Revelation Universal Driver NUL
Installation and Upgrade Guide

Version 4.7
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Section I: Introduction

The Revelation Universal Driver Network User License (NUL) is designed to greatly enhance the network performance of your OpenInsight application. Although the Universal Driver NUL is easy to install, it is strongly encouraged that you familiarize yourself with this guide to ensure that the Universal Driver is optimally configured for your application. This installation guide is broken into four sections: Client Installation, Server Installation, Technical Information, and The Linear Hash Manager Console Application.

What is the Revelation Universal Driver NUL 4.7?

The Revelation Universal Driver is a client/server product designed to operate on Microsoft Windows. It is a required component for properly networking your OpenInsight application. It provides enhanced performance, reliability, and integrity for OpenInsight applications using linear hash files.

A Word About Licensing

Installation of the Revelation Universal Driver NUL indicates agreement and acceptance of the terms of the license. For details of the licensing agreement, consult the hardcopy that was shipped in the package. If your copy of the Revelation Universal Driver NUL did not include a copy of the license agreement, please call Revelation Software at (800) 262-4747 or (201) 594-1422 to request a copy.

Universal Driver Limitations

The Universal Driver will not work with all Microsoft workstations. The only supported workstations are Windows XP Professional, Windows Vista Business, and Windows 7 Business or better.

Special precaution should be taken when accessing tables created with the linear hash service prior to version 2.1. Tables from linear hash services prior to version 2.1 may have a group calculation error (GCE) if the .LK files are larger than 64MB. The FIXVOL utility is available by request to correct this issue. Please contact Revelation technical support or your VAR if this situation applies to you. Tables created with linear hash service 2.1 and later are not affected.

The Network User License version of Universal Driver will **ONLY** communicate with OpenInsight 9.1 and above. All other versions of OpenInsight and Arev will return a FS1018 error message. The standard Universal Driver can be utilized with OpenInsight 9.0 and below as well as Arev.
New Features

The Universal Driver NUL 4.7 provides complete backward compatibility with all previous versions of Linear Hash, as well as forward compatibility with older versions accessing tables created by the Universal Driver.

The Universal Driver NUL also has the Linear Hash Manager console application that allows you to view and manage record locks without having to stop the Linear Hash Service. The manager now allows multiple locked records to be selected and unlocked in one step.

Another change is the error messages that appear in the Windows Event Viewer will be easier to interpret for troubleshooting purposes.

Conventions Used in this Document

To facilitate the explanations and instructions used throughout this Installation Guide, certain conventions will be used.

- If a word is **Monospaced and EMBOLDENED**, it represents a filename, directory, a keystroke or something that should be typed. If the emboldened word is also within `<ANGLED-BRACKETS>`, the user must replace the angled-brackets and the word within them with an appropriate word or phrase. Available selections will appear nearby, most often in a tabular format.
- If a word is “enclosed in double-quotation marks”, it refers to something on the windows desktop, such as a button or menu choice. In some instances, a quoted word or phrase may be used to indicate a response that was generated by the system.
- ‘Single quotation-marks’ will be used to indicate industry terms and to distinguish certain keywords.
- If a word is *italicized*, it expresses emphasis or importance.

Pre-installation Requirements

- Make certain that you have administrative privileges for the server onto which you wish to install the Revelation Universal Driver NUL.

Material Checklist

Verify that you have all the materials that are shipped with the Revelation Universal Driver NUL by your side during the installation. At a minimum, the shipped materials consist of:

- This Installation Guide
- The Universal Driver installation CD-Rom
- The Revelation Network Products License Guide
- Network Driver Update for Large Keys Document

Applying Utilities and Updates for Long Keys

If your OpenInsight system is version is prior to 9.1 please refer to the document Network Driver Update for Large Keys before proceeding. The document covers changes to the Universal Driver and Fix_LH routine. Included is an update to Fix_LH and a utility to help identify tables with long keys.

These changes are important if your application uses keys longer than 50 characters.
Section II: Client Side Installation

The client side installation only needs to be performed on one workstation that will access the Revelation application. If you are using a copy of OpenInsight that already has the Universal Driver version 4.7.0.0 installed, you need not reinstall the client portion of the Universal Driver.

The Revelation Universal Driver NUL 4.7 is only able to communicate with client machines that are using the “Universal Driver NUL 4.7.0.0”. Neither OpenInsight 9.2 or below ship with this driver installed. OpenInsight users must read and perform the Client Installation instructions below.

OpenInsight Client Installation

You will need Administrator Permissions to complete the following tasks.

1. Insert the Universal Driver NUL CD in the CD-ROM drive of a workstation that can access the network share where the Revelation application resides.

2. Run the client “setup” program on the CD. START → RUN “D:CLIENT\SETUP” (Or change D to be your CD or DVD drive letter) in the “Run” dialog.

3. Follow the onscreen instructions and point to the location of your OpenInsight Application.
License Agreement

Please review the license terms before installing Revelation Universal Driver - Client 4.7.

Press Page Down to see the rest of the agreement.

Revelation Software Universal Driver License Agreement

THIS IS A LEGAL AGREEMENT BETWEEN YOU AND REVELATION SOFTWARE (Revelation). READ THESE TERMS AND CONDITIONS BEFORE OPENING THE MEDIA PACKAGE AND/OR INSTALLING OR DOWNLOADING THE PRODUCT. IF YOU DO NOT AGREE WITH THEM, YOU SHOULD PROMPTLY RETURN THE PRODUCT TO REVELATION OR ABORT THE DOWNLOAD SESSION. This AGREEMENT governs the use of the software and documentation contained in the Network Communication Products. Installation, copying, downloading, or any other use of the software indicates your acceptance of the terms of this AGREEMENT.

If you accept the terms of the agreement, click the check box below. You must accept the agreement to install Revelation Universal Driver - Client 4.7. Click Next to continue.

[ ] I accept the terms in the License Agreement

Revelation Software, Inc.

< Back  Next >  Cancel

Choose Install Location

Existing OpenInsight folder

Please specify the folder where your existing OpenInsight is installed. You may use the Browse button to browse to the proper location.

Existing OpenInsight Directory

C:\Revsoft\0Insight\  Browse...

Space required: 1.2MB
Space available: 5.2GB

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< Back  Install  Cancel
Completing the Revelation Universal Driver - Client 4.7 Setup Wizard

Revelation Universal Driver - Client 4.7 has been installed on your computer.

Click Finish to close this wizard.

☑ Show Readme
To verify that the new internal network driver has been installed, type the following command from a Windows command line:

```
<C:\REVSOFT\OINSIGHT\>NETDRV.EXE
```

where `C:\REVSOFT\OINSIGHT` indicates the full path to the location of OpenInsight. If this is not the location of OpenInsight, replace this with the appropriate path. The following figure is displayed showing that the new driver has been installed.

![Change Network Driver](image)

The current driver is listed for *Driver Type*. The new driver, “Universal Driver ver. 4.7.0.0”, is displayed in the *Available Drivers* list.

**Important:** If the “Driver Type” does not say “Universal Driver 4.7.0.0”, you must select it in the “Available Drivers” window and then click “OK”. This will select the appropriate driver and make it active.
Section III: Server Installation

Note: This is only for Windows 2008 Server, Windows 2003 Server, and Windows XP Professional.

The installation of the Revelation Universal Driver NUL is straightforward and consists of only a few steps. The setup program will search for previous installations and attempt to upgrade it. If no existing installations are detected the setup program will work as a new installation. Steps to complete the setup are:

- Performing the Server Side Installation
- Creating the SYSTEM user/group on the server

With the Windows Installation you have the choice of using either Named Pipes, TCP/IP, or a combination of the two. The default installation is TCP/IP. If you wish to use a different configuration, refer to “Changing How the Service Connects” later in this section.

Before proceeding with the installation check the “Services” dialog to make sure there is not an earlier version of the Revelation NT Service, Revelation Windows 2000 Service or Revelation Universal Driver 3.0 or Universal Driver 4.x Service running. This NUL installation cannot upgrade or be installed over non-NUL installations. Please uninstall existing non-NUL Universal Driver installations before continuing.

New Installation – Server Side

1. Run the “setup” program on the CD. It is easiest to do this by typing `D:\SERVER\SETUP` (Change D to be the CD or DVD drive letter) in the “Run” dialog.

2. Read the information presented on the Welcome screen, choose “Next”, and click “Yes” to accept the terms of the software license agreement.

   If the installation program detects a previous version of the Linear Hash service you will be prompted
to upgrade. Please refer to the “Upgrade Installation – Server Side” section.

3. Enter the serial number from the Revelation Universal Driver (NUL) 4.6 registration card. If you have received this product from Revelation Software electronically, you will have received your serial
number via email. The serial number must be valid, or you will not be able to progress past this point. When you have finished, click “Next”.

4. You are informed that the Revelation Universal Driver (NUL) 4.6 will be installed into the \REVSOFT\UNIVERSAL DRIVER directory. If you would prefer a different destination directory, you can make the change at this screen. Confirm your choice by clicking “Next”.
If the installation process cannot find the valid Universal Driver directory from a prior install an error will be reported. Cancel the installation process and remove your prior Universal Driver registry settings. The registry settings will be in a folder located under one of the following locations depending on the server edition:

64bit server: HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\RevSoft
32bit server: HKEY_LOCAL_MACHINE\SOFTWARE\RevSoft

Remove any folders named “Revelation Universal Driver” or “NT Service”. Restart the installation to continue.
The next screen asks you for the location of your existing OpenInsight application. This is because the setup will install a Revparam file in the specified location with the necessary settings to run OpenInsight. Once you enter the path to your application, click “Next”.

![Choose Install Location](Image)
5. You are asked if you wish the Service to run using TcpIp. If you click “Yes”, you are asked for a port to use. This is an internally routed port, but you will need to allow it to pass through any internal firewalls. If you wish to use another port aside from the default, enter it on the screen and choose “Next”. If you choose not to run TcpIp, you are asked for a Named Pipe to use. You can choose the default, or click “Next”.

![Image of Revelation Universal Driver (Network User License) 4.7 Setup](image)

Please specify the type of connection to be used with the Universal Driver

- [ ] TCP/IP (Recommended)
- [ ] Named Pipe

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[< Back](#)  [Next >](#)  [Cancel](#)
6. This screen asks you for the TCP/IP Port to use for the Universal Driver and the Host name or IP Address of the Server you are installing the Universal Driver on. Enter the information and click “Next”.

---

**Connection Details**

Specify the connection details for the Universal Driver

Please specify the connection details to be used with the Universal Driver

Enter the TCP/IP Port to use for the Universal Driver

- 777

Enter the IP Address or Host Name for this system (the Universal Driver server)

- win2k8a4w

---

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[Back] [Next] [Cancel]
7. At this point please select the Program Group you want the Linear Hash Manager listed under.

8. Click the Install button to start the installation process.
9. The last screen allows you to automatically view the README document and to start the Linear Hash service, via checkboxes. It is strongly recommended that you leave both boxes checked. Click “Next” to complete the installation.
Upgrade Installation – Server Side

1. Run the “setup” program on the CD. It is easiest to do this by typing `D:\SERVER\SETUP` (Change D to be the CD or DVD drive letter) in the “Run” dialog.

2. Read the information presented on the Welcome screen, choose “Next”, and click “Yes” to accept the terms of the software license agreement. If you are performing an upgrade the installer will locate the previous installation in the registry and prompt you to upgrade. During installation any previous versions will be deactivated and replaced with the new Universal Driver.
3. The Installer will automatically detect your previous installed version of the Universal Driver. Click the “Yes” button if you want to upgrade your version of the Universal Driver.
4. You are informed that the Revelation Universal Driver will be installed into the \REVSOFT\UNIVERSAL DRIVER directory. If you would prefer a different destination directory, you can make the change at this screen. Confirm your choice by clicking “Next”.

If the installation process cannot find the valid Universal Driver directory from a prior install an error will be reported. Cancel the installation process and remove your prior Universal Driver registry settings. The registry settings will be in a folder located under one of the following locations depending on the server edition:

64bit server: HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\RevSoft
32bit server: HKEY_LOCAL_MACHINE\SOFTWARE\RevSoft

Remove any folders named “Revelation Universal Driver” or “NT Service”. Restart the installation to continue.
5. The next screen asks you for the location of your existing OpenInsight application. If you are using Advanced Revelation, point to your Advanced Revelation application. This is because the setup will install a Revparam file in the specified location with the necessary settings to run Advanced Revelation or OpenInsight. Once you enter the path to your application, click “Next.”
6. You are asked if you wish the Service to run using TcpIp. If you click “Yes”, you are asked for a port to use. This is an internally routed port, but you will need to allow it to pass through any internal firewalls. If you wish to use another port aside from the default, enter it on the screen and choose “Next”. If you choose not to run TcpIp, you are asked for a Named Pipe to use. You can choose the default, or click “Next”.
7. This screen asks you for the TCP/IP Port to use for the Universal Driver and the Host name or IP Address of the Server you are installing the Universal Driver on. Enter the information and click “Next”.

![Connection Details](image)

Please specify the connection details to be used with the Universal Driver

Enter the TCP/IP Port to use for the Universal Driver

777

Enter the IP Address or Host Name for this system (the Universal Driver server)

win2k8o4w.lab.winwinsol.int

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< Back  Next >  Cancel
8. At this point please select the Program Group you want the Linear Hash Manager listed under.
9. Click the Install button to start the installation process.
10. The last screen allows you to automatically view the README document and to start the Linear Hash service, via checkboxes. It is strongly recommended that you leave both boxes checked. Click “Next” to complete the installation.
The System User/Group

In addition to the steps above, you need to ensure that the Universal Driver’s LinearHash service will have appropriate access to your files. By default, the LinearHash service logs into your server as the “System” user/group. This is a predefined user/group on the server. It is important that the System user/group be granted “Full” access to the shared data in the “Permissions” window (located in the “Security” tab of a shared drive’s properties). Furthermore, you should configure the security settings of the shared volume to both “Replace Permissions on Subdirectories” and “Replace Permissions on Existing Files”. For instructions on how to do this, consult your Microsoft Windows 2008/2003 documentation.

Verifying the Revelation Universal Driver Installation

After completing the installation procedure, you should verify that the software has been installed properly and is functioning. There are two ways to accomplish this, either through the services dialog or the command line.

Services Dialog

There are a number of ways to check the services running on your server, depending on the operating system. Please consult your Windows documentation for details. You can access the services list by right clicking “Computer” and choosing “Manage”. Navigate to “Configuration -> Services” and locate “LinearHash” in the list of services names. This service is what the Revelation Universal Driver registers itself to the operating system as. The status should read “Started”. You can try stopping, starting, and restarting the service with the start and stop buttons on the top button bar.

Your dialog should look similar to this:
Command Line

The Universal Driver’s LinearHash service status can also be checked using the command line. The command line is less intuitive, but quicker for those who are more comfortable with text interfaces. If you are not one of these people, use the Services dialog to verify the installation—it’s equally valid. The command line steps follow below:

1. Change to the \REVSOFT\UNIVERSAL DRIVER directory (assuming you accepted the defaults; use the directory name you installed to)
2. Type LH47NUL STATUS

The service should respond with the message “Running”. If you have stopped the service yourself, it should read “Created”. If you would like to know other command line parameters for the LH47NUL executable, see “Using the Universal Driver” later in this section.

The Revparam File

The REVPARAM file (with no extension) is a file that is automatically created in the directory where your Revelation application executable resides. It will allow certain behaviors of the client driver to be customized. This file is a text file that can be created in any text editor, such as the Notepad program in Windows (NotePad.EXE).

The REVPARAM file consists of a series of parameters followed by an equal sign and a value. Below are the contents of a sample REVPARAM file for a Windows network:

ServerOnly=True
TcpIpPort=777
ServerName=192.168.1.2

Although there are several configuration settings available to be used in the REVPARAM file, not all of them need to be explicitly present in the file itself. For any variable that you do not put in the REVPARAM file, it uses system defaults. This means that you only need to enter the configuration settings that you wish to change.

If you have multiple Revelation Software applications installed on your server, you will need to create a REVPARAM file for each application.

The ServerOnly flag

This REVPARAM file flag controls access to your data. If the ServerOnly flag is set to False, then any user with OpenInsight or Advanced Revelation can read information from your data directories, whether or not they have been configured to use the Revelation Universal Driver. Although having this flag set to the value of False will allow every user to use your data, it is a recommended security precaution that you change this flag to True. This ensures that all user requests are making use of the LinearHash service—which is the purpose of the Universal Driver.

If the ServerOnly flag is set to True, then all copies of OpenInsight or Advanced Revelation will refuse to read the files in your data directories, unless they can communicate with the LinearHash service on the server. This means that the individual client machines will not attempt to manipulate the data themselves, and will instead perform all their data I/O via requests to the server.
Windows Server Installation Summary

Please take a moment to make sure that you have installed the Universal Driver correctly. Here is a brief summary of the installation steps used to install the Revelation Universal Driver on the server.

OpenInsight

- Install the client software
- Install the Server Side of the Service
- Create the SYSTEM user/group
- Verify Proper Service Installation

Advanced Revelation

- Install the Server Side of the Service
- Create the SYSTEM User
- Verify Proper Server Installation
Technical Details

The Revelation Universal Driver

The Revelation Universal Driver is a Windows 2008 and Windows 2003 operating system service that was designed to reduce network traffic and increase application speed by processing Linear Hash file activity on the server. This eliminates the bottleneck caused by multiple computers simultaneously requesting data from individual Linear Hash files. The result of transferring this task from the client to the server is an increase in application speed and data integrity, as well as a reduction in network traffic.

The Revelation Universal Driver by default, communicates via TCP/IP but can be configured to use Named Pipes, a high level application programming interface (API) used for passing data between two processes, regardless of whether the processes are local or remote. The underlying network transport used in establishing a connection between client and server can be any protocol that is common between the two. The client uses the highest priority transport that both the client and server support.

The default communication is via TCP/IP. When establishing the TCP/IP connection, you can choose the specific port number you wish to use, or allow the Service to allocate a port itself. How to configure these settings will be covered further in “Changing How the Service Connects” later in this chapter. Before you change from the default settings, please be sure to consult the compatibility table that is located in this Linear Hash Manager.

Ideally, the Revelation Universal Driver should be installed on every file server containing OpenInsight or Advanced Revelation linear hash files in order to provide maximum performance benefits. In situations where application files are stored on a different server from the data, and only one Universal Driver is available, it is necessary that the Universal Driver be installed on the file server on which the data resides.
Changing how the Service Connects

By Default, the Universal Driver installs in TcpIp mode, but you can change to Named Pipes, or a combination of Named Pipes and TcpIp if you are so inclined. TcpIp is the recommended connection method.

The next sections discuss making changes to the registry. These instructions are written for 64bit versions of Windows. If you are using a 32bit version exclude the “Wow6432Node” branch from the registry path.

For example, on a 64bit server the root registry path is:
HKLM\SOFTWARE\Wow6432Node\RevSoft\Revelation Universal Driver\4.7

On 32bit editions the root registry path is:
HKLM\SOFTWARE\RevSoft\Revelation Universal Driver\4.7

To run Named Pipes and TCP/IP:

In this configuration, the Service will use Named Pipes to establish the connection between the workstation and the application on the server, but then once the TCP/IP connection is established Named Pipes is no longer used. You will need to run the following on the Server.

Start -> Run -> REGEDIT

![A screen shot of the Registry Settings for the Universal Driver using TcpIp](image)

HKEY_LOCAL_MACHINE → SOFTWARE → WOW6432NODE → REVSOFT → REVELATION UNIVERSAL DRIVER → 4.7

<table>
<thead>
<tr>
<th>Change</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>AnonymousUserName</td>
<td>ServiceLogOn</td>
</tr>
<tr>
<td>NamedPipeName</td>
<td>LH47NUL</td>
</tr>
<tr>
<td>TcpIpPort</td>
<td>Allocate</td>
</tr>
</tbody>
</table>
You will need to make additional changes to the REVPARAM file. You will need to confirm that it does contain the line:

ServerOnly=true

And add the line:

NamedPipeName=LH47NUL

**Important:** After you are done making changes to the Registry, you will need to stop and then restart the Linear Hash Service on the Server.

**To run Named Pipes Only:**

In this configuration, you only need to specify the Named Pipe you will use. We will use LH47NUL as an example.

Start -> Run -> REGEDIT

HKEY_LOCAL_MACHINE ➔ SOFTWARE ➔ WOW6432NODE ➔ REVSOFT ➔ REVELATION UNIVERSAL DRIVER ➔ 4.7

<table>
<thead>
<tr>
<th>Change</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>AnonymousUserName</td>
<td>None</td>
</tr>
<tr>
<td>NamedPipeName</td>
<td>LH47NUL</td>
</tr>
<tr>
<td>TcpIpPort</td>
<td>None</td>
</tr>
</tbody>
</table>

You will need to add the following line to your revparam:

NamedPipeName=LH47NUL

If there is a line mentioning a TcpIpPort, you will need to remove it.

**Uninstalling the Universal Driver**

From the Universal Driver Program Group choose “Uninstall Universal Driver.”

**Revelation Universal Driver Files**

The following files are installed when you install the Revelation Universal Driver. The default install directory for all the files listed below is the \REVSOFT\UNIVERSAL DRIVER directory.
### Windows File Contents

| LH47NUL.exe | The Universal Driver executable |
| RCL4.dll | Contains the named pipes communication API used by LH47NUL.EXE. It passes data to LH47NUL.EXE via the Revelation Communication Layer (RCL). The RCL provides a modular interface between the Universal Driver and the Inter-Process Communications (IPC) mechanisms used in the RCL4.DLL. |

### Command Line Parameters for LH47NUL.EXE

**LH47NUL.EXE**, the file used to control the Revelation Universal Driver, can accept parameters when used from the command line. The format for using these parameters is as follows:

**LH47NUL.EXE <parameter>**

These parameters are described in the following table.

#### LH47NUL Command Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Effect</th>
</tr>
</thead>
</table>
| Create | Creates the Service and adds it to the list in the Server Management Services dialog box.  
*Note: The default registry entries created with this method default to named pipes but the recommended connection method is TcpIp*  |
| Start | Starts the Revelation Universal Driver. This command requires that the service already be created.  |
| Install | Creates and starts the Revelation Universal Driver.  |
| Stop | Stops the Revelation Universal Driver.  |
| Delete | Removes the Revelation Universal Driver from the operating system and the Services dialog box.  |
| Remove | Stops the Revelation Universal Driver and removes it from the operating system and the Services dialog box.  |
| Pause | Temporarily pauses the execution of the Revelation Universal Driver.  |
| Continue | Continues the execution of the Revelation Universal Driver after it has been paused.  |
| Status | Reports the operational state of the Revelation Universal Driver. The states can be:  
*Not created* | The Revelation Universal Driver has not been created and isn't recognized by the operating system. |
The Revelation Universal Driver has been created and is listed in the Server Management Services dialog box.

The Revelation Universal Driver has been started and is running.

The Revelation Universal Driver has been paused.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created</td>
<td>The Revelation Universal Driver has been created and is listed in the Server Management Services dialog box.</td>
</tr>
<tr>
<td>Running</td>
<td>The Revelation Universal Driver has been started and is running.</td>
</tr>
<tr>
<td>Paused</td>
<td>The Revelation Universal Driver has been paused.</td>
</tr>
</tbody>
</table>

Debug

Starts the Revelation Universal Driver server console application that displays a log of the work performed by the service. If the Revelation Universal Driver is already running, all users must log out of their OpenInsight/Advanced Revelation applications, then the service must be stopped before starting it using the debug parameter. The following keystrokes are used to control the service while in console mode:

- **p** Pauses the Revelation Universal Driver 4.6.
- **c** Continues the service.
- **ESC** Stops the Revelation Universal Driver 4.6.

LH47NUL.LOG

For debugging purposes, you can create the LH46SRVC.log file in the subdirectory where the LH47NUL.exe is located. This will log all the calls to the Universal Driver with no noticeable speed penalty. After you create the LH47NUL.LOG file, you will need to stop and restart the LH47NUL.EXE.

Revparam File

The **REVPARAM** file controls whether or not OpenInsight and Advanced Revelation use the Service to coordinate locking. The contents of this file should be created with an ASCII editor. Each line of the file contains the following format:

```
<parameter> = <value>
```

Depending on the **parameter** the **value** will be one of the following:

- **Boolean:** 1 or 0; True or False; Yes or No
- **Unsigned decimal integer:** Any number between 1 and approximately 4 million
- **Hexadecimal value:** 0x followed by a hexadecimal number

The following table describes available parameters and their default values. Keep in mind that these drivers are client-side settings, and the Universal Driver overrides many of them when the Linear Hash service is running. Normally there is no reason to change the values that are installed with the Linear Hash Service.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ReadOnly</td>
<td>False</td>
<td>When True, limits access of all files in this directory to read and select requests. If you are using a volume in a reference/read-only capacity (i.e. CD-ROM format), you may want to set this value to True.</td>
</tr>
<tr>
<td>Locks</td>
<td>True</td>
<td>When True, forces byte range locks to be used on all files in this directory. If byte range locking is not available from the operating system, an error message is returned. If byte range locking is available, and the Locks parameter is set to False, locking is disabled for this directory.</td>
</tr>
<tr>
<td>TcpIpPort</td>
<td>Allocate</td>
<td>Sets the TCP/IP port used by the client if not strictly Named Pipes. Only set in Application main directory.</td>
</tr>
<tr>
<td>NamedPipeName</td>
<td>LH47NUL</td>
<td>Only set in Application main directory.</td>
</tr>
<tr>
<td>FlushFileSizeUpdates</td>
<td>False</td>
<td>When True, updates causing a change in file size changes are immediately saved to disk.</td>
</tr>
<tr>
<td>FlushAllUpdates</td>
<td>False</td>
<td>When True, any file changes are immediately committed to disk.</td>
</tr>
<tr>
<td>SelectCache</td>
<td>True</td>
<td>When True, caching is implemented. This improves performance for ReadNext/ReadOnly loops.</td>
</tr>
<tr>
<td>FillCharacter</td>
<td>0x00</td>
<td>If you are running on a network that has problems with sparse files, you may want to change the fill character value to another setting (i.e. 0xFF). This causes your system to fill empty space in frames within a file with char(255) instead of char(0).</td>
</tr>
<tr>
<td>GroupLockTimeOut</td>
<td>60 seconds</td>
<td>Decimal value in seconds limiting the amount of time a workstation tries to place a group lock. If the value is reached and a group lock is not set, an error message is displayed, thus preventing a system hang.</td>
</tr>
<tr>
<td>ServerOnly</td>
<td>False</td>
<td>When True, prevents workstations from accessing Linear Hash files in local mode. True is recommended.</td>
</tr>
</tbody>
</table>
### Universal Driver Files

The following files are added to your system after installing the client driver.

<table>
<thead>
<tr>
<th>OpenInsight</th>
<th>LH46.DLL</th>
<th>The OpenInsight internal network driver loads the LH46CLNT (32-bit OI).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LH47CLNT.DLL</td>
<td>Loads the RCL4.DLL</td>
</tr>
<tr>
<td></td>
<td>RCL4.DLL</td>
<td>The communication API used by LH47.DLL. It passes data to the Revelation communication level (RCL).</td>
</tr>
<tr>
<td></td>
<td>REVERROR.DAT</td>
<td>File containing error messages.</td>
</tr>
</tbody>
</table>
Section IV: The UD 4.7 Linear Hash Console Application

The Revelation Universal Driver contains a console application to help you manage system record locks. To start the console application, click the following:

Start -> Programs -> Universal Driver -> Universal Driver Manager
To manage record locks, click on the Locks Tab, then click Refresh to display the current record locks:

To release a record lock, highlight the lock you want to release and click Unlock. The following warning message will display:

A response of Yes will display a message confirming the lock has been released.