativity features and options. The help system also contains step-by-step presentations on how to accomplish specific tasks with Relativity and an extensive glossary. A separate help file is provided for each of the various Relativity tools: the DBMS (Data Client and Data Manager), the Designer, the DBA, and the Server Administrator.
- **Relativity README Files.** A set of online HTML documents that lists any changes to the Relativity documentation since its publication and contains new technical information that supplements the documentation.

Conventions Used in this Document

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

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

Registration

Please take a moment to fill out and mail (or fax) the registration card you received with Relativity. You can also complete this process by registering your Liant product online at: <http://www.liant.com>.

Registering your product entitles you to the following benefits:

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

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

Technical Support

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

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

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

Support Guidelines

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

- Company name and contact information.
- Liant product serial number (found on the media label, registration card, or product banner message).
- Liant 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 Liant products). It must also include step-by-step instructions to reproduce the behavior.
2. **Program source files.** We require source for any program that is called during the course of the test case. Be sure to include any copy files necessary for recompilation.
3. **Data files required by the programs.** These files should be as small as possible to reproduce the problem described in the test case.

Chapter 1: Installation and Verification of Relativity Data Server for UNIX

This chapter lists the [system and setup requirements](#) (on page 8) and describes the procedures for [installing the Relativity Data Server for UNIX](#) (on page 11) software on a computer having one of the UNIX operating systems.

This chapter also discusses the following topics:

How to	See page
Start the Relativity Data Server for UNIX.	33
Verify that the installation was successful.	34
Terminate the Relativity Data Server for UNIX.	34
Remove the Relativity Data Server for UNIX.	35
Relink the Relativity Data Server for UNIX.	37
Troubleshoot Relativity Data Server for UNIX problems.	38
Configure a Relativity Data Server data source on the UNIX server.	41
Customize Relativity Data Server for UNIX installation.	42
Rebuild Micro Focus COBOL Windows catalogs.	51

System and Setup Requirements

Installation of the Relativity Data Server for UNIX software requires the following minimum software and hardware.

Component	Requirement
Operating System	IBM AIX HP-UX Linux SCO OpenServer 5 (or later) Sun Solaris SPARC and Intel x86 UNIX System V Release 4 (Intel-based) UnixWare 7.1.1
Disk Space	20 MB recommended.
Network Software	TCP/IP network.
COBOL Software	If using Micro Focus, Micro Focus COBOL 4.1 or later, or Server Express version 2 or later. See also the Relativity Data Server link in the Relativity README file for the latest version of Micro Focus COBOL with which Relativity was tested.
C Development System	Required with Relativity for Micro Focus COBOL only. Note For IBM AIX, you must install the entire bos.adt package.
Internet Browser	A browser (for example, Netscape or Microsoft Internet Explorer) capable of viewing HTML files, such as the README text or other documents that are available in this format.

Installation of the Relativity Data Server for UNIX software also includes the following prerequisites:

- Because the installation of a Data Server includes writing to the `/etc/services` file (and possibly the `/etc/inittab` file), the person installing the software must have write permission on the `/etc/services` file (and the `/etc/inittab` file) before beginning the installation. That is, the installer must have either root privileges or the assistance of a System Administrator having root privileges.
- The system command `init` must be accessible. Although this is normally the case, on Linux the directory `/sbin` may need to be added to your `PATH` environment variable.
- If you are installing the Data Server to access RM/COBOL files, no special requirements are necessary.
- If you are installing the Data Server to access Micro Focus COBOL files, an environment must be set up with access to the Micro Focus COBOL libraries and `cob` command. This setup procedure includes the following tasks:
 - Placing the directory containing the Micro Focus COBOL executables in the `PATH` environment variable.
 - Placing the Micro Focus COBOL installation directory in the `COBDIR` environment variable.

- Placing the Micro Focus COBOL installation libraries directory in the appropriate environment variable, as follows:
 - LIBPATH under IBM AIX
 - SHLIB_PATH under HP-UX
 - LD_LIBRARY_PATH under Linux, SCO OpenServer 5, Sun Solaris SPARC and Intel x86, and UNIX System V Release 4, and UnixWare 7.1.1.
- A user name must exist that has the desired permissions for the Data Server software. See the following topic, [User Name and Permissions for the Relativity Data Server for UNIX](#) (on page 9).
- Any processes running any current version of the Data Server software must be terminated. If a Relativity Data Server for UNIX is running, it must be terminated. For more information, see [Terminating the Relativity Data Server for UNIX](#) (on page 34).
- For Sun Solaris Intel x86 users, the Micro Focus COBOL file manager is not supported on this platform.

User Name and Permissions for the Relativity Data Server for UNIX

As with all UNIX processes, the Relativity Data Server runs under a specific user name and has all the permissions of that name. The user name under which the Data Server runs must have the permissions to meet the needs of all Windows clients that will connect to it, including file and directory access, as well as end-user permissions.

File Access Permissions

The user name of the Data Server 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 user name of the Data Server must have the following permissions to access directories:

- Read permission to the following types of directories:
 - Directories containing COBOL data files to be accessed by the Windows client applications.
 - The installation directory containing the **odbc.ini** file.

- A directory that is the current working directory for the Data Server process. The user name also must have write permission to this directory.

Note The last two types of directories are usually the same directory, that is, the directory where the Data Server was installed. The installation script gives the user name the correct permissions for this directory.

- Write permission to the installation directory containing the **odbc.ini** file if the creation of new data sources is permitted.
- 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 names on the UNIX server are to have access to the data files created for new tables, the user name of the Data Server must be set up to do the following:

1. Create the new files with the desired group name.
2. Create the new files with read and write permissions.
3. Give read and write permissions to other users on the UNIX server.

Liant recommends that the user name of the Data Server be a separate account on the UNIX server. The group for this account is the group that is assigned when the Relativity catalogs and data files are created.

To control access to these catalogs and data files from other users and groups on the UNIX server, you must set the **umask** for the Data Server user name when the Data Server process is started. Place the **umask** command in either the **.profile** file (for Bourne shell and K shell) or the **.cshrc** file (for C shell). Then, execute the **umask** command with either one of the following arguments:

- An argument of **002**, indicating that all users in the group will have read and write permissions to the new catalogs and data files.
- An argument of **000**, indicating that all users of the machine on which the Data Server is running will have access to the new catalogs and data files.

Set the permission for existing catalogs and data files with either one of the following methods:

- Use the **chown** command to assign the user name of the Data Server as the owner of the existing catalogs and data files.
- Use the **chgrp** command to assign the existing catalogs and data files to the same group as the user name of the Data Server.

After the owner or group is set for the existing catalogs and data files, use the **chmod** command to give read and write permissions to either the owner (**u+rw**) or the group (**g+rw**).

Installing the Relativity Data Server for UNIX

This section discusses the [distribution media options](#) (on page 11) and the steps on how to install the Relativity Data Server for UNIX software, including the following:

- [Step 1: View the Data Server README File](#) (on page 13)
- [Step 2: Create the Staging Directory](#) (on page 13)
- [Step 3: Load the License File](#) (on page 14)
- [Step 4: Load the Distribution Media](#) (on page 17)
- [Step 5: Start the Installation Script](#) (on page 21)
- [Step 6: Answer the Installation Prompts](#) (on page 22)
- [Step 7: Perform the Installation](#) (on page 25)
- [Step 8: Unload the Distribution Media](#) (on page 30)
- [Step 9: Remove the Staging Directory](#) (on page 31)

Note 1 During the installation process, you designate a location, called the base directory, where the Relativity Data Server is to be installed. The installation process, however, does not place the Data Server's files directly in this base directory. Instead, the installation process creates a subdirectory within the base directory and places the actual installation files there. This directory is called the installation directory. The name of the installation directory has the format **Rel??x.yz**, where ?? is either RM or MF, depending on the type of COBOL files (RM/COBOL or Micro Focus COBOL) that the Data Server is to access, and x.yz is the version number of the Data Server. This mechanism allows the previous version of the Data Server to remain installed on the UNIX server until the installation of the new version is complete. Once the installation is finished and you are satisfied with the new version, you may remove the installation directory of the previous version (before you do this, be sure to move any application files that you added to this directory).

The staging directory is a temporary directory that is used during the installation process. No permanent files are placed here. The installation script uses this directory to contain files that it will use to control the installation process. An installation prompt is provided to remove these control files following a successful installation (see [Step 6m](#) on page 25). The staging directory is not required to be on the same UNIX file system as the base directory. Because the bulk of the Data Server's files are read directly from the installation media into the installation directory, the space requirements for the staging directory are small.

Note 2 For information on customizing the installation procedures of the Data Server, refer to [Customizing the Relativity Data Server for UNIX Installation](#) (on page 42).

Distribution Media Options

The Relativity Data Server for UNIX software is available on CD-ROM media and via Electronic Software Delivery.

Electronic Software Delivery allows the Relativity Data Server for UNIX to be downloaded from the Liant Electronic Software Delivery website in any of three

formats: ISO CD Image, Windows Self-Extracting EXE, and UNIX GUNZIP TAR. Simply follow the instructions on the website for downloading and decompressing the file for the format selected.

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

- **ISO CD Image.** The download format for ISO CD Image contains the full product. Use CD-ROM Burning software, such as Nero (<http://www.nero.com>) or Roxio's Easy CD Creator (<http://www.roxio.com>), to create the physical CD-ROM media, and then follow the instructions contained in the section [Step 4: Load the Distribution Media](#) (on page 17), to install your product. After the CD is created, proceed with normal CD installation, as described in [CD-ROM on the UNIX Server](#) (on page 17).
- **Windows Self-Extracting EXE.** The download format for Windows Self-Extracting EXE does *not* contain a full product. In order to reduce the size of the download file, the AutoPlay and Adobe Reader software, normally available on the CD, are not present. Furthermore, the Relativity installation guides are included in the deliverable download file but not the installation script to install these guides. The installation guides, formatted as PDF files, can be installed simply by copying them to the desired location.
- **UNIX GUNZIP TAR.** The download format for UNIX GUNZIP TAR download does *not* contain a full product. In order to reduce the size of the download file, the AutoPlay and Adobe Reader software, normally available on the CD, are not present. Furthermore, the Relativity installation guides are included in the deliverable download file but not the installation script to install these guides. The installation guides, formatted as PDF files, can be installed simply by copying them to the desired location.

Note The Windows Self-Extracting EXE format is decompressed on a Windows machine. The UNIX GUNZIP TAR format is decompressed on a UNIX machine. Both download formats have their advantages. The Relativity Data Server for UNIX product contains both Windows (Data Client) and UNIX (Data Server) components. Downloading just one format will require transferring some files from the operating system that was the target of the download to the other operating system. Downloading both formats will simplify the process, but at the cost of downloading the product twice. If only one format is to be downloaded, the Windows Self-Extracting EXE is the simpler method, as only two files need to be transferred from the Windows machine to the UNIX machine, as opposed to 21 files for transfer from UNIX to Windows.

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. If the UNIX GUNZIP TAR format was chosen, then follow the instructions in [Installing Relativity Data Client from UNIX GUNZIP Tar](#) (on page 57), which provides details on how to transfer the Data Client and README files from the installation components directory on the UNIX machine to the installation components directory on the Windows machine. If the Windows Self-Extracting EXE format was chosen, then follow the instructions in [Step 4: Load the Distribution Media](#) (on page 17) to transfer the Data Server from the installation components directory on the Windows machine to the staging directory on the UNIX server.

Step 1: View the Data Server README File

The README files contain important, last-minute information about Relativity. It is a good idea to read these files before installing or running this version of Relativity.

To view the Relativity Data Server README file on Windows:

- a. If the distribution media is a CD, insert the CD with Relativity Data Server and Data Client into the Windows client's CD-ROM drive. Proceed to Step b of these instructions.

If the distribution is via Window Self-Extracting EXE, proceed to [Step 2: Create the Staging Directory](#) (see the following topic).

- b. Do one of the following:
 - 1) If the installation program starts automatically, select the **View the README file** option.
 - 2) If the installation program does not start automatically, or if your UNIX server contains a CD-ROM drive and an Internet browser, direct the browser to the file **dserver/server.htm** on the CD or to the installation components directory.

Note For UNIX servers, you will have to wait until after you complete [Step 4: Load the Distribution Media](#) (on page 17) in order to be able to view the README file with the UNIX server's Internet browser.

Step 2: Create the Staging Directory

It is necessary to create an empty, temporary staging directory to contain the files used to control the installation process. This directory need not be on the file system where the Relativity Data Server ultimately will be installed. Nor will the file system of the staging directory require more than 100 blocks of free storage. The majority of the Data Server's files will be installed directly from the distribution media into its installation directory.

Note If the UNIX server is unable to read the installation media directly, it will be necessary to load the media on a machine that can read the installation media and then copy the installation file into the staging directory. In this case, the file system of the staging directory will need 32,000 blocks of free storage.

To create the staging directory, enter:

```
mkdir /RelStage
```

The name *RelStage* will be used throughout the remainder of this document to refer to the staging directory. You may, however, choose any name you wish.

Step 3: Load the License File

The Liant license file, **liant.lic**, which contains a license certificate for this product, is a normal text file distributed on an MS-DOS-formatted diskette or as an e-mail attachment for Electronic Software Delivery.

Not all UNIX operating systems, however, can read an MS-DOS-formatted diskette, and not all UNIX server machines have diskette drives. To make the license file available to the Relativity Data Server **INSTALL** script at the appropriate prompt in [Step 6: Answer the Installation Prompts](#) (on page 22), two techniques are provided:

- a. [Mounting the license file diskette as an MS-DOS file system](#) (on page 14).
- b. [Transferring the license file via FTP from a Windows client](#) (on page 16).

For e-mail attachments received directly on the UNIX server, save the attachment as a file into the staging directory. For e-mail attachments received on a Windows machine, save the attachment as a file on the Windows machine, and then use the procedure described in Step 3b.

Mounting the License File Diskette as an MS-DOS File System

Use this option to load the license file if the UNIX operating system supports MS-DOS file systems and your hardware has a diskette drive installed. Instructions for specific versions of UNIX are provided in the following sections.

IBM AIX, HP-UX, and UNIX System V Release 4

These platforms do not support mounting MS-DOS diskettes. Use the FTP instructions described in [Transferring the License File via FTP from a Windows Client](#) (on page 16) to transfer the license file to the UNIX server.

Linux

1. Insert the diskette into the diskette drive.
2. Log in as root and enter:

```
mount -t msdos /dev/fd0H1440 /mnt/floppy
```

3. Copy the license file to the staging directory:

```
cp /mnt/floppy/liant.lic /RelStage/liant.lic
```

4. Dismount the diskette with the following command and then remove the diskette from the diskette drive:

```
umount /mnt/floppy
```

SCO OpenServer 5

1. Insert the diskette into the diskette drive.
2. Log in as root and enter:

```
mount -f DOS,lower /dev/fd0 /floppy
```

Note It may be necessary to create the mount directory **/floppy** before executing this command.

3. Copy the license file to the staging directory:

```
cp /floppy/liant.lic /RelStage/liant.lic
```

4. Dismount the diskette with the following command and then remove the diskette from the diskette drive:

```
umount /floppy
```

Sun Solaris SPARC and Intel x86

1. Insert the diskette into the diskette drive.
2. Log in as root and enter:

```
volcheck
```

3. Copy the license file to the staging directory:

```
cp /floppy/liant/liant.lic /RelStage/liant.lic
```

4. Dismount the diskette with the following command and then remove the diskette from the diskette drive:

```
eject floppy
```

UnixWare 7.1.1

1. Insert the diskette into the diskette drive.
2. Log in as root and enter:

```
mount -F dosfs /dev/dsk/f0q18dt /Disk_A
```

3. Copy the license file to the staging directory:

```
cp /Disk_A/liant.lic /RelStage/liant.lic
```

4. Dismount the diskette with the following command and then remove the diskette from the diskette drive:

```
umount /Disk_A
```

Transferring the License File via FTP from a Windows Client

To transfer the Liant license file from a Windows client to the UNIX server, use one of the many graphical FTP utilities available on Windows and transfer the license file, **liant.lic**, as a text file. You can also follow this procedure:

1. On the Windows client, insert the diskette into the diskette drive.

Note These instructions assume that this is drive A. If it is another drive, change the drive letter to the appropriate letter in the remaining instructions.

2. Open an MS-DOS Prompt window by clicking **Start** on the task bar, pointing to **Programs**, and then clicking **MS-DOS Prompt**.
3. Connect to the UNIX server by entering:

```
ftp UnixServerName
```

where *UnixServerName* is the network name of your UNIX server.

4. Change the directory to the staging directory:

```
cd /RelStage
```

5. Specify a text file transfer:

```
ASCII
```

6. Send the license file to the UNIX server:

```
send location liant.lic
```

where *location* is the location of the Liant license file, either **A:\liant.lic** in the case of a MS-DOS-formatted diskette, or the location of the Liant license file in the case that it was received as an attachment from Electronic Software Delivery.

7. Disconnect from the UNIX server:

```
bye
```

8. Close the MS-DOS Prompt window with the following command and then remove the diskette from the diskette drive:

```
exit
```

Step 4: Load the Distribution Media

The Relativity Data Server is distributed either on CD-ROM media or electronically via Electronic Software Delivery. Use any of the following options to load the distribution media:

- a. If your UNIX server machine has a CD-ROM drive installed and the software was delivered on this type of media, see [CD-ROM on the UNIX Server](#) (on page 17).
- b. If the UNIX server machine does *not* have a CD-ROM drive, or if the distribution was via Electronic Software Delivery using the Windows Self-Extracting EXE format, refer to [CD-ROM or Electronic Software Delivery on the Windows Client](#) (on page 19) to load the distribution media.
- c. If the distribution was via Electronic Software Delivery using UNIX GUNZIP TAR, after the downloaded file has been decompressed into an installation components directory, no further steps are necessary to load the distribution media.

CD-ROM on the UNIX Server

Use this option to load the distribution media if your UNIX hardware has a CD-ROM drive installed and the Relativity Data Server was delivered on this type of media. Instructions for loading the distribution media on specific versions of UNIX are provided in the following sections, along with the procedures for using Electronic Software Delivery.

Note In the instructions that follow, the standard mount directory names are used where the UNIX operating system has such a standard. If the operating system does not follow a standard, the name */cdrom* is used. It will be necessary either to create the directory */cdrom* or substitute the preferred mount directory name for */cdrom*.

IBM AIX

1. Insert the CD into the CD-ROM drive.
2. Log in as root and enter:

```
mount -o ro -v cdrfs /dev/cd0 /cdrom
```

Note It may be necessary to create the mount directory */cdrom* before executing this command.

HP-UX

1. Insert the CD into the CD-ROM drive.
2. Log in as root and enter:

```
mount -F cdfs -o ro,cdcase /dev/dsk/c0t4d0 /cdrom
```

Note 1 It may be necessary to create the mount directory */cdrom* before executing this command.

Note 2 The device name, *c0t4d0*, is dependent on the hardware configuration of your UNIX server. It may be necessary to substitute the proper value for your system. Consult your UNIX System Administrator.

Linux

1. Insert the CD into the CD-ROM drive.
2. Log in as root and enter:

```
mount -o ro -t iso9660 /dev/cdrom /mnt/cdrom
```

SCO OpenServer 5

1. Insert the CD into the CD-ROM drive.
2. Log in as root and enter:

```
mount -o ro -f ISO9660,lower /dev/cd0 /cdrom
```

Note It may be necessary to create the mount directory */cdrom* before executing this command.

Sun Solaris SPARC and Intel x86

1. Insert the CD into the CD-ROM drive.
2. If Solaris does not automatically load the CD-ROM, log in as root and enter:

```
volcheck
```

UNIX System V Release 4 (Intel-based)

1. Insert the CD into the CD-ROM drive.
2. Log in as root and enter:

```
mount -o ro -F cdfs /dev/cdrom/c0t4l0 /cdrom
```

Note 1 It may be necessary to create the mount directory */cdrom* before executing this command.

Note 2 The penultimate character in *c0t4l0* is a lowercase letter “L”.

Note 3 The device name, `c0t4l0`, is dependent on the hardware configuration of your UNIX server. It may be necessary to substitute the proper value for your system. Consult your UNIX System Administrator.

UnixWare 7.1.1

1. Insert the CD into the CD-ROM drive.
2. Log in as root and enter:

```
mount -F cdfs -o ro /dev/cdrom/c1b0t0l0 /CD-ROM_1
```

Note 1 The penultimate character in `c1b0t0l0` is a lowercase letter “L”.

Note 2 The device name, `c1b0t0l0`, is dependent on the hardware configuration of your UNIX server. It may be necessary to substitute the proper value for your system. Consult your UNIX System Administrator.

CD-ROM or Electronic Software Delivery on the Windows Client

Use this option to load the distribution media if your UNIX hardware does not have a CD-ROM drive installed, but there is a CD-ROM drive on a Windows client that has FTP access to the UNIX server, or if you received the Relativity Data Server for UNIX via Electronic Software Delivery and chose the Windows Self-Extracting EXE format.

1. On the Windows client, if installing from a CD, insert the Relativity Data Server CD into the CD-ROM drive.

Note These instructions assume that this is drive D. If it is another drive, change the drive letter to the appropriate letter in the remaining instructions.

2. Open an MS-DOS Prompt window by clicking **Start** on the task bar, pointing to **Programs**, and then clicking **MS-DOS Prompt**.
3. Do one of the following:

- If installing from a CD, change to the CD-ROM drive:

```
d:
```

- If installing from an Electronic Software Delivery installation components directory, change to the installation components directory.

```
cd \InstallationComponentsDirectory
```

4. Change the directory to the DServer directory:

```
cd DSERVER
```

5. Change the directory to the proper directory for the operating system on which the Data Server is to be installed:
 - If this is an Electronic Software Delivery installation, there will be only one directory. The name of this directory is product- and operating system-dependent, and will be one of the names listed for the CD-ROM installation, as described below.

- If this is a CD-ROM installation, then you will need to select the proper directory from the following list :
 - 010 - Intel UNIX System V Release 4
 - 051 - SCO OpenServer 5
 - 056 - Sun Solaris SPARC
 - 057 - Sun Solaris Intel x86
 - 059 - IBM AIX
 - 060 - UnixWare 7.1.1
 - 061 - HP-UX
 - 063 - Large File Linux (Intel)

6. Connect to the UNIX server:

```
ftp UnixServerName
```

where *UnixServerName* is the network name of your UNIX server.

7. Change the directory to the staging directory:

```
cd /RelStage
```

8. Specify a binary file transfer:

```
BINARY
```

9. Send the installation script to the UNIX server:

```
send INSTALL install
```

10. Send the installation file to the UNIX server:

```
send DBMSCPIO dbmscpio
```

11. Disconnect from the UNIX server:

```
bye
```

12. Close the MS-DOS Prompt window with the following command and, if necessary, remove the CD-ROM from the CD-ROM drive:

```
Exit
```

Step 5: Start the Installation Script

To start the installation script for the Relativity Data Server:

- a. Login as root.

Note If you are installing a Data Server to access Micro Focus COBOL files, make sure that the COBDIR environment variable is defined and exported, that the directory containing the Micro Focus COBOL executables are in the PATH environment, and that the Micro Focus COBOL libraries are in the appropriate operating environment variable for shared libraries. See [System and Setup Requirements](#) (on page 8) for more information.

- b. Change the directory to the staging directory:

```
cd /RelStage
```

- c. Do one of the following:

- If you have a CD-ROM installation on UNIX, invoke the following installation script on the CD-ROM:

```
sh /cdrom/install*
```

where *cdrom* is the mount directory specified in the procedures in [CD-ROM on the UNIX Server](#) (on page 17). For those operating systems with standard mount directory names, choose the appropriate name from the following:

- IBM AIX: /cdrom/install.
 - HP-UX: /cdrom/install.
 - Linux: /mnt/cdrom/install
 - SCO OpenServer 5: /cdrom/install
 - Sun Solaris SPARC and Intel x86:
/cdrom/relativity60/install.
 - UNIX System V Release 4: /cdrom/install
 - UnixWare 7.1.1: /CD-ROM_1/install
- If you have an Electronic Software Delivery on the UNIX Server, invoke the following installation script in the installation components directory:

```
sh /InstallationComponentsDirectory/install
```

- If you have an Electronic Software Delivery on the Windows Data Client, invoke the following installation script in the staging directory:

```
sh ./install
```

Proceed directly to Step 6: Answer the Installation Prompts.

- d. The installation script will display a message indicating the operating system on which it is running, and a list of the products available to install. The script will then prompt for the directory of the product to install:

```
Please enter the directory name of the product to
install: [exit]
```

Enter the directory name **dserver** and proceed to Step 6.

Step 6: Answer the Installation Prompts

The installation script prompts you for all the information that it needs before beginning the actual installation of the Relativity Data Server. If there is a failure during the installation, the responses to these prompts will be presented as the defaults for the prompts when the installation script is started again. The defaults appear in the square brackets at the end of the prompt. Pressing the Return or Enter key at the prompt will result in the value within the square brackets being used as the response to the prompt.

Each prompt is discussed below in the order in which it appears.

- a. **Enter the name of the installation file or the CD mount point:**

This prompt requests the name of the installation device containing the Data Server installation file. The installation script will locate the installation file in the directory containing the installation script. If there is an installation file in that directory, the name of that file will be presented as the default for this prompt. If you wish to specify a different installation file, enter the name of that file in response to this prompt. You may enter only the mount directory or the installation components directory in response to this prompt. In this case, the installation script will choose an installation file appropriate to the target operating system.

The default name, as appropriate for your UNIX system, is shown in the following list:

- IBM: `/cdrom/dserver/059/dbmscpio.`
- HP-UX: `/cdrom/dserver/061/dbmscpio.`
- Linux: `/mnt/cdrom/dserver/063/dbmscpio`
- SCO OpenServer 5: `/cdrom/dserver/051/dbmscpio`
- Sun Solaris SPARC:
`/cdrom/relativity60/dserver/056/dbmscpio.`
- Sun Solaris Intel x86:
`/cdrom/relativity60/dserver/057/dbmscpio.`
- UNIX System V Release 4: `/cdrom/dserver/010/dbmscpio`
- UnixWare 7.1.1: `/CD-ROM_1/dserver/060dbmscpio`
- CD-ROM on the Windows client: `dbmscpio`
- Electronic Software Delivery on Windows client: `dbmscpio`
- Electronic Software Delivery on UNIX server:
`/InstallationComponentsDirectory/DServer/nnn/dbmscpio`

b. **Do you accept this license?:**

The Liant license agreement prompt will be displayed via the UNIX command **more**.

Please read this license agreement carefully. If you agree with the terms, enter **y**. Enter **n** to terminate the installation. There is no default.

c. **Enter the name of the license file [liant.lic]:**

This prompt appears only if the staging directory does not contain a file named **liant.lic**. Enter the actual name of the license file.

d. **1) RM/COBOL**

2) MF COBOL with Server Express

3) MF COBOL with Object COBOL Developer Suite

Enter the type of files the Data Server is to access:

This prompt requests whether the installed Data Server is to access RM/COBOL-formatted files or Micro Focus COBOL-formatted files via Server Express, or Micro Focus COBOL-formatted files via Object COBOL Developer Suite.

Enter the number of the desired Data Server, or enter **RM**, **rm**, **MF**, **mf**, **MFX**, **mfX**, **MFOCDS**, or **mfocds**. MF, mf, MFX, and mfx indicate that the Micro Focus COBOL-formatted files are accessed via Server Express. MFOCDS and mfocds indicate that the Micro Focus COBOL-formatted files are accessed via Object COBOL Developer Suite.

e. **Enter the name of the Micro Focus configuration file or “none” [none]:**

This prompt requests that the name of the Micro Focus COBOL file manager configuration file be used by the Relativity Data Server. Note that this prompt appears only when the Relativity Data Server for MF COBOL has been selected in [Step 6d](#) (on page 23).

Enter the name of the configuration file that the Relativity Data Server is to use. The default may be one of the following:

- none
- The first file with the name extfh in the COBDIR directory for Micro Focus Object COBOL Development System product.
- The first file with the name extfh in the COBDIR/etc directory for the Micro Focus Server Express product.

If you do not wish to specify a Micro configuration file, enter **none**.

f. **Service port on which to run the Relativity Data Server [1583]?:**

This prompt requests the TCP/IP service port under which the Relativity Data Server is to run. Enter the service port for the Data Server. The default service port is 1583. If the service port is already in use, a message will appear and this prompt will be presented again.

g. **Do you wish to install the sample files? [y]:**

This prompt requests whether the Relativity sample data files and catalogs are to be installed during installation. These files must be installed if verification of the Data Client, DBA (Database Administrator), and Designer installation is to be performed later.

If you want to install the RM/COBOL or Micro Focus COBOL sample files, enter **y**. If you do not want to install the sample files, enter **n**.

h. **Enter the user name under which to install the Data Server**
[CurrentUser]:

This prompt requests the user name under which the Data Server is installed. Refer to [User Name and Permissions for the Relativity Data Server for UNIX](#) (on page 9).

Enter the user name of the Data Server (for example, Relativity). The default is the current user.

i. **Base directory in which to install the Data Server:**

This prompt requests the name of the directory where the Data Server is to be installed. This directory, called the base directory, should be dedicated to installations of the Data Server.

Enter the name of the base directory. For example:

```
/home/Relativity
```

Note During the installation process, a separate installation subdirectory is created in the base directory for each installed version of the Data Server software. An existing version of the Data Server is never overwritten. To install a version of the Data Server that already exists in the base directory, the existing version's installation directory must be removed from the base directory. For more information about the version of the Data Server that is active, see [Installation Notes](#) (on page 32).

To preserve data sources created with this Data Server when replacing an existing version, copy the **odbc.ini** file from the installation directory to a temporary location. Then copy the **odbc.ini** file back after the installation of the Data Server is completed. This same procedure may be performed with any data files and catalogs in the installation directory.

j. **There is already an active version of the Data Server installed in**
/home/Relativity/Rel??x.yz. Do you want to import its data sources into
this installation? [y]:

This prompt requests whether the server data sources from a prior installation of the Data Server should be imported into the current installation. This prompt appears only if an active version of Relativity is already installed in the base directory, and it is a version 3.0 or higher.

To import the prior version's data sources, enter **y**. To install with no server data sources, enter **n**.

Note 1 This import process does not change the location of the catalogs in the data sources. Catalogs that are in the prior Data Server's directory, such as the Verify data source, will be used by the new Data Server from their current location.

Note 2 Once the current installation is complete, it will become the active installation. If it is deleted and installed again, this prompt will not appear unless the **.active** file in the base directory is edited to contain the name of the directory for the Relativity Data Server whose data sources are to be converted. For more information, see [Active Version of the Relativity Data Server](#) (on page 32).

k. ***/home/Relativity* does not exist; create it? [y]:**

This prompt appears only if the base directory, which was specified in [Step 6i](#) (on page 24), does not exist.

To create the directory, enter **y**. To specify a different base directory, enter **n**.

l. **Do you wish to set the Data Server to autostart at machine reboot? [n]:**

This prompt requests whether the Data Server is to be installed such that it is automatically restarted when the UNIX server is rebooted. On many UNIX installations, this also causes the Data Server to be started immediately following installation. When the Data Server is automatically started, it runs under the user name that was used to install the Data Server in [Step 6h](#) (on page 24).

To restart the Data Server, enter **y**. To cause the Data Server not to be restarted, enter **n**.

If the Data Server is already installed for starting at machine boot, this prompt will not appear. Instead, the following message will appear:

```
The Data Server has already been set for
autostart at machine reboot.
```

m. **When installation is finished, do you wish to remove the source files from */RelStage*? [n]:**

This prompt requests whether you want to clean up the temporary files that the Data Server placed in the staging directory during installation. This will include the file that is storing the values entered in response to the installation prompts and the **INSTALL** script. These files are removed *only* following a successful installation.

To remove the temporary files, enter **y**. To cause the temporary files to remain, enter **n**.

Step 7: Perform the Installation

The following messages may appear during the installation of the Relativity Data Server:

- **Cannot determine Operating System type. Please contact Liant Customer Support.**

```
OS_NAME=name
OS_RELEASE=number
ARCH_TYPE=architecture
```

This message indicates that the installation cannot determine the current operating system, and that the installation may not be compatible with this operating system. Contact Liant Customer Support with the information indicated by the *name*, *number*, and *architecture* fields.

- **Attempt to install Relativity Data Server for *ProductOperatingSystem* on *ActualOperatingSystem***

This message indicates that the installation was able to determine the current operating system (*ActualOperatingSystem*), and that it is not the correct operating system for the product (*ProductOperatingSystem*). Obtain the correct

version of the Relativity Data Server for the operating system on which you are attempting the installation.

- **Unable to install on a system without inittab or services.**

This message indicates that two of the system files that will be modified by the installation are not present. The installation will abort.

- ***/cdrom* is not a file or directory.**

This message indicates that the value of the installation file or the CD-ROM mount directory entered in Step 6a is not a valid file or directory name. Enter either a valid filename, which will be treated as a Data Server installation file, or a directory name, which will be treated as a CD-ROM device mount directory or installation components directory.

- **Cannot find installation file using */cdrom***

This message indicates that the directory name entered for Step 6a does not contain the Data Server installation file.

- **Cannot access installation file.**

This message indicates that the installation file, which was either entered directly in Step 6a or located within the directory entered in Step 6a, cannot be opened. Before this message is displayed, another error message will be printed that indicates the source of the problem.

- **Installation does not contain the required files.**

This message indicates that the installation file, which was either entered directly in Step 6a or located within the directory entered in Step 6a, could be opened, but the file did not contain the expected files within it. It is probably the wrong installation file for this installation script.

- **Please respond with y for yes or n for no.**

This message is in response to a prompt that requires a yes or no answer. Simply use the lower case first letter of the word in your response.

- **License file not readable: *liant.lic*.**

This message indicates that the license file entered in Step 6c is either not a valid filename, or it is not readable.

- **Unknown type: *COBOLFileType*.**

This message indicates that the installation script did not recognize the type of COBOL file type that was entered in Step 6d.

- **'Port' not defined in 'relativity.ini'.**

This message indicates that a required entry is missing from the **relativity.ini** installation control file. The presence of this message indicates that the installation has been corrupted in some way.

- **'Service' not defined in 'relativity.ini'.**

This message indicates that a required entry is missing from the **relativity.ini** installation control file. The presence of this message indicates that the installation has been corrupted in some way.

- **'Version' not defined in 'relativity.ini'.**
This message indicates that a required entry is missing from the **relativity.ini** installation control file. The presence of this message indicates that the installation has been corrupted in some way.
- **Version Rel??x.yz of the Relativity Data Server to be installed.**
This message reports the version of Relativity that is being installed.
- **Micro Focus file manager configuration file *extfh.cfg* does not exist.**
This message indicates that the filenames entered in Step 6e could not be found.
- **Required MF environment variable COBDIR not defined.**
This message indicates that during the installation of a Data Server to access Micro Focus COBOL files, the required environment variable is not available. For more information, see page 9.
- **Required MF environment variable *LIBRARY* not defined.**
This message indicates that during the installation of a Data Server to access Micro Focus COBOL files, the required environment variable is not available. The actual environment variable *LIBRARY* is operating system-dependent. See page 9 for further details.
- **???? is not a valid service port number.**
This message indicates that the service port number entered in Step 6f was not valid. The service port number must be greater than 0, and it must be a valid integer. If the number is not a valid integer, this message will be preceded by a system error message.
- **The Data Server is already set up correctly in '/etc/services'.**
This message indicates that the Data Server has already been configured in the UNIX **services** file.
- **Port already in use in '/etc/services' by ????.**
This message indicates that the service port entered in Step 6f (on page 23) is in use by another service, where *????* is the name of the service. This situation must be corrected before the installation can proceed. Either move the existing service to another service port, or specify a different number at the service port prompt. For further information, see [Customizing the Relativity Data Server for UNIX Installation](#) (on page 42).
- ***UserName* is not a valid user name.**
This message indicates that the *UserName* entered in Step 6h cannot be located in the **/etc/passwd** file.
- **Base directory is required.**
This message indicates that no directory names were entered in Step 6i for the *Base* directory, and there is no default.
- **The Data Server has already been set for autostart at machine reboot.**
This message indicates that the UNIX server has already been configured to start the Data Server automatically.

- **Unable to modify '/etc/services'.**

This message indicates that the user name being used for installation does not have permission to modify the **services** file in order to insert the Data Server service into it. This situation must be corrected before the installation can proceed. To resolve this problem, see [System and Setup Requirements](#) (on page 8) for more information.

- **Directory *Base/Rel??x.yz* must be removed before running INSTALL. (INSTALL will not overwrite a previously installed version.)**

This message indicates that the *Base* directory entered in Step 6i already contains an installation of the version of Relativity that is being installed. The product that is in the *Rel??x.yz* directory must be uninstalled before proceeding. If the product has already been uninstalled, the *Rel??x.yz* directory must be removed.

- **Beginning installation.**

This message indicates that the installation script is beginning installation of the Data Server.

- **licverify: License installed successfully, 'Relativity Data Server'.**

This message indicates that the license file has been read and that the license has been installed. If the license fails to install, a message indicating the source of the failure will appear instead, and the installation will terminate.

Other messages concerning the license may be displayed at this time. Follow the instructions given by the licensing program.

- **Installing files in */home/Relativity/Rel??x.yz*.**

This message precedes the execution of the **cpio** command that will read the Data Server installation files from the installation device or file and place them into the installation directory. If the **cpio** command fails, a message indicating the source of the failure will appear instead, and the installation will terminate.

- **Linking with installed MF library.**

This message indicates that a Data Server to access Micro Focus COBOL files is being installed. This Data Server must be linked with the Micro Focus COBOL libraries already installed on the UNIX server.

- **The Data Server cannot start because of the following problem:**

(This is a system error message.)

Some problems can be corrected by linking the server using the libraries on the installation machine. This link can be performed by this installation script, assuming that the library search path contains the location of the RM libraries.

This message indicates that a Data Server is being installed to access RM/COBOL files, and the Data Server is not able to execute on this particular version of UNIX. This is caused by a difference in the library entry points between the version of UNIX that was used to link the installation Data Server (the ready-to-execute version for RM/COBOL) and the UNIX server on which the Data Server is being installed. Relinking the Data Server usually corrects this situation. See [Relinking the Relativity Data Server for UNIX](#) (on page 37) for more information.

- **Would you like to link the Data Server now? [y]:**
This prompt requests whether to perform the link of the Data Server. Enter **y** to perform this link. Enter **n** not to perform the link.
- **The link was successful.**
This message indicates that the link was successful and installation can proceed normally.
- **The link failed.**
This message indicates that the link was not successful. The cause of the failure will be displayed prior to this message.
- **Proceed with the installation and correct the problem later? [y]**
This prompt indicates that the link failed or that you chose not to perform the link of the Data Server during installation. To terminate the installation, enter **n**. To proceed with the installation, enter **y**. The following message appears:

Installing nonfunctioning server as a placeholder. Use the LINK command to build a functioning server. See the "Relativity Client/Server for UNIX Installation Guide" for more information.

This message is directing you to the topic, [Relinking the Relativity Data Server for UNIX](#) (on page 37), for instructions on how to link the Data Server.
- **Associating the Data Server with port ??? in '/etc/services'.**
This message indicates that the Data Server is being installed in the UNIX **services** file.
- **Adding the Data Server to /etc/inittab.**
This message indicates that the Data Server was installed to start automatically at machine boot and that installation is occurring.
- **Also installing in the kernel configuration.**
This message indicates that this particular UNIX platform requires an additional installation step in order to preserve the starting of the Data Server at machine boot following a link of the UNIX kernel, and that installation step is occurring.
- **You can start this service manually with the command:**
/home/Relativity/RUNACTIVE
This message indicates that the Data Server was installed not to start automatically. Instead, start the Data Server manually by using the **RUNACTIVE** script.
- **You can also start this service manually with the command:**
/home/Relativity/RUNACTIVE
This message indicates that the Data Server was installed to start automatically. However, the **RUNACTIVE** script also can be used to start the Data Server, especially if the Data Server does not start automatically following installation. Care should be exercised when using this command, as two Data Servers cannot be running at the same time using the same service port. If the automatic start of the Data Server is enabled and the Data Server is started manually, the **inittab** program will issue messages about the **RUNACTIVE** script respawning too rapidly. For more information on this situation, see [Troubleshooting the Relativity Data Server for UNIX](#) (on page 38).

- **Install was successful.**

This message indicates that the installation was successful.

- **Files removed.**

This message indicates that, per your request, the temporary files in the staging directory have been removed.

- **Installation complete. Version Rel??x.yz is now active.**

This message indicates the version of the Data Server that is now active, where ?? is either RM or MF and x.yz is the version number of the Data Server. This is the version that will be started automatically by autostart at machine reboot or by the **RUNACTIVE** script.

Step 8: Unload the Distribution Media

This step removes the Data Server installation media from the hardware. Use any of the following options to unload the distribution media:

- a. If the installation involved a CD-ROM drive installed on the UNIX server machine, see [Unload the CD-ROM on the UNIX Server](#) (on page 30).
- b. If the UNIX server machine does *not* have a CD-ROM drive, refer to [Unload the CD-ROM on the Windows Client](#) (on page 31).
- c. If the distribution of the media was via Electronic Software Delivery using UNIX GUNZIP TAR, remove the installation components directory with the following command:

```
rm -rf /InstallationComponentsDirectory
```

Unload the CD-ROM on the UNIX Server

Use this option to unload the distribution media if the Relativity Data Server installation involved a CD-ROM drive installed on the UNIX server. Instructions for specific versions of UNIX are provided in the following sections.

IBM AIX, HP-UX, SCO OpenServer 5, and UNIX System V Release 4

The instructions for these platforms are identical:

1. Enter the following command:

```
umount /cdrom
```

where */cdrom* is the mount directory used in the **mount** command.

2. Remove the installation media from the CD-ROM drive.

If you had to create the mount directory */cdrom* for this installation, you may remove it at this time.

Linux

1. Enter the following command:

```
umount /mnt/cdrom
```

2. Remove the installation media from the CD-ROM drive.

Sun Solaris SPARC and Intel x86

1. Enter the following command:

```
eject cdrom
```

2. Remove the installation media from the CD-ROM drive.

UnixWare 7.1.1

1. Enter the following command:

```
umount /CD-ROM_1
```

2. Remove the installation media from the CD-ROM drive.

Unload the CD-ROM on the Windows Client

Follow these instructions to unload the distribution media if the Relativity Data Server was installed from a CD-ROM drive on a Windows client.

1. Remove the media from the CD-ROM drive.
2. At the Windows command prompt, enter:

```
exit
```

3. Enter the following command from the UNIX root login:

```
rm /RelStage/dbmscpio
```

Step 9: Remove the Staging Directory

You may now remove the staging directory from the UNIX server by entering:

```
cd ..  
rm -rf /RelStage
```

Installation Notes

The following considerations apply to the installation of the Relativity Data Server for UNIX.

Active Version of the Relativity Data Server

The Relativity Data Server installation stores different versions of the Data Server in different directories based on two criteria: the type of files to be accessed and the version number of the Data Server (**Rel??x.yz**) within the installation directory, where ?? is either RM or MF, and x.yz is the version number of the Data Server.

It is possible to change the version of the Data Server that is started by editing the **.active** file within the installation directory to contain the name of the directory with the desired active version.

Deleting Previous Versions of the Relativity Data Server

Once you are comfortable that a new version of the Relativity Data Server has been installed correctly and you have copied all your application files from the **Rel??x.yz** directory, you may delete the previous version of the Data Server with the following command from the installation directory:

```
cd Rel??x.yz
./ UNINSTALL
```

where ?? is RM or MF, depending on the type of files to be accessed by the installed Data Server, and x.yz is the version number of the previous Data Server.

Relativity Data Server Event Log Cleanup

The Data Server generates a log file to track events. This file, named **event.log**, is placed in the Data Server's working directory. Over time, this log can become quite large, and the Data Server will not reduce its size automatically. To manage the size of the event log, use the **CHKLOG** script in the installation directory.

The format of the script is:

```
./CHKLOG [regularly]
```

CHKLOG will test the size of the **event.log** file. When it reaches the size of 10 MB, it will rename the file to **event.sav**. The Data Server will then create a new **event.log** file the next time that it generates a log entry.

The optional parameter, **regularly**, can be used to run the **CHKLOG** script every night at midnight, by using the UNIX **at** command. In order for this feature to work, however, the user name that is used to invoke **CHKLOG** must have permissions to use the **at** command. In your UNIX documentation, see the **at** man page for more information.

Starting the Relativity Data Server for UNIX

After installation is successfully completed, there are two methods of running the Relativity Data Server for UNIX: automatically with Autostart at Machine Reboot or manually without Autostart.

Automatically With Autostart at Machine Reboot

If the Autostart at Machine Reboot option was requested in Step 6l (on page 25), the Relativity Data Server will start automatically every time the machine reboots. If it does not start automatically following installation, you must enter the following command to signal the operating system that the **inittab** file has changed:

```
init q
```

If the Data Server still will not start, refer to [Troubleshooting the Relativity Data Server for UNIX](#) (on page 38).

If the Autostart at Machine Reboot option was not requested in Step 6l, log out and follow the procedures described in the next section, “Manually Without Autostart.”

Manually Without Autostart

The following procedures start the Relativity Data Server when the Autostart at Machine Reboot option is not stipulated in Step 6l of the installation procedures (see page 25):

1. Log on with the user name for the Data Server. See [User Name and Permissions for the Relativity Data Server for UNIX](#) (on page 9).
2. Change the directory to the base directory (see Step 6i on page 24).
3. Execute the **RUNACTIVE** script by typing the following:

```
./RUNACTIVE
```

The **RUNACTIVE** script is used to start the Data Server manually. The Data Server will continue to run after the user logs off and until it is terminated with a **kill** command or **STOP** script. See also [Terminating the Relativity Data Server for UNIX](#) (on page 34).

Verifying Installation of the Relativity Data Server for UNIX

To verify the installation of the Relativity Data Server for UNIX software:

1. Change the current working directory to the directory where the Data Server software was installed, that is, the base directory.
2. Enter the following script:

```
./RUNACTIVE
```

3. Change the current working directory to the active Data Server by entering:

```
cd `cat .active`
```

4. Execute the Relativity Server Administrator's command to show the server's status:

```
relserveradmin --show-server-status
```

Output similar to the following should be displayed:

```
Status of server valhalla.1583.  
Server Start Time: Mon May 31 16:14:19 2004.  
Current number of connections: 1.  
Process ID Client Machine (User Name) Application  
18372 valhalla (Unknown) Unknown
```

If this is not the case, see [Troubleshooting the Relativity Data Server for UNIX](#) (on page 38).

Terminating the Relativity Data Server for UNIX

Several techniques may be used to terminate the Relativity Data Server for UNIX.

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

Alternatively, if the Relativity Server Administrator is unavailable, and if the Data Server was started using the **RUNACTIVE** script, it may be terminated using a **STOP** script. Follow these steps:

1. Change the current working directory to the directory where the Relativity Data Server software was installed; that is, the base directory.
2. Change the current working directory to the directory containing the version of Data Server that is to be terminated:

```
Cd Rel??x.yz
```

where ?? is either RM or MF, and x.yz is the version number of the Data Server.

3. Issue the **STOP** script to terminate the Data Server:

```
./STOP
```

The Relativity Data Server may also be terminated using a UNIX **kill** command if the Relativity Server Administrator is unavailable, and if the Data Server was started using the **RUNACTIVE** script. In this case, first use the **ps** command to locate the process ID of the Data Server:

```
ps -ef | grep reldbsrv
```

Then enter the following **kill** command:

```
kill -s TERM <process-ID>
```

Note 1 If the Relativity Data Server was *not* started by the **RUNACTIVE** script, but instead was started by the operating system at machine reboot, issuing the **STOP** script or **kill** command will still terminate the current Data Server, but UNIX will restart the Data Server that is indicated by the **.active** file in the base directory.

Note 2 Do not use a **kill -9** command. The Data Server is well-behaved and will respond to the TERM signal with an orderly closing down of its network connections.

WARNING Care must be taken when choosing the process ID to kill. The Data Server spawns child processes for each client using it. Be sure to choose the ID of the Data Server process that is the parent of all the others, or wait until all clients have stopped using the Data Server, in which case there is only one **reldbsrv** process.

Removing the Relativity Data Server for UNIX

The Relativity Data Server for UNIX can be removed from the UNIX server on which it was installed. This may be necessary if the Data Server is to be moved to a different UNIX server or if a new release of the Data Server is to be installed on the same UNIX server machine. Two techniques may be used to remove the Relativity Data Server for UNIX.

This first method is an automated way to remove the Relativity Data Server from the UNIX server:

1. Log in as root.
2. Change the current working directory to the directory where the Relativity Data Server software was installed; that is, the base directory.
3. Change the current working directory to the directory containing the version of Data Server that is to be removed:

```
cd Rel??x.yz
```

where ?? is either RM or MF, and x.yz is the version number of the Data Server.

4. Issue the **UNINSTALL** script to remove the Data Server:

```
./UNINSTALL
```

This command will remove the files installed for the Relativity Data Server and will remove the Rel??x.yz directory if it is empty. If the Data Server is running, it will be stopped. If the Data Server is the active server, and Data Server was installed to start automatically with the Autostart at Machine Reboot option (see page 33), this reboot will be disabled. If the Data Server is the active server, the Data Server will be removed from the **/etc/services** file.

To remove the Relativity Data Server manually from the UNIX server:

1. Log in as root.
2. If the Data Server was installed to start automatically with the Autostart at Machine Reboot option (see page 33), edit the file **/etc/inittab**:
 - a. Locate the line containing the execution of the **RUNACTIVE** script in the Data Server base directory and delete it.
 - b. Save the file.
3. Terminate the current Data Server, if it is already running, by following the procedure described in [Terminating the Relativity Data Server for UNIX](#) (on page 34).
4. Edit the file **/etc/services**:
 - a. Locate a line similar to one of the following and delete it:

```
Express1583 1583/tcp #Liant Relativity Data Server  
for UNIX
```

or

```
Express???? ????/tcp #Liant Relativity Data Server  
for UNIX
```

where ???? is the service port number under which the server was running.

- b. Save the file.
5. Change the directory to the Data Server installation directory.
 6. Delete the directory containing the version of Data Server that is to be removed by entering:

```
rm -rf Rel??x.yz
```

where ?? is either RM or MF, and x.yz is the version number of the Data Server.

7. If desired, use the **rm -rf** command to remove the Data Server base directory.

Relinking the Relativity Data Server for UNIX

The UNIX client/server version of Relativity supplies a **LINK** script that will relink the Relativity Data Server for UNIX program in order to allow a new Data Server to be constructed when a new version of the RM/COBOL file manager or Micro Focus COBOL is available.

A ready-to-execute version of the Data Server is shipped in order to access RM/COBOL files. This ready-to-execute Data Server may not be able to be loaded by the operating system when the libraries on the UNIX server do not match those of the machine on which the ready-to-execute version was linked. This usually manifests itself with an error being written to standard output by the UNIX dynamic loader objecting to the missing symbol, `litpow`. See Step 8 of these procedures for instructions on how to modify the Data Server's **RUN** script to examine the dynamic loader's messages.

To relink the Data Server:

1. Verify that the desired version of RM/COBOL or Micro Focus COBOL is installed on the UNIX server. For example, for RM/COBOL, enter the command **runco**; for Micro Focus COBOL, enter the command **cob -V**.
2. If you installed the Data Server to start automatically with Autostart at Machine Reboot (see [Step 61](#) on page 25), edit the file `/etc/inittab`:
 - a. Locate the line containing the **RUNACTIVE** script and change the text **respawn** to **off**.
 - b. Save the file.
3. Shut down the Data Server as described in [Terminating the Relativity Data Server for UNIX](#) (on page 34).
4. Change the directory to the Data Server base directory.
5. Next, change to the installation subdirectory whose name is **Rel??x.yz**, where ?? is either RM or MF, and *x.yz* is the version number of the Data Server.

Alternatively, you can type the **cd `cat .active`** command to enter the directory for the active Data Server.

6. Enter the **LINK** script:

```
./LINK
```

If the link fails, the proper COBOL libraries may be unavailable for the link. This problem usually occurs because the user name **root** does not have the proper environment variables set up. If you are using Micro Focus COBOL, make sure that the `COBDIR` environment variable is defined and contains the Micro Focus installation directory.

7. Restart the Data Server.

If necessary after a successful link, re-enable the Autostart at Machine Reboot option by editing `/etc/inittab`, locating the **RUNACTIVE** line again, and changing **off** to **respawn**. You may then enter the command **init q** to restart the Data Server.

If you wish to start the Data Server manually, you may execute the **RUN** script in the directory containing the **LINK** script.

8. If the Data Server does not start, edit the **RUN** script and redirect the Data Server's standard output to a file:
 - a. Locate the text string, **>/dev/null**, and change it to **>server.log**. Note that there are two instances of this text string in the file. If you are starting automatically from **inittab**, change the first instance. If you are manually starting by issuing the **RUN** script, change the second instance.
 - b. Attempt to restart the Data Server, examine the **server.log** file, and correct any errors.

Troubleshooting the Relativity Data Server for UNIX

There are several installation problems related to local changes made to the UNIX server that may need to be corrected in order for the Relativity Data Server for UNIX to install and execute correctly.

Relativity Data Server for UNIX Does Not Run After Successful Installation

The Relativity Data Server generates a log file named **event.log** in the working directory from which it is run. If the **RUNACTIVE** script or Autostart at Machine Reboot (see page 33) is used to start the Data Server, **event.log** will be in the installation directory of the Data Server base directory. The **event.log** file contains messages pertaining to the execution of the Data Server.

The following error messages may be displayed during installation:

Internal error 2013 calling server

This message indicates that the Relativity Data Client is having trouble communicating with the Relativity Data Server.

To resolve this problem, examine the **event.log** file in the Data Server's installation directory on the UNIX server. If it shows that the Data Client connected but did not disconnect, the Data Server may have crashed trying to process the Data Client's request. The installation of the Micro Focus COBOL runtime may be one cause for this problem in the case of a Data Server that is accessing Micro Focus files. Examine the Micro Focus COBOL installation directory, **\$COBDIR**, for the file **rts32**. This file must have execute permission for the user name under which the Data Server is running.

Server respawning too rapidly

This message is generated on the system console. It occurs whenever the Relativity Data Server has been installed to Autostart at Machine Reboot and is unable to start successfully.

This error may result if a Relativity Data Client is rebooted without disconnecting from the Data Server first. Since the Data Server will continue to show a Data Client connection, the UNIX server will recognize that the Data Server service port 1583 remains in use, thereby refusing to allow the new Data Server to have exclusive use

of it. This will cause the Data Server to conclude that there is a version of the Data Server already running, and it will terminate.

This message also may occur when a user corrects a technical problem that causes the Data Server not to run, and then starts the Data Server manually using the **RUNACTIVE** script. After a few minutes, the **inittab** program will attempt to start the Data Server automatically. Once the program discovers that there is a Data Server already running, the **inittab** program terminates. The solution to this situation is to terminate the Data Server that was started manually and then perform an **init q** to cause the Data Server to autostart immediately.

No value found or SvrPort in odbc.ini

This message indicates that the user name used to run the Data Server does not have read permission for the **odbc.ini** file.

To resolve this problem, see [User Name and Permissions for the Relativity Data Server for UNIX](#) (on page 9).

Installation abandoned with the following message: "ld: Symbol set_local in coblib/libnlsstub.a is multiply defined"

This message indicates that the linker is attempting to link both the COBOL and C National Language Support into the Data Server.

To resolve this problem, edit the file **\$COBDIR/coblib/liblist** and temporarily remove the entry by entering the following command:

```
s-lnls
```

Installation abandoned with one of the following messages: "ld: Cannot find or open library file: l m" or "cob: cannot execute as" or "cob: error(s) in assembling /tmp/cobONkyMa/ldtab.s"

These messages indicate that a C development system is not present on the UNIX server machine. Micro Focus licensing constraints require that the Data Server be linked with the Micro Focus COBOL runtime installed on the target machine. This linking, however, requires that a C development system be loaded on the machine to provide a **libm.a** file and the assembler. This requirement also ensures that there is not a conflict between two versions of Micro Focus COBOL runtimes attempting to coexist on the machine.

To resolve this problem, install a C development system on the UNIX server. See [System and Setup Requirements](#) (on page 8).

Controlling the Location of the Relativity Data Server for UNIX Temporary Sort Files

The files that the Relativity Data Server uses for sorting can become quite large. If your temporary partition is not large enough to support these sort files, take the following action:

1. Start the Relativity Server Administrator.
2. In the Select Server dialog box, select a UNIX server.
3. In the Data Sources dialog box, click **Options**.
4. In the Relativity dialog box, click the **Global** tab.
5. In the Temporary Files Directory box on the Global tab, enter the directory name where the temporary files are to be placed.
6. Click **OK** and then click **Close** in the subsequent dialog boxes to exit the Relativity Server Administrator.

Intermittent Connection Problems

Under a heavily loaded UNIX system, Data Clients are occasionally refused connection to the Data Server. This problem may be due to a lack of semaphore resources. For instance, on SCO OpenServer 5, this is usually the Semaphore “undo” structure.

This problem is corrected by increasing the value of the SEMMNU configuration parameter. To change the SEMMNU parameter:

1. Log in as root and enter the following to change the directory:

```
cd /etc/conf/cf.d
```

2. Enter:

```
./configure
```

Note You must change directory to **/etc/conf/cf.d** in order to execute the **configure** command.

3. From the main menu, select #15, **Semaphores**.
4. Follow the on-screen instructions.
5. Look for “SEMMNU”. The default is 30. Increase this number to add more “undo” structures for the UNIX server.

Once the change has been made, a new kernel must be built and the system rebooted. In your UNIX documentation, see the **configure** man page for more information.

Configuring a Relativity Data Server Data Source on the UNIX Server

A Relativity Data Server data source may be configured on the UNIX server by any 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 UNIX Server](#) (on page 62).
- The Relativity Server Administrator may be run on a UNIX client machine. See “Configuring a Relativity Data Server Data Source from the UNIX Client” in the *Relativity Data Client for UNIX Installation Guide*.
- Install predefined data sources, as discussed in [Installing Predefined Data Sources](#) (on page 44).
- 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 73).
- The Relativity Server Administrator may be run the UNIX server.

This section describes the latter procedure. The Relativity Server Administrator is used to configure and maintain server data sources, as well as provide other maintenance functions for the server.

To configure a Data Server data source on the UNIX server:

1. Change the current working directory to the directory where the Data Server software was installed (that is, the base directory).
2. Change the current working directory to the active Data Server by entering:

```
cd 'cat .active'
```

3. Execute the Relativity Server Administrator’s command to create a data source:

```
relserveradmin --add-data-source DataSourceName  
--catalog CatalogFileName  
--data-source-desc DataSourceDescription
```

- For *DataSourceName*, substitute the desired name of the data source. For example, **Verify**.
- For *CatalogFileName*, substitute the desired location of the data source’s catalog file. For example, **sample/XX/verify/verify.rcg**, where **XX** is **rm** if the Relativity Data Server can access RM/COBOL files or **mf** if the Relativity Data Server can access Micro Focus COBOL files.
- For *DataSourceDescription*, substitute a description of the data source. For example, **“Relativity C/S for UNIX Data Source”**. If *DataSourceDescription* contains spaces, enclosing it in quotation marks will be necessary.

4. Execute the Relativity Server Administrator's command to list the current data sources:

```
relserveradmin --list-data-sources
```

A list of the data sources will be displayed:

```
Data sources on data server tcp:UnixServer.1583. Verify
```

Customizing the Relativity Data Server for UNIX Installation

You may customize the installation of the Relativity Data Server for UNIX to install your application's data files and data sources. You also may predefine answers to the installation prompts and change the installation defaults. This section discusses the various ways you can customize the installation process, including:

- [Creating a Media Image Directory](#) (on page 43)
- [Unpacking the Data Server Installation Media](#) (on page 43)
- [Removing Optional Files](#) (on page 43)
- [Adding Application Files](#) (on page 44)
- [Installing Predefined Data Sources](#) (on page 44)
- [Customizing the Installation Control Files](#) (on page 45)
- [Creating New Installation Media](#) (on page 51)

Note The first, second, and last procedures are required if you choose any of the other options to customize the Data Server installation process.

Creating a Media Image Directory

Use the following command to create an empty directory in which to place the installation media's contents:

```
mkdir /RelMedia
```

To make this directory your current directory, enter:

```
cd /RelMedia
```

You may change RelMedia to be any appropriate directory.

Unpacking the Data Server Installation Media

In the media image directory, unload files from the installation media into the directory using commands such as the following:

```
cpio -icBvdum </cdrom/dserver/dbmscpio*
```

Change */cdrom* to be the name of the device that holds the Relativity Data Server for UNIX distribution media. See [Step 6: Answer the Installation Prompts](#) (on page 22).

Removing Optional Files

The following files, which are part of the Schema Extractor, are not required as part of the installation and may be removed from the media image directory:

COBOL.pass1	relcob.dat
COBOL.symbol	relcobmf.dat
FILES.rst	relcobmf.msg
listproc	relcobrm.dat
LISTPROC.symbol	relcobrm.msg
make_rst.sh	relpp
messages	RelSymTb.output
parser	RelSymTb.pass1
reonstr	RelSymTb.symbol
relcob	

The following files and directory, which are part of the Samples, are not required as part of the installation and may be removed from the media image directory:

```
FILES.mfsam  
FILES.rmsam  
samples
```

If the Data Server is to access only RM/COBOL files, the following files may be removed from the media image directory:

```
FILES.mf  
rebldinx  
reldbmf.o
```

If the Data Server is to access only Micro Focus COBOL files, the following files may be removed from the media image directory:

```
FILES.rm  
REC.MSG  
recover1  
reldbrm.o  
reldbsrv.rm
```

Adding Application Files

Any application files or directories that are to be installed by the installation process must be added to the media image directory. These files may be installed either in the Data Server installation directory or in a separate directory.

To have your application files or directories installed in the Data Server installation directory, append either the name of each file or a wildcard description of a set of files in the **FILES.all** file. For example, to add the name of each file, enter:

```
find your-app-files -print >>FILES.all
```

To add a directory as a wildcard, use the following command:

```
echo "your-directory/*" >>FILES.all
```

To have your application files or directories placed in a separate directory, the file **FILES.db** must be added to the media image directory. Place in **FILES.db** the names of the files to be installed in the new directory, either by listing each file or by using a wildcard with the techniques described above. The presence of the file **FILES.db** will cause the installation script to prompt for the location of the directory in which to install the files, create the directory, if needed, and perform the installation.

Installing Predefined Data Sources

If you wish to predefine data sources on the Data Server that reference the added application files, add the file **odbctemp.ini** to the media image directory. If this file is present during installation, it will serve as a template for creating the data sources. All occurrences of the string *<SRCDIR>* in the **odbctemp.ini** file will be replaced by the directory name in which the application files were placed. If the files were installed in a directory different than that of the Data Server because the file **FILES.db** is present in the media image directory, then the string *<SRCDIR>* will be replaced with the name of this different directory. If **FILES.db** is not present, then *<SRCDIR>* will be replaced with the name of the installation directory of the Data Server.

If the **odbctemp.ini** file is present in the media image directory, the installation script will not prompt to import the Data Server data sources of a prior version of the Data Server into the current installation. The **odbctemp.ini** file has precedence.

Use the **odbc.ini** file of a current Data Server to create the **odbctemp.ini** file. Liant recommends that you initially create the Data Server data sources using the Relativity Server Administrator on a computer having one of the UNIX platforms described in [System and Setup Requirements](#) (on page 8). Then, copy the **odbc.ini** file from the installation directory of the Data Server to the media image directory

with the name **odbctemp.ini**. Next, edit the file and replace the leading directory names in the Catalog entries with `<SRCDIR>`, as shown in the example below:

```
[Relativity Data Source]
DBQ=rel000
Catalog=<SRCDIR>/catalog.rcg
Description=Relativity Data Source
.
.
.
```

Note For more information, see [Configuring Relativity Data Server Data Sources from Catalog Developer Installation Scripts](#) (on page 73) on the UNIX server machine.

Customizing the Installation Control Files

To control the installation process and the Relativity Data Server after installation, you may customize the following files:

- The **relativity.ini** file, which directs the installation process.
- The **odbc.ini** file, which directs the Data Server after installation.

Customize the *relativity.ini* File

The **relativity.ini** file resides in the media image directory and controls the installation process. It has two required sections, [RM INSTALL] and [MF INSTALL], each of which directs the installation depending on whether the Relativity Data Server is to access RM/COBOL or Micro Focus COBOL files. Each section has the five same entries: `service`, `port`, `version`, `VENDOR`, and `PRODUCT`.

WARNING The profile string entries are case-sensitive and no space is allowed on either side of the equal sign.

- **service.** The `service` entry is the name that is to be used in the UNIX `/etc/services` file by the Data Server. This entry should not be changed unless it conflicts with another Data Server product installed on the same machine.
- **port.** The `port` entry is the service number in the UNIX `/etc/services` file for the Data Server. The value of 1583 for this entry is registered with the Information Sciences Institute for SimbaExpress, which provides the software used by the Data Server to communicate between the Data Client and Data Server.

The value of the `port` entry should not be changed unless there is a conflict with another Data Server or SimbaExpress product installed on the same computer.

If the value of the `port` entry is changed, the assigned value must be a local value that is available on the UNIX server. This value is usually assigned by the System Administrator of the UNIX computer system.

Note This value can be changed at installation via a prompt.

- **version.** The version entry is the name of the installation directory where the Data Server is installed. This directory is located within the base directory for which the **INSTALL** command prompts during installation. This directory name should not be changed because it identifies the following items:
 - The type of COBOL data files that are supported.
 - The version of the Data Server being installed.
- **VENDOR.** The VENDOR entry is the name of the company installing Relativity.
- **PRODUCT.** The PRODUCT entry is the name of the product being installed.

The **relativity.ini** file also may include an optional section, [PARAMETERS]. This section can have two different types of entries:

- Entries that predefine the answer to prompts during installation. This type of entry causes the prompt not to be displayed during installation. The following entries are the predefined answers to prompts:
 - **LICENSE.** The LICENSE entry is the name of license file. If this name is present and defines a readable file, the installation will proceed silently without prompting for the license.
 - **TYPE.** The TYPE entry is the type of Data Server to be installed. The value RM will install a Data Server that will access RM/COBOL files. The value MF will install a Data Server that will access Micro Focus COBOL files via Server Express. The value MFOCDS will install a Data Server that will access Micro Focus COBOL files via Object COBOL Developer Suite.
 - **PORT.** The PORT entry is the service port under which the Data Server is to run. This value must be a valid integer greater than 0.
 - **SAMPLES.** The SAMPLES entry indicates that the sample files are to be installed. A value of **y** indicates to install the samples. A value of **n** indicates not to install the samples.
 - **RUNNER.** The RUNNER entry indicates the user name with which the Data Server is to be installed. Files in the installation directory will be owned by this user name and, if the Data Server is automatically started, it will be run under this user name.
 - **BASE.** The BASE entry indicates the base directory in which the installation or the version directory will be placed, and in which the Data Server will be installed.
 - **CREATEBASE.** The CREATEBASE entry indicates that the directory indicated by the BASE entry is to be created. The value **y** will cause any existing file named with the entry BASE, unless it is a directory, to be deleted and a directory (to be named as indicated by the BASE entry) to be created.
 - **DATABASE.** The DATABASE entry indicates the directory in which files contained in **FILES.db** are to be restored.
 - **CREATEDATABASE.** The CREATEDATABASE entry indicates that the directory indicated by the DATABASE entry is to be created. The value **y** will cause any existing file, unless it is a directory, to be deleted and a new directory to be created.

- **IMPORT_ODBC.** The IMPORT_ODBC entry indicates that there is a prior version of Relativity installed in the base directory and that the Data Server data sources in it should be imported and converted into this installation. The value **y** indicates that the data sources should be imported, if present. The value **n** indicates that the data sources should not be imported, if present.
- **AUTOREBOOT.** The AUTOREBOOT entry indicates whether the Data Server is to be installed to start automatically at boot time. The value **y** will cause it to be installed, if it is not already installed.
- **REMOVESRC.** The REMOVESRC entry indicates whether the temporary files created by the installation, INSTALL, FILES.*, and so forth, are to be removed following a successful installation. The value **y** will cause them to be removed.
- **MF_CFG.** The MF_CFG entry indicates the name of the Micro Focus COBOL file manager configuration file. The value **none** indicates that no configuration file is to be specified.
- Entries that predefine the default value for prompts during installation. This type of entry causes the default value to be displayed and used if the user performing the installation presses Return or Enter in response to the prompt. The following entries are the default answers to prompts:
 - **DEFAULT_LICENSE.** The DEFAULT_LICENSE entry is the default name of the license file prompt.
 - **DEFAULT_TYPE.** The DEFAULT_TYPE entry is the default value of the Data Server type prompt.
 - **DEFAULT_PORT.** The DEFAULT_PORT entry is the default value for the services port prompt. If this value is not present, the value from the port entry from the **relativity.ini** file will be used. See the “port” entry description in [Customize the relativity.ini File](#) (on page 45).
 - **DEFAULT_SAMPLES.** The DEFAULT_SAMPLES entry is the default value of the install samples prompt.
 - **DEFAULT_RUNNER.** The DEFAULT_RUNNER entry is the default value of the prompt to specify the user name for the Data Server.
 - **DEFAULT_BASE.** The DEFAULT_BASE entry is the default value for the base directory prompt.
 - **DEFAULT_DATABASE.** The DEFAULT_DATABASE entry is the default value for the separate database directory prompt.
 - **DEFAULT_IMPORT.** The DEFAULT_IMPORT entry is the default value for the import data sources prompt.
 - **DEFAULT_AUTOREBOOT.** The DEFAULT_AUTOREBOOT entry is the default value for the auto reboot prompt.
 - **DEFAULT_REMOVESRC.** The DEFAULT_REMOVESRC entry is the default value for the remove files following installation prompt.
 - **DEFAULT_MF_CFG.** The DEFAULT_MF_CFG entry indicates the default value for the Micro Focus COBOL configuration file prompt.

Customize the *odbc.ini* File

The **odbc.ini** file in the installation directory controls the operations of the Data Server. The **odbctemp.ini** file or the **odbc.ini** on the installation media will be placed in the installation directory as the **odbc.ini** by the installation process. The appropriate file may be customized in the installation media directory to reflect the needs of your application. As described on page 44, the presence of the **odbctemp.ini** file on the installation media will place it in the Data Server installation directory after having the string *<SRCDIR>* replaced with the directory in which your application files are placed. If the **odbctemp.ini** is not present on the installation media, the file **odbc.ini** from the media will be placed in the Data Server installation directory instead.

This customization process of these files occurs in three different sections: [SimbaServer], [SimbaTrace], and [ODBC Data Sources].

WARNING The profile string entries are case-sensitive and no space is allowed on either side of the equal sign.

[SimbaServer] Section

The [SimbaServer] section has eight entries: SvrPort, LogEvent, LogMask, BindAllAddresses, MgrInitProto, MgrSecondProto, Organization, and MaxTCPSendSize. Of these, only one entry can be customized:

- **SvrPort.** The SvrPort entry is the service number in the UNIX */etc/services* file or the Data Server. This value will be changed automatically by the installation script to match the value entered at the service port prompt (see page 23 for more information).

You may, however, add the following entry to this section:

- **TempFileDirectory.** The TempFileDirectory controls where the Data Server places its sort files. If this entry is not present, the temporary directory of the UNIX server is used.

[SimbaTrace] Section

The [SimbaTrace] section has nine entries. The entries EngineTrace, OdbcTrace, StringTrace, FMgrTrace, LnaTrace, ServerTrace, LnaSrvTrace, and CDRMTrace are various levels of tracing that can be enabled. The TraceOutput entry contains the name of the file to which the trace is to be written.

[ODBC Data Sources] Section

The [ODBC Data Sources] section contains the names of all data sources defined for the Data Server. Each entry in the [ODBC Data Sources] section is the name of a section in the **odbc.ini** file that describes the data source. The value of the entry is "Relativity Server". Liant recommends that a copy be made of the [ODBC Data Sources] section created by the Relativity Server Administrator from a working **odbc.ini** file. This working copy should be placed into the **odbc.ini** or **odbctemp.ini** file in the media image directory.

Each data source is described by a section in the **odbc.ini** file. Each section has six fixed entries: DBQ, Catalog, Description, FileMgr, QryPlan, and QryPlanOutput.

Micro Focus COBOL and RM/COBOL have additional entries that are specific to the type of COBOL (see the descriptions on pages 50 and 51, respectively).

- **DBQ.** The DBQ entry is the database qualifier. This entry is a string of characters and digits with no embedded spaces. This string must be a unique value for each data source defined in the **odbc.ini** file.
- **Catalog.** The Catalog entry is the pathname of the Relativity catalog file. If you are customizing an **odbctemp.ini** file, this is the entry that you would replace the directory portion of the pathname with *<SRCDIR>*. If you are customizing an **odbc.ini** file, this will need to be the pathname of your application files on the UNIX server. If you wish, this value may be relative to the current working directory of the Data Server process.

If the Data Server is installed to run automatically with Autostart at Machine Reboot or via the **RUNACTIVE** script (see page 33), the current working directory of the Data Server is the installation directory. The current working directory is also where files listed in the **FILES.all** file are placed.

For Micro Focus COBOL, the file format of the Relativity catalog can be specified within brackets following the catalog's pathname. The valid values for the file format of the Relativity catalog are as follows:

- **DEFAULT.** This value indicates the default file format.
- **CISAM.** This value indicates the C-ISAM file format.
- **LEVELII.** This value indicates the LEVEL II COBOL format.
- **IDX4.** This value indicates IDXFORMAT"4" format.
- **IDX8.** This value indicates IDXFORMAT"8" format.
- *n.* The numeric value of *n* specifies the Micro Focus File Handler file format parameter for the catalog.

For RM/COBOL, there is no additional file format information in the pathname.

- **Description.** The Description entry is a description of the data source. This description may be used to locate the data source during setup.
- **FileMgr.** The FileMgr entry has the value RM if the data source accesses RM/COBOL files and the value MF if the data source accesses Micro Focus COBOL files.
- **QryPlan.** The QryPlan entry is a flag that indicates whether a Query Plan is to be created for every query prepared. A value of 0 indicates that a plan should not be generated. A value of 1 indicates that a plan should be generated.
- **QryPlanOutput.** The QryPlanOutput entry is the pathname where the query plan is to be placed if the QryPlan entry has a value of 1. This file may be transported to a Windows client machine and examined with the Query Plan Viewer program supplied with the Relativity Data Client.

Micro Focus COBOL-specific entries include CrTabFormat, DataCompress, KeyCompress, SparseChar, and FileShare:

- **CrTabFormat.** This Micro Focus COBOL-specific entry describes the format of files for tables created by ODBC-enabled applications. The valid values for the specification of the Micro Focus File Handler file format of the Relativity catalog are as follows:
 - **DEFAULT.** This value indicates the default file format.
 - **CISAM.** This value indicates the C-ISAM file format.
 - **LEVELII.** This value indicates the LEVEL II COBOL format.
 - **IDX4.** This value indicates IDXFORMAT"4" format.
 - **IDX8.** This value indicates IDXFORMAT"8" format.
 - *n.* The numeric value of *n* specifies the Micro Focus File Handler file format parameter for the catalog.
- **DataCompress.** This Micro Focus COBOL-specific entry describes the data compress routine to be used on files for tables created by ODBC-enabled applications. The value of this entry is a decimal number that specifies the compression to be used. The value of 0 specifies no compression. The value of 1 specifies the MF compression routine CBLDC001. The default for this entry is the value of 1.
- **KeyCompress.** This Micro Focus COBOL-specific entry describes the key compression flags to be used on keys of files for tables created by ODBC-enabled applications. The value of this entry is a series of attributes separated by the | character or the space character. There are three attributes:
 - **TrailingSpaces.** This attribute indicates that trailing spaces compression is to be performed on the keys.
 - **LeadingCharacters.** This attribute specifies that leading character compression is to be performed on the keys.
 - **Duplicates.** This attribute specifies that duplicate compression is to be performed on the keys.

The default for this entry is compression of trailing spaces, leading characters, and duplicates.

- **SparseChar.** This Micro Focus COBOL-specific entry describes the sparse key character. Keys made up entirely of this value are suppressed. This entry can be a decimal number, that is, the numeric value of the character, or the actual character surrounded by single quotes ('). The default for this entry is not specifying a sparse key character.

WARNING The Relativity Data Server (and the Data Manager) do not support indexes built upon keys with sparse characters.

- **FileShare.** This Micro Focus COBOL-specific entry specifies that the data source use Micro Focus FileShare to access the Relativity catalog. A value of 0 indicates that access to the file is local. A value of 1 indicates that access to the file is via FileShare.

RM/COBOL-specific entries include BufferPoolSize, EABtrieve, EAInfoXTCP, EAInfoXIPX, and InfoExpress:

- **BufferPoolSize.** This RM/COBOL-specific entry supplies the value used to specify the buffer pool size to the RM/COBOL File Manager for buffer allocation. The value specifies an integer number of kilobytes (1024 bytes) of memory to be allocated for the buffer pool. A value of 0 indicates that the default of 256 kilobytes should be used. The value must be a decimal integer from 16 to 649.
- **EABtrieve.** This RM/COBOL-specific entry specifies the Btrieve File Manager options. This entry is ignored.
- **EAInfoXTCP and EAInfoXIPX.** These RM/COBOL-specific entries specify RM/InfoExpress options. These entries are ignored.
- **InfoExpress.** This RM/COBOL-specific entry specifies that the data source use RM/InfoExpress to access the Relativity catalog. A value of 0 indicates that access to the file is local. A value of 1 indicates that access to the file is via RM/InfoExpress.

Creating New Installation Media

After the media image directory contains all the application files, and the modified **odbc.ini** or **odbctemp.ini** file, new installation media can be created with the following **cpio** command.

```
find * -print | cpio -ocBv >dbmscpio
```

The resulting **dbmscpio** file will then need to be placed on a CD-ROM. Liant used the ISO 9660 file system and CD-ROM mode 1 for greatest portability.

Rebuilding Micro Focus COBOL Windows Catalogs

The Micro Focus COBOL indexed file structure is not the same on all UNIX platforms. In order to move an existing Relativity catalog from a Windows client to the UNIX server where the Relativity Data Server is running, the index structure must be rebuilt. This task is performed by the following **rebldinx** script:

```
rebldinx cat-data-file-name ...
```

The notation *cat-data-file-name* is the name of the catalog's data file being transported from the Windows computer. It is unnecessary to transport the **.idx** file because it will be rebuilt.

WARNING The catalog's data file must be transferred to the Data Server as a binary file.

The new index file will have the name *cat-data-file-name.idx*. The extension of the *cat-data-file-name*, if any, will not be removed; the **.idx** extension simply will be added. This is the expected behavior on the Micro Focus COBOL system. The catalog cannot be opened if the index cannot be found. Do not attempt to change the name of the index file to correct this situation as this will result in a Micro Focus COBOL runtime error 43.

When creating a Data Server data source, use the name of the catalog's data file in the Catalog entry of the [ODBC Data Sources] section of the **odbc.ini** or **odbc-temp.ini** file. For more information, see the [ODBC Data Sources] Section in the topic [Customize the odbc.ini File](#) (on page 48).

In order for the **rebldinx** script to be used, the Micro Focus COBOL product for this UNIX server must be installed, and the **fhrebuild** command must be available in the PATH environment variable.

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 (on page 54) 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 UNIX server.	59
Remove the Relativity Data Client and Server Administrator software components.	69
Use the options available to the System Administrator for installing the Relativity Data Client on end-user machines.	69
Configure Relativity Data Server data sources from catalog developer installation scripts.	41

System Requirements

Installation of the Relativity Data Client software on a Windows client workstation requires the following minimum software and hardware.

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

Installing the Relativity Data Client and Server Administrator

Note If you have a version of the Relativity Data Client that supports the uninstall process, you should remove it prior to installing a newer version. See [Removing the Relativity Data Client and Server Administrator](#) (on page 69).

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

- [CD-ROM Installation for Data Client and Server Administrator](#) (on page 55)
- [Electronic Software Delivery Installation for Data Client and Server Administrator](#) (on page 56)

CD-ROM Installation for Data Client and Server Administrator

To install the Relativity Data Client software and the Relativity Server Administrator utility program from the CD-ROM:

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

```
d:autorun
```

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

4. From the list of installation options, click **View the Installation Documentation** to read or install the documentation for this product, which is provided on the CD-ROM.
5. Click **Data Client Installation for Windows** from the list of installation options. A second list of options is presented:
 - Click the **View the README file** option to review important last-minute information about Relativity.
 - Click the **View the Installation Documentation** option to read or install the appropriate Relativity installation guides (in Adobe PDF).
 - Click the **Install the Relativity Data Client** option to begin the actual installation process.
6. Follow the instructions presented by the installation program.
7. When the Installation Type dialog box opens, select the **Database Administrator** option in order to install the Relativity Server Administrator utility program.

The Server Administrator utility allows you to define a UNIX server for the Data Client and configure a Relativity Data Server data source on the UNIX server machine.
8. When the Define Server dialog box opens, in the Server's Network Name box, enter the network name of the UNIX server on which the Relativity Data Server was installed. The value in the Service Port box should match the service port number for the UNIX server on which the Data Server was installed. The default is 1583.
9. Continue to follow the instructions until you have completed the installation process.
10. When the Setup Complete dialog box opens, select the check box to view the ReadMe files or click **Finish** to close the dialog box.

Electronic Software 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.

The Relativity Data Server for UNIX software (which includes the Relativity Data Client and Relativity Server Administrator utility components) is available as a download from the Liant Electronic Software Delivery website in any of three formats: ISO CD Image, Windows Self-Extracting EXE, and UNIX GUNZIP TAR. Simply follow the instructions on the website for downloading and decompressing the file for the format selected.

- **ISO CD Image.** The download format for ISO CD Image contains the full product. Use CD-ROM Burning software, such as Nero (<http://www.nero.com>) or Roxio's Easy CD Creator (<http://www.roxio.com>), to create the physical CD-ROM media, and then follow the instructions contained in the [CD-ROM Installation for Data Client and Server Administrator](#) (on page 55) section to install your product.
- **Windows Self-Extracting EXE.** The download format for Windows Self-Extracting EXE does *not* contain a full product. In order to reduce the size of the download file, the AutoPlay and Adobe Reader software, normally available on the CD, are not present. Furthermore, the Relativity installation guides are included in the deliverable download file but not the installation script to install these guides. The installation guides, formatted as PDF files, can be installed simply by copying them to the desired location.

After the deliverable has been downloaded and uncompressed, and the installation components have been created from the Windows Self-Extracting EXE format, follow the instructions in the [Installing Relativity Data Client from Windows Self-Extracting EXE](#) (on page 57) topic to install the Relativity Data Client software.

- **UNIX GUNZIP TAR.** The download format for UNIX GUNZIP TAR does *not* contain a full product. In order to reduce the size of the download file, the AutoPlay and Adobe Reader software, normally available on the CD, are not present. Furthermore, the Relativity installation guides are included in the deliverable download file but not the installation script to install these guides. The installation guides, formatted as PDF files, can be installed simply by copying them to the desired location.

After the deliverable has been downloaded and uncompressed, and the installation components have been created from the GUNZIP TAR format, follow the instructions in the [Installing Relativity Data Client from UNIX GUNZIP TAR](#) (on page 57) topic to install the Relativity Data Client software.

Note The Windows Self-Extracting EXE format is decompressed on a Windows machine. The UNIX GUNZIP TAR format is decompressed on a UNIX machine. Both download formats have their advantages. The Relativity Data Server for UNIX product contains both Windows (Data Client) and UNIX (Data Server) components. Downloading just one format will require transferring some files from the operating system that was the target of the download to the other operating system. Downloading both formats will simplify the process, but at the cost of downloading the product twice. If only one format is to be downloaded, the Windows Self-Extracting EXE is the simpler method, as only two files need to be transferred from the Windows machine to the UNIX machine, as opposed to 21 files for transfer from UNIX to Windows.

Installing Relativity Data Client from Windows Self-Extracting EXE

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 85).

Note If the Relativity Data Client software was obtained via Electronic Software Delivery using the Windows Self-Extracting EXE format, refer to [Installation Options for the Relativity Data Client](#) (on page 69), to facilitate installation of the Data Client on end users' machines.

1. Start Windows.
2. Click **Start**, and then click **Run**. In the Run dialog box, click the **Browse** button.
3. In the Browse dialog box, navigate to the directory containing the installation components and open the **DClient\046** directory.
4. Click on the file, **Setup**, and then click **Open**.
5. In the Run dialog box, click **OK**.
6. Follow the instructions presented on the installation dialog boxes.
7. When the Installation Type dialog box opens, select the **Database Administrator** option in order to install the Relativity Server Administrator utility program.

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

8. When the Define Server dialog box opens, in the Server's Network Name box, enter the network name of the UNIX server on which the Relativity Data Server was installed. The value in the Server Port box should match the service port number for the UNIX server on which the Data Server was installed. The default is 1583.
9. Continue to follow the instructions until you have completed the installation process.
10. When the Setup Complete dialog box opens, select the check box to view the ReadMe files or click **Finish** to close the dialog box.

Installing Relativity Data Client from UNIX GUNZIP TAR

The Relativity Data Client is a Windows program and, therefore, must be installed on that operating system. If the UNIX GUNZIP TAR format was downloaded to a UNIX machine, the contents of the **DClient\046** directory must be transferred to a Windows machine in order to perform the installation.

Note If the Relativity Data Client software was obtained via Electronic Software Delivery using the UNIX GUNZIP TAR format, refer to [Installation Options for the Relativity Data Client](#) (on page 69), to facilitate installation of the Data Client on end users' machines.

Another alternative is to download the Windows Self-Extracting EXE to the Windows machine from the Liant Electronic Delivery Download page on the Liant website (<http://www.liant.com/ElectronicDelivery>), create the installation

components, and run the installation procedure as described in [Installing Relativity Data Client from Windows Self-Extracting EXE](#) (on page 57). If you do not wish to download the Windows Self-Extracting EXE, use the following procedures:

1. On Windows, create a directory named **DClient**, in which to place the Relativity Data Client installation components.
2. Open an MS-DOS Prompt window by clicking **Start** on the task bar, pointing to **Programs**, and then clicking **MS-DOS Prompt**.
3. Change to the directory created in Step 1.
4. Connect to the UNIX server:

```
ftp UnixServerName
```

where *UnixServerName* is the network name of your UNIX server.

5. Change the directory to the installation components directory:

```
cd InstallationComponentsDirectory
```

where *InstallationComponentsDirectory* is the directory where the installation components were placed.

6. Change the directory to the **DClient\046** directory.

```
cd dclient\046
```

7. Specify a binary transfer:

```
binary
```

8. Download the installation files for the Data Client:

```
get _inst16.ex_  
get _inst32i.ex_  
get _isd1.exe  
get _setup.dll  
get _setup.lib  
get _setup32.lib  
get client.htm  
get defects.htm  
get disk1.id  
get disk2.id  
get disk3.id  
get docs.htm  
get readme.htm  
get reldbms.1  
get reldbms.2  
get reldbms.3  
get setup.exe  
get setup.ini  
get setup.ins  
get setup.pkg  
get whatsnew.htm
```

9. Disconnect from the UNIX server:

```
bye
```

10. Close the MS-DOS Prompt window with the following command:

```
exit
```

11. Follow the instructions in the [Installing Relativity Data Client from Windows Self-Extracting EXE](#) (on page 57) section.

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](#) (on page 60)
- [Selecting a UNIX Server](#) (on page 61)
- [Using the Relativity Server Administrator to Configure a Relativity Data Server Data Source on the UNIX Server](#) (on page 62)
- [Configuring a Relativity Data Client Data Source on the Windows Client](#) (on page 65)

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 UNIX server (see the following section).
2. Use the Relativity Server Administrator to configure a Data Server data source on the UNIX server and select a catalog to be associated with the Data Server data source (see page 41).

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

Selecting a UNIX Server

To select a UNIX server:

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

The server listed here is defined in Step 8 during the installation of the Relativity Data Client on the Windows client workstation (see page 54).



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 UNIX Server

To configure a Relativity Data Server data source on the UNIX 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 UNIX 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.

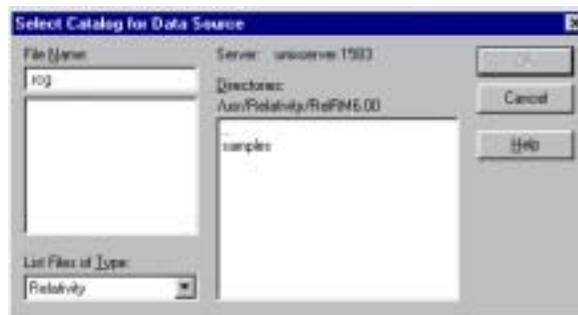
A valid data source name must have a length within the range of 1 through 32 characters. The characters [] { } () , ; ? * = ! @ \ must not appear in a data source name. The data source name must also begin with a letter.

Tip It is helpful to use the same name for the Data Client (see page 65) and Data Server data sources that will be associated with one another.

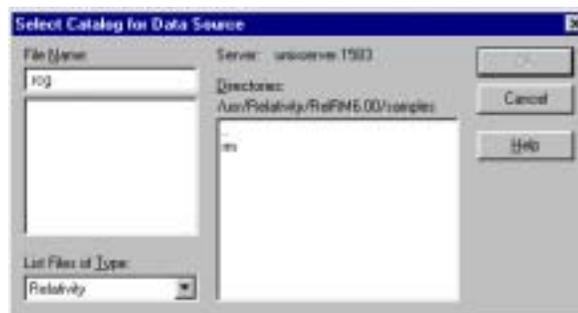
- Optionally, in the Description box, type a description of the data source. For example, type **Relativity C/S for UNIX Data Source**.



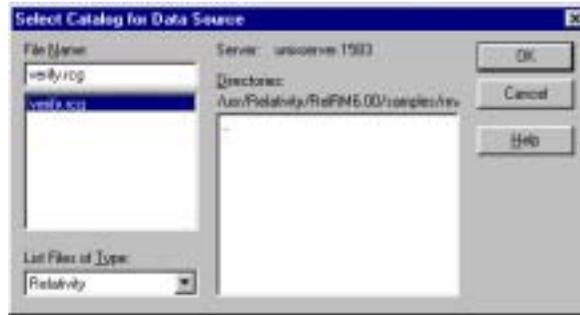
- In the Catalog area, click **Select Catalog** to open the Select Catalog for Data Source dialog box.
- In the Directories list, double-click the **samples** folder.



- Next, double-click either the **rm** or **mf** folder and then double-click the **verify** folder.



7. Select **verify.rcg** in the File Name list.

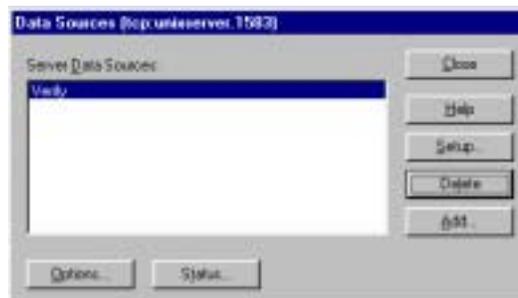


8. Click **OK**.

The Select Catalog for Data Source dialog box closes and the pathname of the selected catalog appears in the Relativity setup dialog box.



9. Click **OK** to exit the Relativity setup dialog box.
10. 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.



11. Click **Close** to exit the Data Sources dialog box.

12. 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 UNIX 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 UNIX server machine, see [Configuring Relativity Data Server Data Sources from Catalog Developer Installation Scripts](#) (on page 73).

Configuring a Relativity Data Client Data Source on the Windows Client

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, 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.

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

To configure a Relativity Data Client data source on the Windows client:

1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. From the Control Panel, on Windows 98, double-click **ODBC Data Sources (32bit)**; on Windows NT, double-click **ODBC**; on Windows 2000, Windows XP, or Windows Server 2003, double-click **Administrative Tools** and then click **Data Sources (ODBC)**.

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



4. 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**).



5. In the ODBC Relativity C/S Setup dialog box, click the UNIX server from the Server Name list. The Server DSN list box containing Data Server data sources for the selected UNIX 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 41).



6. 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.



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

8. 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.

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:

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

A message box will appear requesting confirmation of the uninstall.

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

Installation Options for the Relativity Data Client

The standard type of installation for the Relativity Data Client on an end user's Windows workstation is from CD-ROM. In this type of installation, which is described in [Installing the Relativity Data Client](#) (on page 86), no preparatory procedures are required on the part of the System Administrator.

If the Relativity Data Server for UNIX software was downloaded via Electronic Software Delivery using either the Windows Self-Extracting EXE or the UNIX GUNZIP TAR format, one straightforward method of installing the Data Client on end-user machines is to use a CD-ROM Burner to create a CD for installation. Then, the procedures, described in [Chapter 3: Installation and Verification of Relativity Data Client for End Users](#) (on page 85), may be used directly. If this method is chosen, merely place the **DClient\046** directory on the root directory of the CD.

Optionally, the Data Client software may be installed on a Windows client by two other methods: using a network (if a Windows server is available) or diskettes. This section describes each of these installation procedures and the preparatory tasks that

must be performed by the System Administrator before end-user installation can occur.

Preparing Network Installation

For those end-user sites where installation from CD-ROM is unavailable, the Relativity Data Client installation can be placed on a Windows server (if a Windows server is available) by the System Administrator. The Windows client workstations can then perform the installation across the network as described in [Network Installation](#) (on page 87).

Note To facilitate network installation, the Data Client installation procedure can be automated. See [Automated Installation of the Relativity Data Client from a Network](#) (on page 70) and [Creating a Windows Shortcut](#) (on page 72).

To install the Relativity Data Client on a Windows server:

1. Create a folder on the Windows server in a location where the Windows client workstations can access it. This can be in a folder that is already shared, or it may be a folder that can be shared after creation.
2. Share the folder by doing the following:
 - a. In Windows Explorer, right-click the folder you want to share. A shortcut menu appears.
 - b. Click **Sharing**. A Properties dialog box opens for the selected folder.
 - c. If necessary, select the **Sharing** tab, and then click **Shared As**. (The defaults for the fields are usually sufficient. If not, modify them as necessary.)
 - d. In the **Share Name** text box, type the name of the shared folder for use with the Windows client workstation installations. See Step 2 in [Network Installation](#) (on page 87).
 - e. Click **OK** to apply the changes you have made and close the dialog box.
3. Copy the contents of the **DClient\046** folder from the Relativity Data Server's installation CD into the shared folder created in Step 2 of these procedures.

Automated Installation of the Relativity Data Client from a Network

The System Administrator can automate the installation program for the Relativity Data Client, which allows the installation of the Data Client to be incorporated with the installation of your product. This is useful for network installations. To automate the installation, use a set of options that predefine answers to the installation prompts. The predefined answers are supplied as arguments on the command line to the **setup** command. The installation can also be configured not to prompt for questions at all.

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

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

- **-_AUTO=Y.** This option specifies automatic installation without prompting. The default is to prompt the user during installation.
- **-_DELETE=Y.** This option specifies that any previous Relational DataBridge or Relativity Data Clients that are found on the machine should be deleted. The default is to leave the previous Data Clients.
- **-_DRIVER=driver name.** This option specifies the driver name with which the Relativity Data Client is to be installed. This is the name that will appear in the ODBC Administrator dialog box when creating new data sources. The default is Relativity Client. This option is useful when several different versions of the Relativity Data Client need to be installed at the same time. When installing multiple versions of Relativity, be sure to install them in separate directories.
- **-_FOLDER=folder.** This option specifies *folder* as the folder for icons. The default is Relativity.
- **-_MFFH=Micro Focus file handler DLL.** This option specifies the fully qualified filename of the *Micro Focus file handler DLL (mffh.dll)* that will be used to access Micro Focus COBOL files. Specify this option when the MF file manager support is being installed. The default is to use the Micro Focus file handler that is installed on this machine. If a Micro Focus file handler is not detected on this machine, a Micro Focus NetExpress version 3.0 file handler will be installed in the Relativity installation directory and used instead.
- **-_MOVE=Y.** This option specifies that any previous Relational DataBridge and Relativity client data sources that are found on the machine should be moved to the Relativity driver. The default is to leave the previous data sources.
- **-_ORG=organization.** This option specifies *organization* as the name of the user’s organization. The default is blank.
- **-_SERVER=server.** This option specifies *server* as the default UNIX server name for the Data Client. The default is that no default UNIX server will be configured (see Step 8 on page 55).

The format of the *server* argument is *NetworkName.PortNumber*, where *NetworkName* is the network name of the UNIX server on which the Relativity Data Server is installed. *PortNumber* is the TCP/IP service port number to which the Relativity Data Server is configured. This argument corresponds to the PORT and DEFAULT_PORT configuration parameters for the Relativity Data Server for UNIX installation. See the discussion of the optional [PARAMETERS] topic in the section, [Customize the relativity.ini File](#) (on page 45).

- **-SMS.** This option, which allows the calling installation program to determine when the Relativity Data Client installation program completes, must be entered as the last option on the command line.
- **-_TARGETDIR=directory.** This option specifies *directory* as the installation directory. The default is C:\Program Files\Relativity.
- **-_TYPE=DBA.** This option specifies that the Relativity Server Administrator is to be installed in the Windows workstation’s Control Panel. The default is not to install the Relativity Server Administrator.
- **-_USERNAME=user name.** This option specifies *user name* as the name of the user installing the Data Client. The default is blank.

Note The default values for most of these options are generally sufficient. However, the **-_SERVER** option is particularly useful because it can configure the Data Client to the desired UNIX server for Data Client data source creation.

Creating a Windows Shortcut

It is also possible to create a shortcut in a shared folder on the Windows server to encapsulate the automated installation options and thus quickly start the installation program. This shortcut would be visible to Windows client workstations that have access to the shared folder.

To create a Windows shortcut:

1. Install the **DClient\046** folder, as described in the network procedures to install the Relativity Data Client on the Windows server. See [Preparing Network Installation](#) (on page 70).
2. In Windows Explorer, click the name of the folder you created in Step 1 of those same instructions.
3. On the File menu, point to **New**, and then click **Shortcut**. The Create Shortcut wizard opens.
4. In the Command line box, enter the command line for the **setup** command.
 - Be sure to use network names so that the Windows workstations will not require that drive letters be mapped to the Windows server. For example, type `\\WindowsServerName\ShareName\setup`. See Step 2 under installation of the Relativity Data Client in the topic [Preparing Network Installation](#) (on page 70).
 - Following the **setup** command, specify the options to automate installation, as described in [Automated Installation of the Relativity Data Client from a Network](#) (on page 70).
5. Click **Next**. The Select a Title for the Program dialog box opens.
6. Enter a descriptive name. For example, type **Install**.
7. Click **Finish** to close the dialog box.

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

Preparing Diskette Installation

For those end-user sites where neither CD-ROM nor network installation is available (for example, when there are security concerns on the Windows server), the System Administrator must place the Relativity Data Client installation on diskettes.

To create the diskettes that will be used to install the Relativity Data Client at end-user sites:

1. On a Windows machine with a CD-ROM drive, format two floppies and label them diskette 1 and diskette 2.
2. Insert the Relativity Data Server for UNIX installation CD in the CD-ROM drive.
3. In Windows Explorer, open the CD-ROM drive, and then open the folder, **DClient\046**.
4. Copy all files from the **DClient\046** folder *except* **DISK2.ID** and **RELDBMS.2** to diskette 1.

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

5. Copy **DISK2.ID** and **RELDBMS.2** to diskette 2.

Once the diskettes have been made, they can be used to install the Data Client on the Windows client workstations, as described in [Diskette Installation](#) (on page 87).

Configuring Relativity Data Server Data Sources from Catalog Developer Installation Scripts

Liant provides an alternative to having your end users use either the Relativity Server Administrator utility, as described in the section, [Starting the Relativity Server Administrator](#) (on page 60), or predefined data sources installed on the Data Server, as discussed in the section, [Installing Predefined Data Sources](#) (on page 44), to configure Relativity Data Server data sources on the UNIX server. 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 [Installing the Relativity Data Client and Server Administrator](#) (on page 54).

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](#) (on page 80) 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 character 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](#) (on page 76) 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 not successfully connected.

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 UnixServer, this argument is **UnixServer.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.

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](#) (on page 76) 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 (on page 85) 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 UNIX server.	88
Remove the Relativity Data Client software component.	34

System Requirements

Installation of the Relativity Data Client software on a Windows client workstation requires the following minimum software and hardware.

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

Installing the Relativity Data Client

Note If you have a version of the Relativity Data Client that supports the uninstall process, you should remove it prior to installing a newer version. See [Removing the Relativity Data Client](#) (on page 91).

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

- [CD-ROM Installation](#) (see the following topic)
- [Network Installation](#) (on page 87)
- [Diskette Installation](#) (on page 87)

To verify the Relativity Data Client installation, see [Verifying Client/Server Communications](#) (on page 88).

CD-ROM Installation

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

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

`d:autorun`

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

4. From the list of installation options, click **View the Installation Documentation** to read or install the documentation for this product, which is provided on the CD-ROM.
5. Click **Data Client Installation** for Windows from the list of installation options. A second list of options is presented:
 - Click the **View the README file** option to review important, last-minute information about Relativity.
 - Click the **Install the Relativity Data Client** option to begin the actual installation process.
6. Follow the instructions presented by the installation program.
7. When the Installation Type dialog box opens, select **End User** in order to install the Relativity Data Client.
8. When the Define Server dialog box opens, in the Server's Network Name box, enter the network name of the UNIX server on which the Relativity Data Server was installed. The value in the Service Port box should match the service port number for the UNIX server on which the Data Server was installed. The default is 1583.

9. Continue to follow the instructions until you have completed the installation process.
10. When the Setup Complete dialog box opens, select the check box to view the ReadMe files or click **Finish** to close the dialog box.

Network Installation

For those end-user sites where installation from CD-ROM is unavailable, the Relativity Data Client can be installed on a Windows server, as described in [Preparing Network Installation](#) (on page 70). The end users' Windows client workstations can then perform the installation across the network.

To install the Relativity Data Client across the network:

1. Click **Start**, and then click **Run**.
2. In the Run dialog box, in Open, type

```
\\WindowsServerName\ShareName\setup
```

where:

- *WindowsServerName* is the name of the Windows server on which the Data Client was installed, as described in Step 2 of [Preparing Network Installation](#) (on page 70), and
 - *ShareName* is the name of the shared folder into which the client installation was copied in Step 3 of those same instructions.
3. Click **OK**.
 4. Follow the instructions provided by the installation procedure.

Diskette Installation

Note The diskettes were prepared previously by the System Administrator, as described in [Preparing Diskette Installation](#) (on page 73).

To install the Relativity Data Client from diskettes on an end user's Windows client workstation:

1. Insert diskette 1 into a diskette drive.
2. Click **Start**, and then click **Run**.
3. In the Run dialog box, in Open, type

```
d:\setup
```

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

4. Follow the instructions provided by the installation procedure.

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.

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

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, 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.

To configure a Relativity Data Client data source on the Windows client:

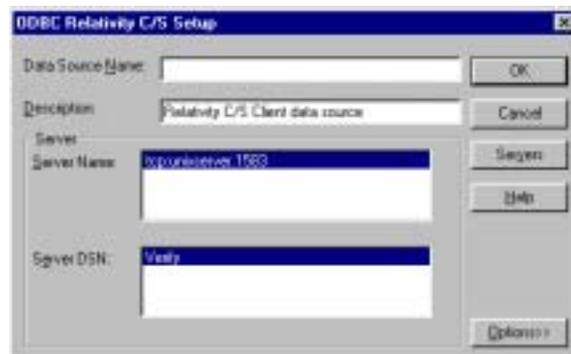
1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. From the Control Panel, on Windows 98, double-click **ODBC Data Sources (32bit)**; on Windows NT, double-click **ODBC**; on Windows 2000, Windows XP, or Windows Server 2003, double-click **Administrative Tools** and then click **Data Sources (ODBC)**.
3. In the ODBC Data Source Administrator dialog box, select the **User DSN** tab and click **Add**.



- In the Create New Data Source dialog box, select a driver for which you want to configure a Data Client data source by double-clicking the driver name (**Relativity Client**).



- In the ODBC Relativity C/S Setup dialog box, click the UNIX 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.



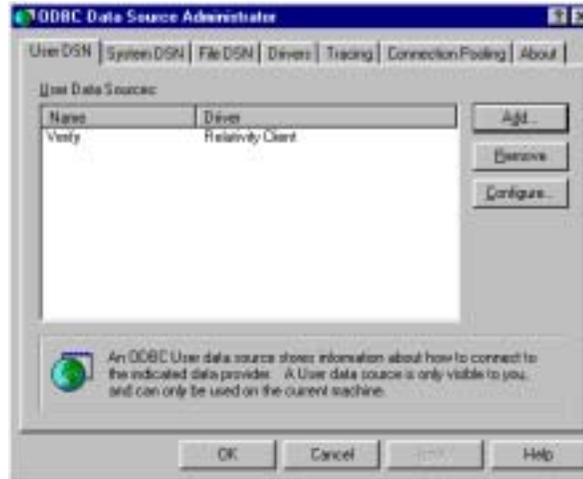
- In the Data Source Name box, type **Verify** as the name of the Data Client data source with which you want to associate a Data Server data source from the Server DSN list.
Tip It is helpful to use the same name for the Data Client and Data Server data sources that will be associated with one another.



7. Optionally, in the Description box, type a description of the Data Client data source.
8. 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.

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:

1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click **Add/Remove Programs**.
3. In the Add/Remove Programs Properties dialog box, click the **Install/Uninstall** tab.
4. In the list box, select **Relativity vX.Y Data Client** where *X.Y* indicates the version number of the Data Client.
5. Click the **Add/Remove** button.

A message box will appear requesting confirmation of the uninstall.

6. Click **OK** to continue.
7. Check for any errors in the Uninstall Relativity window when the uninstall is complete. It may be necessary to select this window from the task bar first in order to bring it to the front of other windows. The operations involved in the uninstall process will be recorded in the **uninsRel.log** file located in the temporary folder on the Windows client workstation.

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**). The **recover1** utility is a standard RM/COBOL program that is configured for use with a terminfo terminal database.

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.

Using the Recovery Utility Program

The **recover1** utility resides in the directory with the Relativity Data Server. Be sure to make your current working directory the directory in which the server was installed (that is, where the RUNACTIVE script is located). In this directory, you will find a directory with the name **RelRMx.yz**, where **x.yz** indicates the version of Relativity installed. Change this directory to be your current working directory and invoke the **recover1** command, as described in [Recovery Command](#) (on page 94).

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.

Recovery Command

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

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

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

drop-file is the name of the file where **recover1** places any unrecoverable records found in the indexed file (see page 96). 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 94). Options are specified with letters that must be preceded with a hyphen (-) or a slash (/). Option letters may be specified in upper or lower case. Certain option letters allow an optional pathname as part of the option format. The presence or absence of the pathname is determined by whether or not the next non-whitespace character following the option letter is a hyphen or slash, whichever one was used preceding the option letter.

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

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

Recovery Command Options

Note These options may also be placed into the registry (on Windows) or the resource files (on UNIX). In the Windows registry, the Command Line Options property provides command line options for the Indexed File Recovery utility when “Recovery” is selected on the Select File tab of the RM/COBOL Properties dialog box. In UNIX resource files, the Options keyword provides command line options

for the Indexed File Recovery utility in the global resource file, `/etc/default/recover1rc`, and the local resource file, `~/recover1rc`. For more information, see Chapter 2: *Installation and System Considerations for UNIX* and Chapter 3: *Installation and System Considerations for Windows*, in the *RM/COBOL User's Guide*.

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

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

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

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

WARNING A template file with the wrong block size can cause the loss of a large percentage of the recoverable records in your file. This can happen because of changes in the method used by the RM/COBOL 7.5 runtime system for calculating the block size. See the warning on page 94 for additional information.

- **-L [*log-file*] Option.** The `-L` option is used to write information about errors encountered while recovering the file to a log file (*log-file*). Only the first 100 errors will be logged. In addition to errors, a number of informational lines about the indexed file and its recovery are written to the log file, including information about sort memory (see the `-M` option regarding sort memory). If *log-file* specifies an environment variable name, the environment variable value will be resolved before opening the log file; this allows the use of the name `PRINTER` to send the log information to the print device. If *log-file* is omitted in the `-L` option, the default value of *log-file* is `PRINTER`. If the `-L` option is not specified, the default is not to write a log file.

- **-M [MB-of-memory] Option.** The -M option is used to specify the number of megabytes of memory (*MB-of-memory*) to allocate to the sort algorithm used in phase 4, build node blocks (see page 97). *MB-of-memory* is a number in the range 0 to 500. Allocating more memory generally results in faster execution of **recover1** and causes fewer node blocks to be built. If this option is not specified, a suitable number will be computed. When a log file is written (see the -L option), a line is written into the log file to show the maximum effective sort-memory size.

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

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

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

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

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

Recovery Process Description

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

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

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

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

Note 1 After the Integrity Scan phase, if the Estimated Recoverable records value is zero or very low, and the number of corrupt data blocks is very close to the total number of data blocks found, the number of keys that allow duplicates may be incorrect, either because the KIB is corrupt or the user provided incorrect key information to **recover1**.

Note 2 After the Integrity Scan phase, if most of the blocks are invalid, the Disk Block Size or the Disk Block Increment may have been incorrectly specified or the KIB may be corrupt.

Note 3 During the Repair Blocks phase, a count of blocks that could be read but not written may be displayed. This count may indicate the presence of a hardware problem with your disk.

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

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

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

Recovery Support Module Version Errors

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

```
RM/COBOL:  module-name version mismatch, expected
           9.0n.nn, found n.nn.nn.
```

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

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

Example

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

```
recover1 master.inx dropout1
```

Figure 1: File Recovery Verification on page 99 shows information about the file, **master.inx**.

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

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

WARNING Because of several changes in the RM/COBOL 7.5 runtime system, it is possible that an indexed file created by performing an OPEN OUTPUT in a COBOL program using the RM/COBOL 7.5 runtime system may have a different block size than a file you are attempting to recover. This may happen even though you specify the same file control entry and file description entry for the template file as when you initially created the file with an earlier version of RM/COBOL.

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

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

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

Figure 1: File Recovery Verification

```

                                Indexed File Recovery Utility
                                Recover1 Version 9.0n.00

Index File: master.inx

This file has not been marked as needing recovery!

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

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

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

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

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

Figure 2: Recover1 Summary

```
Indexed File Recovery Utility
Recover1 Version 9.0n.00

Index File: master.inx
Drop File: dropout1

This file has not been marked as needing recovery!

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

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

Average data size: 14, Average record length: 80

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

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

Figure 3: Recover1 Statistics

```
Indexed File Recovery Utility
Recover1 Version 9.0n.00

Index File: master.inx
Drop File: dropout1

This file has not been marked as needing recovery!

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

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

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

Figure 4: Recover1 Finished Successfully

```

Indexed File Recovery Utility
Recover1 Version 9.0n.00

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

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

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

Recovery successful.

```

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

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

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

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

Figure 5: Entering Key Information

```

Indexed File Recovery Utility
Recover1 Version 9.0n.00

Index File: master.inx

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

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

```

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

Figure 6: Entering KIB Information

```
Indexed File Recovery Utility
Recover1 Version 9.0n.00

Index File: master.inx

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

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

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

After the key and KIB information has been successfully entered, the recovery process proceeds the same as before, as illustrated in Figure 1: File Recovery Verification on page 99. 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.

Appendix B: RelServerAdmin Utility

The Relativity Server Administrator utility program, **relserveradmin**, supports many administrative functions on the Relativity Data Server and can be used to maintain data sources on a Relativity Data Server. This utility can also be used to store the server definitions (server network names and service port numbers) of Relativity Data Servers on the local UNIX or Windows client machines.

The following sections describe the command-line interface for the utility, how to use the commands and associated parameters for this utility, and the additional [RM/COBOL file manager configuration parameters](#) (on page 121) and [Micro Focus COBOL file manager configuration parameters](#) (on page 121) you may need.

Command-Line Interface

The RelServerAdmin utility program that is supplied with Relativity Data Server for UNIX employs a command-line interface. Technically, each element typed on the command line is a parameter; however, the following terminology is used in order to distinguish among the various types of parameters:

- *programname* refers to the name of the utility program; for example, relserveradmin.

Note On the command line, the utility program name must be entered in lowercase characters. However, this document uses a mixed case convention when referring to the abbreviated name of the utility. For example, the name of the Relativity Server Administrator utility is shortened to RelServerAdmin utility.

- *command* refers to the administrative function to be performed by the RelServerAdmin utility; for example, --add-data-source.
- *parameter* refers to additional information associated with a command; for example, [--server-name *ServerName*].

The RelServerAdmin utility program is invoked by typing its program name on the command line, followed by a command or one or more parameters. Each command and parameter supported by the utility program has two forms: a verbose form,

which is introduced by two dashes, and a terse form, which is introduced by a single dash. Both forms may be used on the same command line.

Most, but not all, parameters have values that are associated with them. The meanings of these values are discussed below:

- *ServerName* identifies a Relativity Data Server on the network. *ServerName* is composed of two components: *NetworkName* and *ServicePort*.
 - *NetworkName* is the name of the UNIX server on the network. A *NetworkName* is composed of alphanumeric characters.
 - *ServicePort* is the TCP/IP service port that a Relativity Data Server running on the server *NetworkName* is configured to use. A *ServicePort* is an unsigned decimal number. The default for *ServicePort* is 1583.

The format for *ServerName* is *NetworkName.ServicePort*. When *ServicePort* is omitted, the delimiting period should be omitted as well.

- *FileName* specifies a filename, in the format for the operating system on which the Relativity Data Server is running.
- *Text* indicates one or more words of text. If *Text* contains spaces, delimit *Text* with quotation marks. See the individual parameters under each command for the meaning of the *Text* value.
- *UnsignedInteger* specifies a zero or positive decimal number.
- *SignedInteger* specifies a decimal number, which may contain a leading dash to indicate a negative number.

Conventions

In this appendix, the following conventions for using command-line parameters are observed:

1. Parameters or values that are optional are enclosed in square brackets, “[]”.
2. Parameters or values that are required, and where only one may appear, are enclosed in braces, { }, with the individual items in the list separated by vertical bars, “|”.
3. Each parameter is described using its verbose form, with the terse form following in parentheses. Many, but not all, of the terse forms are merely the first letter of each word of the verbose form.

Displaying Help

If you supply the parameter `--help` (`-h`) in every command, the utility requests and displays additional information and documentation on the command and its parameters. If you supply the `--help` parameter without a command, only a list of the supported commands is displayed.

The syntax of this command is as follows:

```
programname [command] -help
```

Using the RelServerAdmin Utility Commands and Parameters

Each administrative function, or *command*, performed by the RelServerAdmin utility is addressed separately, in order to document clearly the additional parameters that the command supports.

The following table lists the commands supported by the RelServerAdmin utility.

Verbose	Terse	Description
--add-data-source	-ads	Adds a new server data source.
--add-server	-as	Adds a data server definition.
--list-character-sets	-lcs	Lists all of the character sets that a data server supports.
--list-data-sources	-lds	Lists all existing server data sources.
--list-servers	-ls	Lists all data server definitions.
--modify-data-source	-mds	Modifies an existing server data source.
--remove-data-source	-rds	Removes an existing server data source.
--remove-server	-rs	Removes a data server definition.
--show-data-source	-sds	Shows an existing server data source definition.
--show-server-status	-sss	Shows a data server's current status and lists all of its current connections.
--shutdown-server	-ss	Shuts down a data server.
--terminate-server-connection	-tsc	Terminates a current connection on a data server.

Adding a Data Source

A data source contains information necessary for the Relativity Data Server to open a data source requested by a Relativity Data Client. The `--add-data-source` command creates a new data source on the Relativity Data Server.

To add a new data source on the Relativity Data Server, use the following command:

```
relserveradmin --add-data-source Text
  [--server-name ServerName]
  --catalog FileName
  [--type {RM|MF}]
  [--data-source-desc Text]
  [--create]
  [--query-plan {Y|N|C}]
  [--query-plan-file FileName]
  [--character-set SignedInteger]
  [--pool UnsignedInteger]
  [--file-process-count UnsignedInteger]
  [--cat-format {IDX4|IDX8|DEFAULT|BTRIEVE|
  CISAM|LEVELII|UnsignedInteger}]
  [--new-table-format {IDX4|IDX8|DEFAULT|BTRIEVE|
  CISAM|LEVELII|UnsignedInteger}]
  [--data-compress UnsignedInteger]
  [--sparse-byte UnsignedInteger]
  [--trailing-spaces {Y|N}]
  [--leading-chars {Y|N}]
  [--compress-duplicate-keys {Y|N}]
```

where:

- The value of the `--add-data-source` (`-ads`) command specifies the name of the new data source.
- The value of the `--server-name` (`-s`) parameter indicates the Relativity Data Server on which to add the data source.
- The value of the `--catalog` (`-c`) parameter specifies the filename of the data source's catalog.
- The value of the `--type` (`-t`) parameter specifies the type of files to be accessed by the data source. The value **RM** indicates that RM/COBOL files are to be accessed. The value of **MF** indicates that Micro Focus COBOL files are to be accessed. The value of the type parameter must match the type of files that the Relativity Data Server can access.
- The value of the `--data-source-desc` (`-desc`) parameter specifies the description to give to the new data source.
- The presence of the `--create` (`-cr`) parameter specifies that the new data source's catalog file should be created.
- The value of the `--query-plan` (`-qp`) parameter specifies whether the new data source should generate query plans. The value of **Y** will cause query plans always to be generated. The value of **N** will cause query plans never to be generated. The value of **C** will allow the generation of query plans to be controlled by the query plan option of the client data source. For more information, see the `RelClientAdmin` utility topic in the Relativity UNIX Data Client Installation Guide, or the ODBC Relativity C/S Setup dialog box in the Adding, Modifying, and Deleting a Data Source topic in the Data Client online

help file. Under the Options button, the Generate Query Plan option controls this feature.

- The value of the `--query-plan-file (-qpf)` parameter specifies the filename to receive generated query plans. This parameter is required only if the value of the `--query-plan` parameter is **Y** or **C**.
- The value of the `--character-set (-cs)` parameter specifies the number of the character set to use with the new data source. If this parameter is absent, the default character set will be used.
- The value of the `--pool (-p)` parameter is for use only with RM/COBOL files. It specifies the number of 1024 byte pages that the RM/COBOL file manager should allocate in its buffer pool. This parameter can have the value from 16 to 649. The default is **256**. For more information, see [Buffer Pool](#) (on page 121).
- The value of the `--file-process-count (-fpc)` parameter is for use only with RM/COBOL files. It specifies the maximum number of processes—including RM/COBOL run units—that can have a file opened at the same time. This parameter can have the value from 8 to 4096. The default is **1024**. For more information, see [File Process Count](#) (on page 121).
- The value of the `--cat-format (-cf)` parameter is for use only with Micro Focus COBOL files. It specifies the type of Micro Focus COBOL file that should be used when creating a new catalog file. The valid values are **DEFAULT**, **BTRIEVE**, **CISAM**, **LEVELII**, **IDX4**, and **IDX8**. For more information, see [Catalog Format](#) (on page 121).
- The value of the `--new-table-format (-ntf)` parameter is for use only with Micro Focus COBOL files. It specifies the type of Micro Focus COBOL file that should be used when creating a new file because of a CREATE TABLE SQL statement. The valid values are **DEFAULT**, **BTRIEVE**, **CISAM**, **LEVELII**, **IDX4**, and **IDX8**. For more information, see [New File Format](#) (on page 121).
- The value of the `--data-compress (-dc)` parameter is for use only with Micro Focus COBOL files. It specifies the decimal value of the data compression algorithm to be configured for a new data file created as the result of a CREATE TABLE SQL statement. For more information, see [Data Compression](#) (on page 122).
- The value of the `--sparse-byte (-sb)` parameter is for use only with Micro Focus COBOL files. It specifies the decimal value of the sparse byte to be configured for key compression in a new data file created as the result of a CREATE TABLE SQL statement. See [Key Compression - Sparse Byte](#) (on page 122).
- The value of the `--trailing-spaces (-ts)` parameter is for use only with Micro Focus COBOL files. It specifies whether trailing spaces are to be compressed in keys in a new data file created as the result of a CREATE TABLE SQL statement. For more information, see [Key Compression - Trailing Spaces](#) (on page 122).
- The value of the `--leading-chars (-lc)` parameter is for use only with Micro Focus COBOL files. It specifies whether leading characters are to be compressed in keys when creating a new file because of a CREATE TABLE SQL statement. For more information, see [Key Compression - Leading Characters](#) (on page 122).
- The value of the `--compress-duplicate-keys (-cdk)` parameter is for use only with Micro Focus COBOL files. It specifies whether duplicate keys are to be compressed in a new data file created as the result of a CREATE TABLE SQL

statement. For more information, see [Key Compression - Duplicates](#) (on page 122).

Example

```
$ relserveradmin --add-data-source Verify
  --server-name aix43
  --catalog samples/verify/rm/verify.rcg

Data source 'Verify' added on aix43.
```

Adding a Server Definition

A server definition is merely a *ServerName* that has been recorded using this command. The Relativity Server Administrator utility can maintain a set of server definitions for the current user.

Note The set of server definitions is for a future enhancement of the Relativity Server Administrator utility. This set of definitions and this command are of limited use at this time. However, this command's `--default` parameter is very helpful, particularly if you are dealing with only one Relativity Data Server. Setting a *ServerName* as the default will eliminate the need to supply the `--server-name` parameter in other commands.

To add a new server definition, use the following command:

```
$ relserveradmin --add-server ServerName [-default]
```

where:

- The value of the `--add-server` (`-as`) command, *ServerName*, is the network name and service port of the Relativity Data Server to add to the list of server definitions.
- The presence of the `--default` (`-d`) parameter indicates that *ServerName* is to be the default for the `--server-name` parameter in other commands.

Example

```
relserveradmin --add-server aix43.1583 -default

Created Relativity data server definition for aix43.1583.
```

Listing Character Sets

A character set is an interpretation of the bytes within a data file that represent characters, typically the items with a picture clause of X. Each data file has a character set associated with it, and this information is stored as a fixed attribute within a Relativity database. Relativity is capable of translating these characters from the character set of the data file to the character set of the ODBC application. This command supplies a list of the character sets for which the data server can supply translation.

To display a list of the character sets that a Relativity Data Server supports, use the following command:

```
relserveradmin --list-character-sets [ServerName]  
[--server-name ServerName]
```

where:

- The value of the --list-character-sets (-lcs) command indicates the Relativity Data Server for which to list character sets.
- The value of the --server-name (-s) parameter may also be used to indicate the Relativity Data Server for which to list character sets.

Example

The number to the left of each character set name is the identifier of the character set. Use this value in the --character-set parameter of the --add-data-source command and the --modify-data-source command.

```
$ relserveradmin --list-character-sets aix43
```

```
Character sets on data server aix43.  
-28. Hebrew 7-bit Old Code  
-25. MF EBCDIC (UNIX)  
-24. MF EBCDIC (DOS)  
-23. RM EBCDIC  
-22. IBM-850  
-21. SCO Latin 1  
-20. STANDARD-2  
-16. ISO 8859-16  
-15. ISO 8859-15  
-14. ISO 8859-14  
-13. ISO 8859-13  
-11. ISO 8859-11  
-10. ISO 8859-10  
-9. ISO 8859-9  
-8. ISO 8859-8  
-7. ISO 8859-7  
-6. ISO 8859-6  
-5. ISO 8859-5  
-4. ISO 8859-4  
-3. ISO 8859-3  
-2. ISO 8859-2  
-1. ISO 8859-1  
37. EBCDIC US Canada  
.  
.  
.  
1250. Windows Latin 2
```

```
1251. Windows Cyrillic
1252. Windows Latin 1
1253. Windows Greek
1254. Windows Latin 5
1255. Windows Hebrew
1256. Windows Arabic
1257. Windows Baltic Rim
1258. Windows 1258
```

Note Those character sets that represent Windows codepages have a positive value the same as their codepage number. Negative numbers represents all other character sets.

Listing Data Sources

A data source name is an identifier that ODBC applications use to access a Relativity database. This list of data source names represents the data sources on the Relativity Data Server to which a Relativity Data Client data source may be associated.

To display a list of the data source names on a Relativity Data Server, use the following command:

```
relserveradmin --list-data-sources [ServerName]
[--server-name ServerName]
```

where:

- The value of the `--list-data-sources (-lds)` command indicates the Relativity Data Server for which to list data sources.
- The value of the `--server-name (-s)` parameter may also be used to indicate the Relativity Data Server for which the data sources are to be listed.

Example

```
$ relserveradmin --list-data-sources aix43

Data sources on data server aix43.
Shirt-3
Verify
```

Listing Server Definitions

A server definition is simply a *ServerName* that has been recorded using the `--add-server` command. The `RelServerAdmin` utility can maintain a set of server definitions for the current user.

Note The set of server definitions is for a future enhancement of the Relativity Server Administrator utility. This set of definitions and this command are of limited use at this time.

To display a list of the current set of server definitions defined on the UNIX client, use the following command:

```
relserveradmin --list-servers
```

Example

```
$ relserveradmin --list-servers

Relativity data servers defined on this client.
tcp:aix43.1583
tcp:aix43.1584
tcp:hp825.1584
tcp:sco5.1583
tcp:ncr3000.1583
tcp:sunx86.1583
tcp:uw711.1583
tcp:valhalla.1583
tcp:valhalla.1584
```

Modifying a Data Source

A data source contains information necessary for the Relativity Data Server to open a data source requested by a Relativity Data Client. This command alters an existing data source on the data server.

To modify a data source on a Relativity Data Server, use the following command. Note that parameter values that are not specified in the command retain their previous value in the data source.

```
relserveradmin --modify-data-source Text
  [--server-name ServerName]
  [--new-data-source-name Text]
  [--catalog FileName]
  [--type {RM|MF}]
  [--data-source-desc Text]
  [--create]
  [--query-plan {Y|N|C}]
  [--query-plan-file FileName]
  [--character-set SignedInteger]
  [-pool UnsignedInteger]
  [--file-process-count UnsignedInteger]
  [--cat-format {IDX4|IDX8|DEFAULT|BTRIEVE|
  CISAM|LEVELII|UnsignedInteger}]
  [--new-table-format {IDX4|IDX8|DEFAULT|BTRIEVE|
  CISAM|LEVELII|UnsignedInteger}]
  [--data-compress UnsignedInteger]
  [--sparse-byte UnsignedInteger]
  [--trailing-spaces {Y|N}]
  [--leading-chars {Y|N}]
  [--compress-duplicate-keys {Y|N}]
```

where:

- The value of the --modify-data-source (-mds) command specifies the current name of the data source.
- The value of the --server-name (-s) parameter indicates the Relativity Data Server on which to modify the data source.
- The value of the --new-data-source-name (-ndsn) parameter specifies the new name of the data source.
- The value of the --catalog (-c) parameter specifies the filename of the data source's catalog.
- The value of the --type (-t) parameter specifies the type of files to be accessed by the data source. The value of **RM** indicates that RM/COBOL files are to be accessed. The value of **MF** indicates that Micro Focus COBOL files are to be accessed. This parameter, if specified, must match the --type parameter originally used to create the data source.
- The value of the --data-source-desc (-desc) parameter specifies the description to give to the data source.
- The presence of the --create (-cr) parameter specifies that the data source's catalog file should be created.
- The value of the --query-plan (-qp) parameter specifies whether the data source should generate query plans. The value of **Y** will cause query plans always to be generated. The value of **N** will cause query plans never to be generated. The

value of **C** will allow the generation of query plans to be controlled by the query plan option of the client data source. For more information, see the RelClientAdmin utility topic in the Relativity UNIX Data Client Installation Guide, or the ODBC Relativity C/S Setup dialog box in the Adding, Modifying, and Deleting a Data Source topic in the Data Client online help file. Under the Options button, the Generate Query Plan option controls this feature.

- The value of the --query-plan-file (-qpf) parameter specifies the filename to receive generated query plans. This parameter is required only if the value of the --query-plan parameter is **Y** or **C**.
- The value of the --character-set (-cs) parameter specifies the number of the character set to use with the data source.
- The value of the --pool (-p) parameter is for use only with RM/COBOL files. It specifies the number of 1024 byte pages that the RM/COBOL file manager should allocate in its buffer pool. This parameter can have the value from 16 to 649. For more information, see [Buffer Pool](#) (on page 121).
- The value of the --file-process-count (-fpc) parameter is for use only with RM/COBOL files. It specifies the maximum number of processes, including RM/COBOL run units, which can have a file opened at the same time. This parameter can have a value from 8 to 4096. For more information, see [File Process Count](#) (on page 121).
- The value of the --cat-format (-cf) parameter is for use only with Micro Focus COBOL files. It specifies the type of Micro Focus COBOL file that should be used when creating a new catalog file. The valid values are **DEFAULT**, **BTRIEVE**, **CISAM**, **LEVELII**, **IDX4**, and **IDX8**. For more information, see [Catalog Format](#) (on page 121).
- The value of the --new-table-format (-ntf) parameter is for use only with Micro Focus COBOL files. It specifies the type of Micro Focus COBOL file that should be used when creating a new data file as a result of the CREATE TABLE SQL statement. The valid values are **DEFAULT**, **BTRIEVE**, **CISAM**, **LEVELII**, **IDX4**, and **IDX8**. For more information, see [New File Format](#) (on page 121).
- The value of the --data-compress (-dc) parameter is for use only with Micro Focus COBOL files. It specifies the decimal value of the data compression algorithm to be configured for a new data file created as the result of the CREATE TABLE SQL statement. For more information, see [Data Compression](#) (on page 122).
- The value of the --sparse-byte (-sb) parameter is for use only with Micro Focus COBOL files. It specifies the decimal value of the sparse byte to be configured for key compression in a new data file created as a result of the CREATE TABLE SQL statement. For more information, see [Key Compression - Sparse Byte](#) (on page 122).
- The value of the --trailing-spaces (-ts) parameter is for use only with Micro Focus COBOL files. It specifies whether trailing spaces are to be compressed in keys in a new data file created as a result of the CREATE TABLE SQL statement. For more information, see [Key Compression - Trailing Spaces](#) (on page 122).
- The value of the --leading-chars (-lc) parameter is for use only with Micro Focus COBOL files. It specifies whether leading characters are to be compressed in keys in a new data file created as a result of the CREATE TABLE SQL

statement. More information is available in [Key Compression - Leading Characters](#) (on page 122).

- The value of the `--compress-duplicate-keys (-cdk)` parameter is for use only with Micro Focus COBOL files. It specifies whether duplicate keys are to be compressed in a new data file created as a result of the CREATE TABLE SQL statement. For more information, see [Key Compression - Duplicates](#) (on page 122).

Example

```
$ relserveradmin --modify-data-source Verify
  --server-name aix43 --new-data-source-name "New Verify"

Data source 'Verify' modified on server aix43.
```

Removing a Data Source

To remove a data source on a Relativity Data Server, use the following command:

```
relserveradmin --remove-data-source [Text]
  [--server-name ServerName]
```

where:

- The value of the `--remove-data-source (-rds)` command specifies the name of the data source to remove.
- The value of the `--server-name (-s)` parameter indicates the Relativity Data Server from which to remove the data source.

Example

```
$ relserveradmin --remove-data-source "New Verify"
  --server-name aix43

Removed data source 'New Verify' from aix43.
```

Removing a Server Definition

A server definition is merely a *ServerName* that has been recorded using the `--add-server` command. The `RelServerAdmin` utility can maintain a set of server definitions for the current user.

Note The set of server definitions is for a future enhancement of the Relativity Server Administrator utility. This set of definitions and this command are of limited use at this time.

To remove a server definition, use the following command:

```
relserveradmin --remove-server ServerName
```

where:

- The value of the `--remove-server (-rs)` command, *ServerName*, is the network name and service port of the Relativity Data Server to remove from the list of server definitions.

Example

```
$ relserveradmin --remove-server aix43.1583
```

```
Relativity data server definition for aix43.1583 removed.
```

Showing a Data Source

A data source contains information necessary for the Relativity Data Server to open a data source requested by a Relativity Data Client. This command shows the current contents of the data source.

To display a data source on a Relativity Data Server, use the following command:

```
relserveradmin --show-data-source Text
               [--server-name ServerName] [-env]
```

where:

- The value of the --show-data-source (-sds) command specifies the name of the data source to show.
- The value of the --server-name (-s) parameter indicates the Relativity Data Server for which to show the data source.
- The presence of the --env (-e) parameter specifies that the information from the data source be printed to standard output in the form of Bourne shell environment variable assignments. The purpose is to emit the information in a form that will be usable in a script to manipulate or copy an existing data source. The environment variable names and their corresponding parameter options are given in the following table:

Variable Name	Parameter
DS_CATALOG	--catalog
DS_TYPE	--type
DS_DESC	--data-source-desc
DS_QP	--query-plan
DS_QPF	--query-plan-file
DS_CS	--character-set
DS_POOL	--pool
DS_FPC	--file-process-count
DS_CATF	--cat-format
DS_NEWF	--new-table-format
DS_DC	--data-compress
DS_SB	--sparse-byte
DS_TS	--trailing-spaces
DS_LC	--leading-chars
DS_DUP	--compress-duplicate-keys

Example

```
$ relserveradmin --show-data-source Shirt-3
               --server-name aix43
```

```
Data source 'Shirt-3' on aix43:
DBQ=Shirt_3
Description=Sample Shirt-3 Data Source
Catalog=samples/rm/shirt-3/shirt3.rcg
FileMgr=RM
```

Showing the Status of a Data Server

A Relativity Data Server's status consists of several pieces of information, including when it started, the number of clients that are connected to it, the maximum number of clients that can connect to it, the number of connections that it is servicing, and the actual connections themselves. (Only version 6 Relativity Data Servers and later supply the number of clients and maximum number of clients status information.) The connection information consist of the ID of the UNIX process that is servicing the connection, the name of the client machine, the user name of client, and the name of ODBC application program. (Not all ODBC applications supply the application name.)

To show the status of a Relativity Data Server, and to display a list of connections it is currently servicing, use the following command.

```
relserveradmin --show-server-status [ServerName]
[--server-name ServerName]
```

where:

- The value of the --show-server-status (-sss) command indicates which Relativity Data Server's status to show.
- The value of the --server-name (-s) parameter may also be used to indicate which Relativity Data Server's status to show.

Example

```
$ relserveradmin --show-server-status aix43
```

```
Status of server aix43.
Server Start Time: Thu Jun 24 13:58:43 2004.
Current number of connections: 2.
Process ID Client Machine (User Name) Application
      28446 ncr3000 (db3 owner)      Microsoft Access for Windows
      28450 ncr3000 (db3 owner)      Unknown app
```

Shutting Down a Data Server

The --shutdown-server command will terminate a Relativity Data Server. This command has the same effect as executing the ./STOP script on the Relativity Data Server for UNIX.

Note If a Relativity Data Server for UNIX is configured to start automatically at machine boot, the --shutdown-server command will shut down the data server, but the UNIX operating system will automatically restart it.

To shut down or stop a running Relativity Data Server, use the following command:

```
relserveradmin --shutdown-server [ServerName]
[--server-name ServerName]
{--immediately | --gracefully}
```

where:

- The value of the `--shutdown-server (-ss)` command may also be used to indicate the Relativity Data Server to shut down.
- The value of the `--server-name (-s)` parameter may also be used to indicate the Relativity Data Server to shut down.
- The presence of the `--immediately` parameter indicates that the Relativity Data Server is to shut down immediately, summarily disconnecting existing client connections.
- The presence of the `--gracefully` parameter indicates that the Relativity Data Server is to refuse new connections and allow existing connections to disconnect normally, before terminating itself.

Example

```
$ relserveradmin --shutdown-server aix43 -gracefully
Server aix43 requested to shut down gracefully.
```

Terminating a Connection to a Data Server

Each client connection to a Relativity Data Server has a unique ID that can be used to identify the connection. This ID is supplied when terminating a client's connection.

Note The `--terminate-server-connection` command will not force the client connection to terminate. It will merely request that the connection be terminated. This request will be honored when the current request from the client is complete, or if the Relativity Data Server is idle waiting for the next request from the client. This command will not interrupt a current client request.

To terminate a client's connection to a Relativity Data Server, first use the `--show-server-status` command to determine the process ID of the connection to terminate, and then use the following command:

```
relserveradmin --terminate-server-connection UnsignedInteger
[--server-name ServerName]
```

where:

- The value of the `--terminate-server-connection (-tsc)` command specifies the process ID of the connection to terminate.
- The value of the `--server-name (-s)` parameter indicates the Relativity Data Server on which to terminate a connection.

Example

```
$ relserveradmin --terminate-server-connection 28446
--server-name aix43
Terminated connection for process ID 28446.
```

RM/COBOL File Manager Configuration Parameters

This section explains the configuration parameters for access to RM/COBOL files in more depth. See the *RM/COBOL User's Guide* for more information.

Buffer Pool

This configuration parameter sets the size of the buffer pool to be used by the RM file manager for buffer allocation. Note that only the value specified for the first data source connection takes effect when a single application connects to multiple data sources. The value specifies an integer number of kilobytes (1024 bytes) of memory to be allocated for the buffer pool. A value of zero indicates that the default value of 256K bytes should be used. If specified, the value must be a decimal integer from 16 to 649.

File Process Count

This configuration parameter sets the maximum number of processes, including RM/COBOL run units, which can have a file open at the same time. It applies to all file organizations. For record and file locks to perform correctly, all processes opening a file must use the same file process count. The maximum value is 4096. The minimum value is 8. The default value is 1024.

Micro Focus COBOL File Manager Configuration Parameters

This section explains the configuration parameters for access to Micro Focus COBOL files. See the Micro Focus documentation for more information.

Catalog Format

This configuration parameter controls the format of the Micro Focus COBOL index file that will be used when opening or creating a catalog. The available entries are **DEFAULT**, **BTRIEVE**, **CISAM**, **LEVELII**, **IDX4**, and **IDX8**. This configuration parameter cannot be used to change the format of an existing catalog. **DEFAULT** specifies the default Micro Focus COBOL file format for this operating system. **BTRIEVE** specifies the Btrieve file format. **CISAM** species the C-ISAM file format. **LEVELII** specifies the Micro Focus COBOL Level II indexed file format. **IDX4** specifies the catalog as an optimized form of the format used by this system, for fast duplicate key handling. **IDX8** specifies the catalog as a large file format file.

New File Format

This configuration parameter controls the format of the Micro Focus COBOL index file that will be used when creating new files because of a **CREATE TABLE SQL** statement. The available entries are **DEFAULT**, **BTRIEVE**, **CISAM**, **LEVELII**, **IDX4**, and **IDX8**. **DEFAULT** specifies the default Micro Focus COBOL file format

for this operating system. BTRIEVE specifies the Btrieve file format. CISAM specifies the C-ISAM file format. LEVELII specifies the Micro Focus COBOL Level II indexed file format. IDX4 specifies the catalog as an optimized form of the format used by this system for fast duplicate key handling. IDX8 specifies the file as a large file format file.

Data Compression

This configuration parameter controls the type of data compression to be used when new files are created because of a CREATE TABLE SQL statement. This parameter is the same as the Micro Focus COBOL DATACOMPRESS compiler parameter. The value of **0** indicates that no compression of data records is to take place. The value of **1** indicates that compression algorithm 1 is to be used.

Key Compression – Trailing Spaces

This configuration parameter controls whether compression of trailing spaces is to occur on the keys of new files that are created because of a CREATE TABLE SQL statement. The value **Y** indicates that trailing spaces are to be compressed. The default is **N**, which indicates not to compress trailing spaces.

Key Compression – Leading Characters

This configuration parameter controls whether compression of leading characters is to occur on the keys of new files that are created because of a CREATE TABLE SQL statement. The value **Y** indicates that leading characters that are the same as in the previous key are compressed. The default is **N**, which indicates not to compress leading characters.

Key Compression – Duplicates

This configuration parameter controls whether compression of duplicate keys is to occur on the keys of new files that are created because of a CREATE TABLE SQL statement. The value **Y** indicates that the repetitions of duplicate keys are compressed. The default is **N**, which indicates not to compress duplicate keys.

Key Compression – Sparse Byte

This configuration parameter specifies the decimal number of the sparse character for keys of new files that are created because of creating tables. If this parameter is specified, keys in the file that contain only this value are suppressed. The default is not to suppress keys made up of the sparse character.