

# Best Practice Guide -- Relius Administration Oracle Database

For Public Consumption  
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Relius Technology Support

Empowering  
the Financial World

FIS

## Attention Technology Consultants!

If you are unfamiliar with the end-user specific Relius implementation and environment (or if your systems have a relatively large or complex configuration such as WAN, Web, or VRU), please contact Relius Technology at (800) 326-7235, Option 3, before proceeding. Relius Technology can arrange a brief conference call to provide important details regarding each user's unique operational environment and details regarding the Relius installation and upgrade process. This will help ensure your deployment efforts are successful and efficient. We can also schedule priority telephone support during or after business hours to maximize the time you spend on any Relius project. It is important to note that failure to fully meet the prescribed hardware requirements, deployment methods, or closely follow the installation documents and upgrade steps could result in installation problems, unnecessary downtime, and possible end-user data loss.

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## Overview and Purpose

The purpose of this document is to provide a client's technology department with general guidelines and "best practices" when managing the Relius Administration Oracle database. This is not a step-by-step user manual. Rather, the information contained herein issues generalities for backups, exports, and disaster recovery, along with the advantages and drawbacks to various other database practices. Additional information will be found in the Oracle Installation document, the Relius Recovery Services quick-start guide, and other technology-related documents found on our support site.

## Background

Over the years, the Oracle databases that clients host in their environments have grown and become more vital to the health of their operations and the business's bottom line. Therefore, the database has become the central point of focus in the event of a hardware failure, server crash, environmental issue, or disaster. Generally speaking, if the database is recovered, the business can continue.

FIS, Wealth & Retirement, and Relius Administration Technology Support hold no responsibility for clients who wish to maintain their own disaster recovery plans. However, the guidelines placed in this document are based on the experience of other clients in the field along with the more certain ways of successfully recovering data.

## Avoid and Prevent

### Hardware

Clients are encouraged to use name-brand, quality hardware for their database servers and all systems components. At the present time, the supported hardware platforms are HP, Dell, and IBM server-class systems.

### Operating Systems

Windows Server 2008 R2 (with Service Pack 1), Windows Server 2012, and Windows Server 2012 R2 are the only supported operating systems for running the Relius Administration Oracle database server.

### Software and Server Configuration

Auxiliary software installed to the database server should be kept to a minimum. Acceptable types of software include necessary security systems, utilities for managing and monitoring the server, and other database-related products and programs.

Setting up the database server for any task other than database runs the risk of degrading performance or interfering with the database itself.

### Security

Clients are encouraged to "lock down" the server as best as possible without inhibiting the proper and secure usage of the data on the system.

Clients are also encouraged to change the passwords to the Oracle database user accounts. However, FIS Relius does not track these password changes. Neither does FIS Relius have the ability to determine what passwords have been changed to once those alterations take place. Users are cautioned accordingly.

## Scheduling

When scheduling daily backups and exports, you are encouraged to conduct them at a time when the database least active. Consider the times that are in place for automated tasks (via STP), user work, and high-traffic patterns from participants logging on to the Web and VRU. The more idle a database, the faster the export.

## Oracle User Accounts

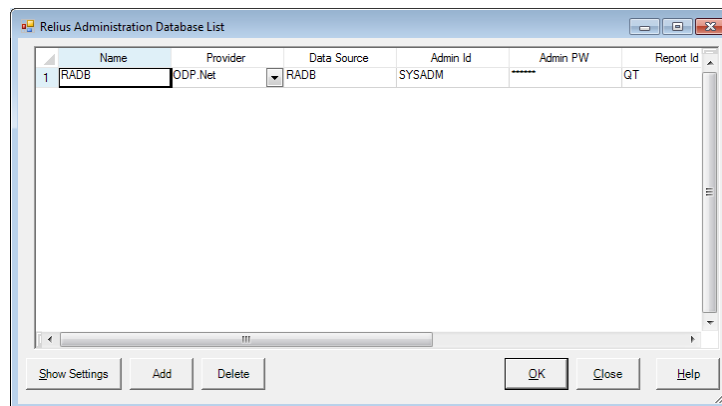
There are four accounts used by Oracle and Relius. Each has a separate purpose. Clients are encouraged to change the passwords as best suits them. But once a password has been changed, FIS Relius has no way of discovering or recovering those passwords. Plan accordingly.

| User Account | Default Password | Purpose  | Database Server | Workstation | Web/VRU |
|--------------|------------------|--|-----------------|-------------|---------|
| sys          | dragnus          | This is the primary user in Oracle and must be left intact. Once a database is built and configured, the sys user is rarely used. However, any “super” tasks may require this account. Clients are encouraged to keep the new password for this account a closely guarded “need-to-know” secret.   | Yes             | No          | No      |
| sysadm       | sysadm           | This is the primary “Relius” user in Oracle. This account is responsible for table maintenance, running scripts, and the overall health of the database. All users need to have this account configured in their workstations and Web/VRU, so it should be publicly available but considered confidential to the organization only.  | Yes             | Yes         | Yes     |
| pngwin       | joker            | The account that accesses the database from within the Relius Administration programs and utilities. All users need to have this account configured in their workstations and Web/VRU, so it should be publicly available but considered confidential to the organization only.  | Yes             | Yes         | Yes     |
| qt           | qt               | The account that access data from within the Crystal Report Writer and Relius Report Writer programs. This account is considered to be “read-only” with the exception of populating temporary reporting tables during the course of generating reports. All users need to have this account configured in their workstations, so it should be publicly available but considered confidential to the organization only. | Yes             | Yes         | No      |

Note: the Oracle account called “system” can be disabled.

## Workstation Configuraiton

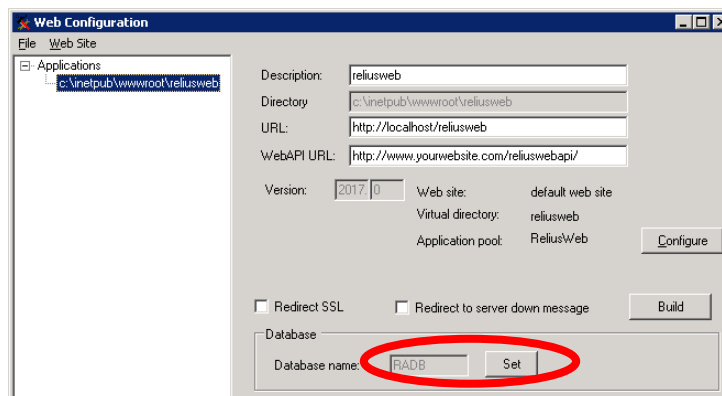
Once the database passwords have been changed, all users will need to adjust their passwords at each workstation. Note that these changes are made at the “user” level, so if multiple users log on to the same workstation or terminal server, the process must be repeated. On workstations, use the “DBList” program, Relius.Admin.UI.DBList.EXE. Once you have made the changes, click OK and then Close.



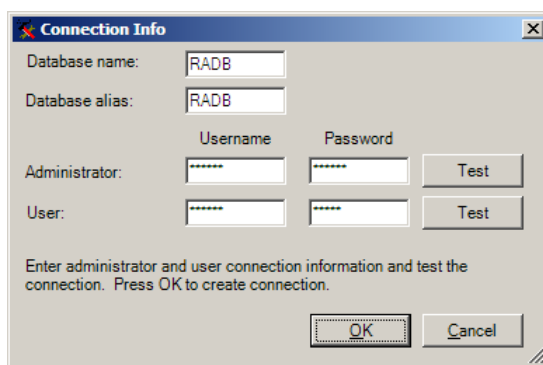
To speed up the change, you can then copy Databases.cfg from the user’s profile (e.g., C:\Users\\AppData\Local\Relius\Admin) to all other users’ profile, overwriting the existing file.

## Web Configuration

To set the passwords on the Web server, click Start | Programs | Relius | Admin | Web Configuration. Click on any one of the sites listed in the configuration utility. In the “Database” section, click the **Set** button.



Enter the appropriate user names and passwords. The “Administrator” is the SYSADM user, and the “User” is the PNGWIN account. Be sure to hit the **Test** button for each entry. When finished click **OK**.



Save your changes within the Web Configuration utility. If multiple user accounts are running on the Web server, be sure to copy Databases.cfg from the current profile to all the other profiles.

## Oracle Batch Files

If any changes are made to the Oracle user accounts, you should check each batch file in the BIN folder of the Oracle Home to ensure they are using the new credentials.

The following files in the Oracle "BIN" folder have the default passwords stored in them. If you change any passwords to the Oracle user accounts, you'll need to adjust these files as well.

| File Name      | Account Used       | Purpose   |
|----------------|--------------------|---|
| DPDir.bat      | sys                | Setting location of data pump exports                     |
| IMP-MYDB.bat   | sys and sysadm     | Importing a database                                      |
| MAK_RADB.bat   | sys                | Initial database creation                                 |
| RAUSERS.sql    | sysadm, qt, pngwin | Creating users during initial database creation           |
| RADBDOWN.bat   | sys                | Shutting down a database                                  |
| RADB-ExpDP.bat | sysadm             | Conducting a data pump export                             |
| RADB-ImpDP.bat | sys and sysadm     | Conducting a data pump import                             |
| RADBUP.bat     | sys                | Starting the database                                     |
| RARPTTRN.bat   | sysadm             | The "qt-clean" routine to empty temporary database tables |

The following user accounts are stored in C:\Program Files (x86)\Relius\AdminDB on the database server: BuildServerDB.txt and BuildStandaloneDB.txt. They are only used for the creation of the database.

## Best Regularly Scheduled Practices

Each client's specific needs and environment will govern whether, how, and when the following practices will be conducted. Bear in mind that the integrity and preservation of client's data is the sole responsibility of the client.

### Purge Temporary Tables (Daily)

There are two ways to purge temporary tables before an export or backup. The first is via batch file that can be automatically set to run as part of the export process, and the other is manually within Relius Administration. Remember to work with everyday users to determine how often this task is accomplished, as some temporary table data is best preserved during certain times.

## Exports (Daily)

A daily export of the database places the entire schema of the primary Oracle user into a single, static file. After the export is completed successfully, the export file and its corresponding log should be compressed into a ZIP file and copied to a secure location other than the same server on which the database resides. This could include external drives, tape backups, file servers, or offsite storage. Clients are urged to keep a rolling backup of at least several days. If business needs dictate, a monthly archived export is also recommended for historical purposes.

## Cold Backups

While the disadvantage of a cold backup means that the database will be offline and unavailable to all users, participants, and plan sponsors, this method is recommended as part of a regular backup routine. If the business needs dictate a constant online presence, clients should build into their schedules a regular maintenance plan that includes offline, cold backups of the entire server, including all drives and files **while the database is down**.

## Advanced Practices

The following practices are considered advanced. Clients with little or no experience in these methods are cautioned against using them.

### Archive Logs

Setting the database in “ArchiveLog” mode is an effective tool to bring the database as current as possible after a recovery. Log files are regularly generated with database transactions. According to Oracle:

*The archiving of filled groups has these advantages:*

- *A database backup, together with online and archived redo log files, guarantees that you can recover all committed transactions in the event of an operating system or disk failure.*
- *If you keep an archived log, you can use a backup taken while the database is open and in normal system use.*
- *You can keep a standby database current with its original database by continuously applying the original archived redo logs to the standby.*

Remember that the creation of archive log files will consume a great amount of disk space and incur a slight performance degradation. Use caution and plan accordingly.

### Hot Backups

While there are advantages to backing up a database while it is online, or “hot,” some clients have experienced failures in their recovery because the backups were not configured correctly, the database was not in “ArchiveLog” mode, or the system was experiencing some other anomaly. Using Hot Backups is not recommended by FIS Relius. However, if clients use this method, they are urged to regularly test the restoration process to ensure it remains in proper working order.

### Renaming the Listener Log

Occasionally, the Listener.log file needs to be renamed, as it is cumulative and will grow extremely large over time. The more users log in over the course of time, the faster the file will grow. On the Oracle database server, open a Command Prompt as administrator and enter the following line:

```
lsnrctl set log_status off
```

Rename the Listener.LOG file in <drive>:\Oracle\diag\tnslsnr\<servername>\listener\trace.

From the same Command Prompt, type the following:

```
lsnrctl set log_status on
```

Close the Command Prompt. This process can be scheduled using the Windows Task Scheduler. The file should be renamed before it reaches 1 GB in size.

## Purging Listener Trace Logs

From a Command Prompt (as administrator), navigate to the following directory (assuming Oracle is installed to the C: drive):

```
cd c:\oracle\diag\tnslsnr\<server name>\listener
```

Then open the command utility that will set up and run the purge:

```
adrci <Enter>  
  
set control (shortp_policy = 336) <Enter>  
  
set control (longp_policy = 720) <Enter>  
  
purge <Enter>  
  
exit <Enter>
```

These commands will set the short purge policy to two weeks (14 x 24 hours = 336) and the long purge policy to one month (30 x 24 hours = 720) and then manually purges all files older than those dates. Once that is complete, the system will automatically purge your alert files in the appropriate intervals.

## Recovery Methods

### Build & Import

The most efficient method for migrating to a new server or recovering from a disaster is to build the database from a fresh installation of Oracle using the installation DVD provided by FIS Relius and then to import the most recent, successful, export. This will ensure an error-free set of files and a “clean” environment on which the database can reside.

### Recovery Software



Using backup recovery software can be used, but the best recovery method in this fashion is a restoration of a cold backup. If using a hot backup, make sure that the license and configurations are set correctly, that the backup and restore are both reliable, and all of the needed ArchiveLog files are also properly restored.

### Third-Party Vendors

Using a third-party vendor is the responsibility of the client. Make certain the following criteria are met:

- The vendor understands the need for backing up all files and folders (specifically the “Relius” and “Backup” folders on the data drive).
- The vendor understands, supports, and is able to make appropriate backups and restorations of open Oracle database files.
- The vendor runs scheduled disaster recovery drills to ensure the data remains intact.

### Relius Technology Support

After a database is restored, there are times when additional assistance is required from Relius Technology Support. If the need for escalated or after-hours assistance is required, additional support charges may apply.

## Test Systems

Clients are encouraged to create their own test environments to ensure the ability to restore and import their data in a safe, off-grid environment. This practice usually incurs additional licensing fees from Relius. Contact your sales representative for further information.

## Virtual Systems

Relius Administration is supported on virtual environments, **except** the database server. The two reasons for this are:

- Oracle licensing fees
- Performance degradation

Clients who wish to put any Oracle database on a virtual platform must contact their Relius sales representative and Relius Technology to discuss.

## Removing Old Data

There are a few places in the database that you can remove old data from your database. Before proceeding, please bear in mind the following imperative disclaimers:

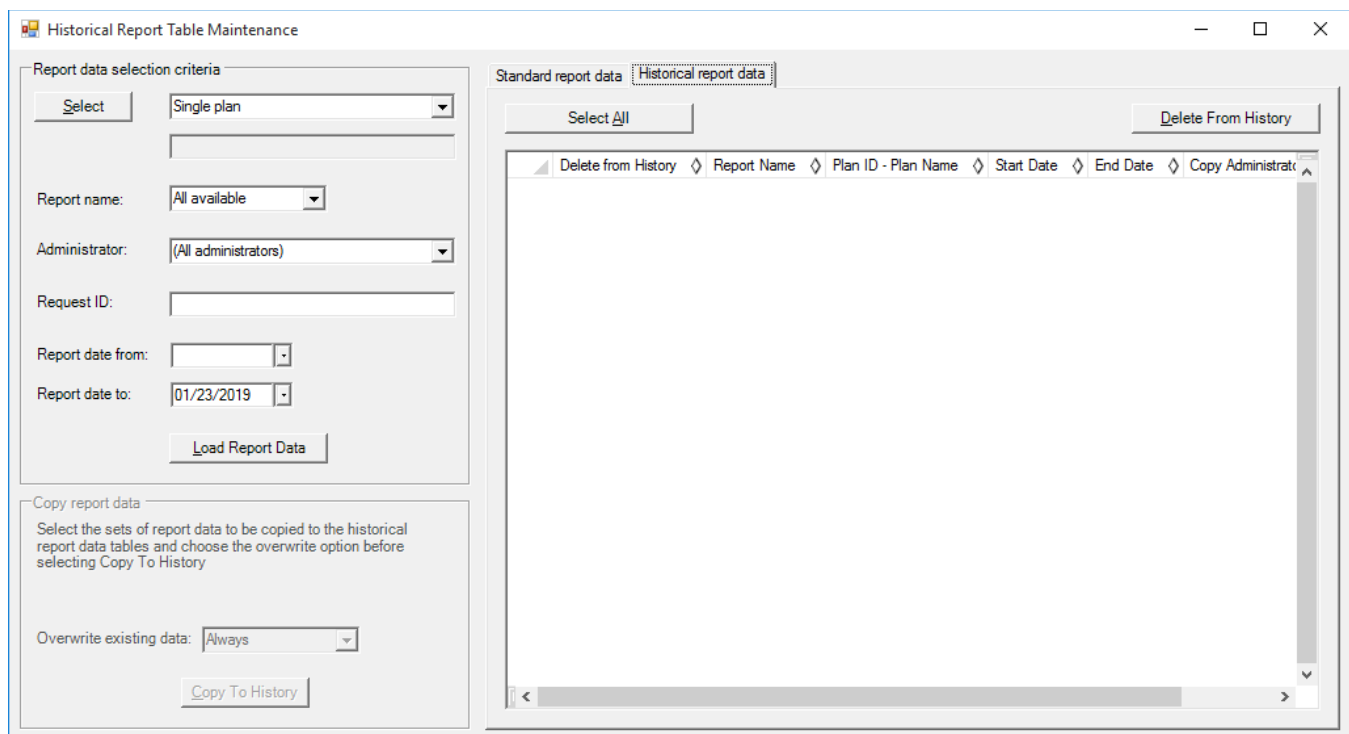
- Your data is your responsibility. Although the programs used to remove old data allow for exporting of **some** of the old data, once this information is pulled out of the database, it's gone for good.
- Do not purge the database manually, as this can cause orphaned records in your database and corrupt data that you want to retain.
- There may be statutory requirements for retaining such information. Please check with your legal team before removing data.
- These programs can take an extremely long time to load if you are purging information for the first time. This is because the data is being counted and loaded. Be patient.

- During the purge processes, there may be quite some time for the program to return to you.

## Historical Report Table Maintenance

From the main menu in Relius Administration click *Reporting | Historical Report Table Maintenance*. This will open a screen that will purge the OUTLOBDATA table. For the purposes of testing your system, you should consider selecting either a single plan or a plan group. After you choose your date range and click “Load Report Data,” the information you can remove will be displayed in the “Historical report data” tab.

Once you determine you want to remove all the files displayed, click “Select All” and then “Delete From History.”

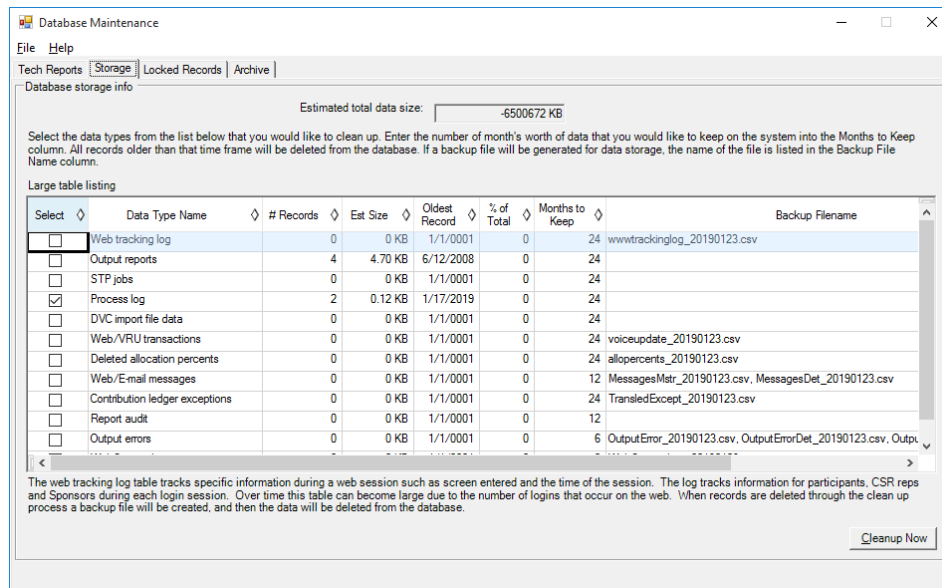


## Database Maintenance

From the main menu in Relius Administration, click *Utilities | System Administration | Database Maintenance*. Click on the “Storage” tab. Note in the grid each particular type of data set that can be purged. You can select the area to remove, along with the “months to keep.” For example, if you choose “24,” the most immediate 24 months’ worth of data will be retained while anything older than 24 months will be removed. If a file name is displayed in the grid, the data you select will be exported in CSV format.

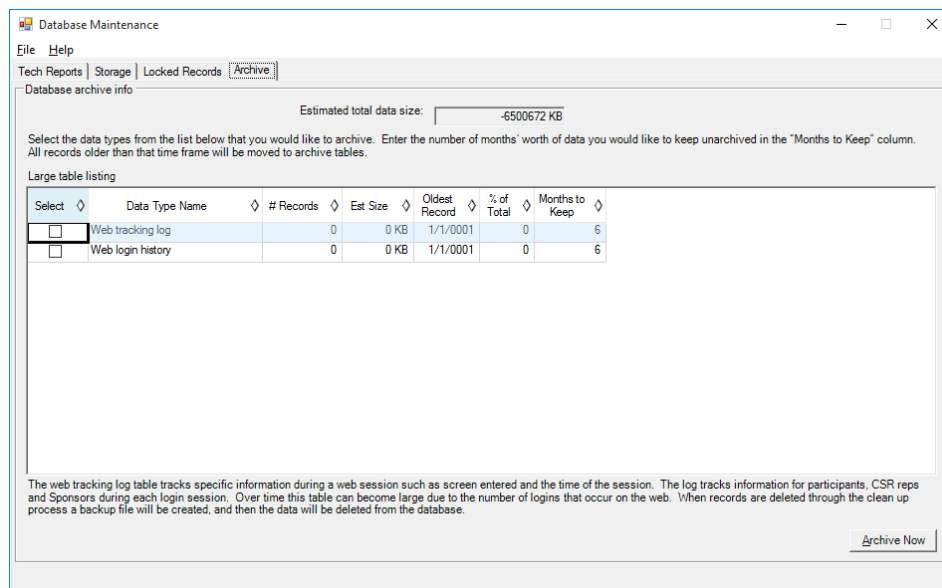
Note: if you save data to a CSV file, you are advised to save it under a different file name for safekeeping so that it doesn’t get overwritten if you run the process again.

Once you have selected all the data you want to purge, click the “Cleanup Now” button. As stated before, bear in mind that this process of purging the first time around may take an exorbitant amount of time to complete. Do not interrupt the process.



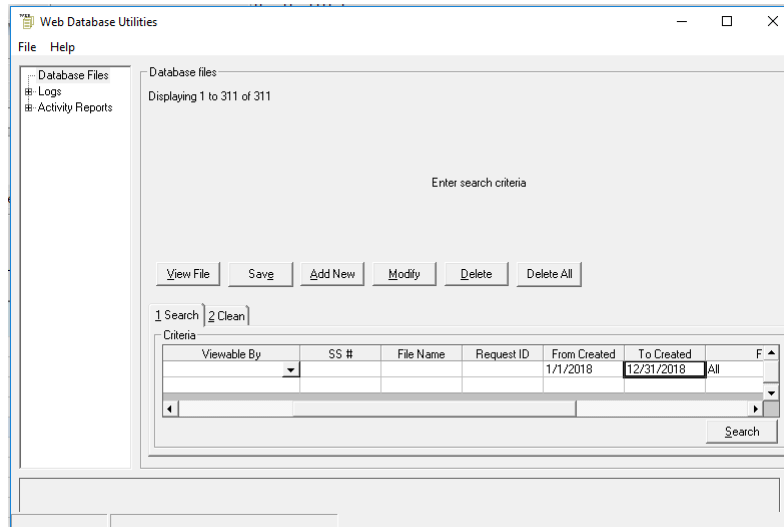
## Web Tracking Logs

A new feature in the Database Maintenance window allows you to archive your WWWTRACKINGLOG table. When records are deleted from the database through this process, a backup file will be created. Select which item to remove and the “months to keep” before hitting the “Archive Now” button.

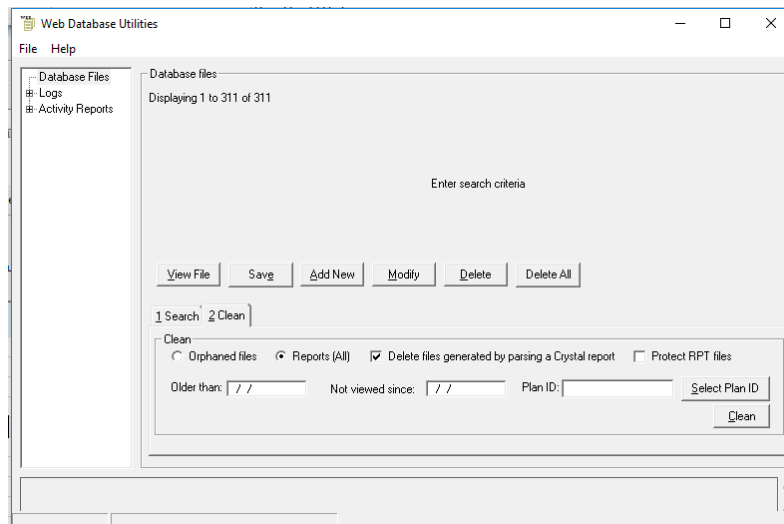


## Web Bin Files

The WebBinFiles table contains files that are inserted into the database that are provided to or by participants and plan sponsors. This table can grow rapidly. From the main menu in Relius Administration, click *Utilities | VRU/Web Administration | Web Database Utilities*. The first tab is a search function to allow you to save data you may want to retain before deleting it.



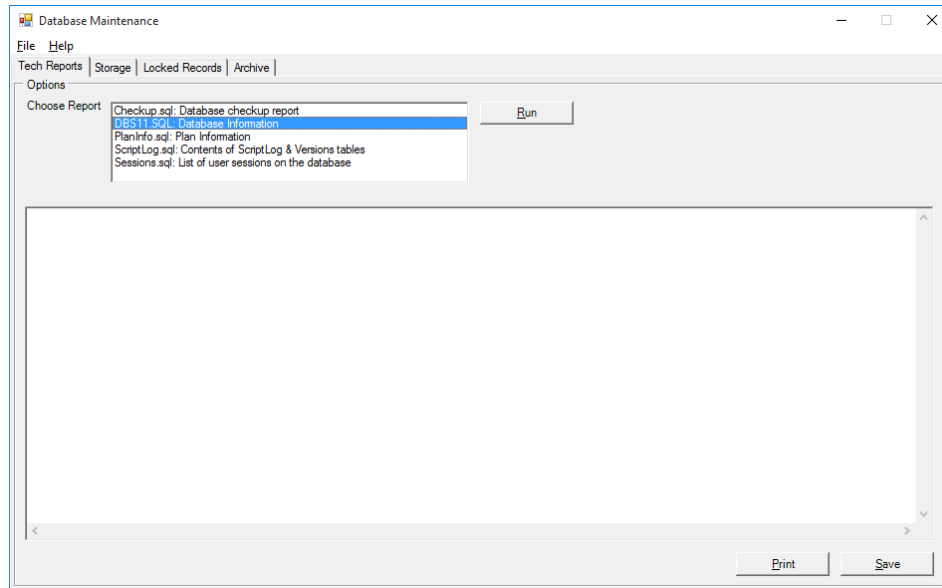
The “Clean” tab allows you to remove old data. Be sure to check with your Legal department before removing any of this old data. Other than reimporting an earlier full database export or saving individual files in the Search tab, there is no recovering information from the WebBinFiles table once it is removed by this utility.



## Shrinking Data Files

To recover some disk space on your server **after** removing and archiving old data, you are best advised to first run a DBS report. In the Database Maintenance window, click the “Tech Reports” tab, select **DBS11.SQL**, and then click the “Run” button. Save the resulting log file to Relius Technology Support for recommendations on shrinking your data files.

Note that as your database begins to grow again, the data files will also grow. This is natural. If your database server is short of space, you should consult Relius Technology Support.



## Additional Options

### Relius Recovery Services

A final option available is a utility called Relius Recovery Services (RRS). This module is installed to your database server. Once configured and scheduled, a regular data pump export of your database is performed, the export file and the associated log are compressed into an encrypted ZIP file, and (if licensed) then the ZIP file is uploaded to a secure server in the Relius ASP enterprise. To use this feature, contact your Relius sales representative.