# GUARDIAN

# *Guardian Database Toolkit User Manual*

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## Introduction

The Guardian Database Toolkit provides facilities to maintain the databases for Guardian Systems without the need to run either the Guardian Visual Designer or Viewer applications.

The toolkit is installed as part of the full Guardian Suite and can be found using the Program Taskbar as Guardian…Applications…Guardian Toolkit.

The primary role of the toolkit is to upgrade previous versions of the database so that they may run with the most recent version of the Guardian Suite, however it has additional facilities such as:

> Compact and repair of database files
> Transferring to and from SQL Server installations
> Creation of small Configuration only databases
> Maintenance of the multiple data storage file format systems

## Database Selection

The Database Toolkit works with the currently selected Default Guardian database project, as previously selected by Visual Designer or Project Manager.

Project Manager also provides the facility to launch the Database Toolkit so it may be used with any of the projects defined within the Project Manager.

If Visual Designer is started with a database that is not up-to-date, it will offer the user the ability to launch the Database Toolkit in order to upgrade the database to the latest release.

It is also possible to open a Microsoft Access file directly with the Database Toolkit by right-clicking the file and using the "*Open With…*" facility select Database Toolkit. This only opens the file for this single use and does not mark it as the current database for the other Guardian applications.

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## Toolbox Selections

Depending on which format of database is used, and if the database is currently up to date, a selection of tools will be provided. To the right of each of the toolbox options is a description of the operation that will be performed. Tools that are not available due to the current version of the database are greyed out.
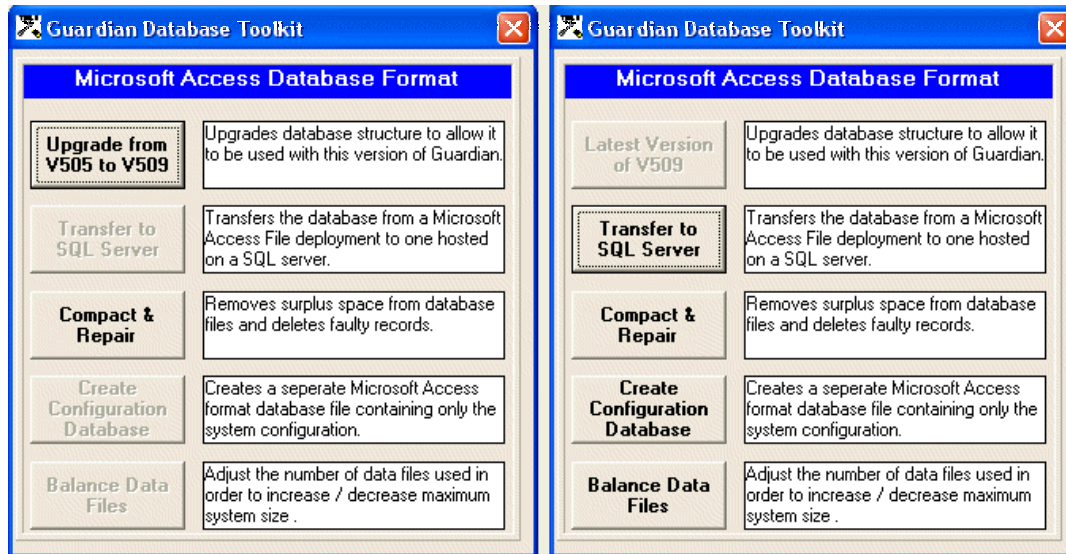


Figure 1. Microsoft Access Tools

The Microsoft SQL Server Database options are similar but do not have the options for "Compact & Repair" or "Balance Data Files" as these are not relevant to its installation format.

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## Database Upgrade

As new facilities are added to the Guardian Suite, the format of the database occasionally has to be. In order that previously designed Guardian systems can migrate to the latest software, an upgrade facility is provided within the toolkit.

Upgrading of a Microsoft Access database is handled completely by the toolkit, for an SQL database there are some external scripts that have to be executed using the Management tools provided by the SQL server installation.

As the upgrade process completes each step, the progress is updated to the display. Once the complete process has finished successfully or with a failure, a Button marked *Complete* is provided to return the user back to the toolkit options.



Figure 2. Upgrade Summary Display

## Transfer to / from SQL Server

It is unlikely that system databases will be generated directly onto Microsoft SQL Server, instead using the Microsoft Access data file to design and test the configuration and then migrate this to SQL Server.

Before this migration takes place, the structure needs to be installed on the server as per the instructions within "SQL Server Database Installation Procedure.doc", which is installed with the full Guardian Suite.

When transferring to SQL Server the same details that would normally be required to connect to a SQL Server system database are required, and these will be requested using the dialog box below.



Figure 3. SQL Transfer Connection Dialog

Once a connection has been made a summary progress will list each table as it is copied. If logged data has been included this may take some time to transfer.

The reverse process of transferring from SQL server is very similar. The user will be prompted for a destination filename and a new Microsoft Access database will be generated.

**Note**: It may not be possible to transfer all the logged data from SQL server as only a Single database file is generated. If the SQL server system has more then 2GB of data it will stop once this limit has been reached.

If it is only the configuration that is required, use the facility of **Creating Configuration Databases** that is described later.

## Compact & Repair

When items of data are deleted from the database, the file size does not decrease, instead the space is marked as available for the next item of data to be saved. This is not normally a problem with the routine running of a Guardian system, however after a major sift or delete operation, it may be desirable to reclaim the disk space freed up.

In addition to reclaiming the space used by deleted items, any records that have been corrupted by a hardware or software failure can be removed from the database which may allow a non-functioning system database to be loaded into Visual Designer for inspection and repair.

**Note** that if any of the configuration records are corrupted this repair process will still leave the database in a non-functioning state if used with Guardian Viewer, however it may be possible to save much of the system with Visual Designer. This should not be seen as a substitute for complete backups.

If Multiple data files are being used, each file will be processed. The new file size is displayed as a percentage of its starting size. On completion click the **Complete** Button to return to the toolkit options.
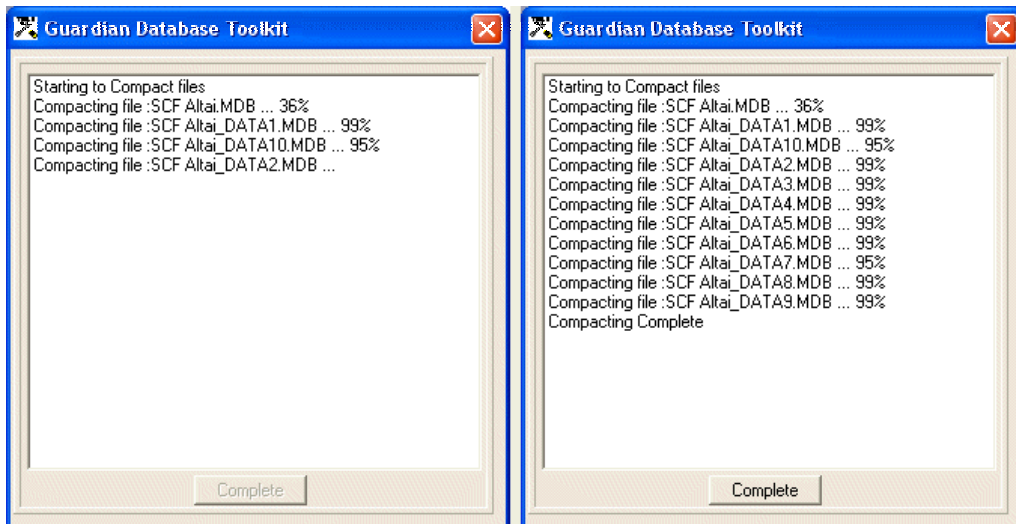


Figure 4. Compact & Repair Status Display

## Creating Configuration Databases

Once a system database has been used with Guardian Viewer it will have started to add logged data entries and start to increase in size. It may be required at a later date to send the database either by Email or by CD, however the database may be too large for the required media.

This toolkit option allows a new system database to be created from an existing one without any of the logged data being included, thus making it identical to a brand new system database.

Previously this could only be achieved from within Guardian Viewer by selecting particular options from the database Management display.

This configuration database may be used to make configuration changes remotely or simply to keep a backup of the system configuration in case of future failure.

On selecting this option the user will be prompted with the standard Windows Save dialog for a filename into which the database will be saved. This should be in a separate folder to the existing system to avoid confusion.

## Balancing Multiple-Data File Systems

Microsoft Access database files have a 2GB limit that has restricted their use with large systems. In order to get around this issue it is now possible to split where the logged data is stored.

By default a single Master Configuration database file will be created by Visual Designer and it will hold both the system configuration and all the logged data. Using this facility of the toolkit it is possible, at any time during the database use, to analyse how much of the file is being used for each machine in the system and to redistribute this logged data across other files.

Any number of system machines may store their data into any file, however a machine can only use one file for its data thus creating a new limit of 2GB of logged data per machine.

The display uses two lists to analyse the distribution of the data. On the left each file is listed along with their current size. If the file is less than 1GB it will be coloured Green indicating there is currently no problem with its size, if it is between 1 and 1.5GB it is coloured Yellow to indicate it is becoming a candidate for splitting, and if it is over 1.5GB it is coloured Red to indicate that this file is getting close to its limit.

The Master Configuration database file is identified by not having an extension of "_DATA". Initially it may be the only file listed.
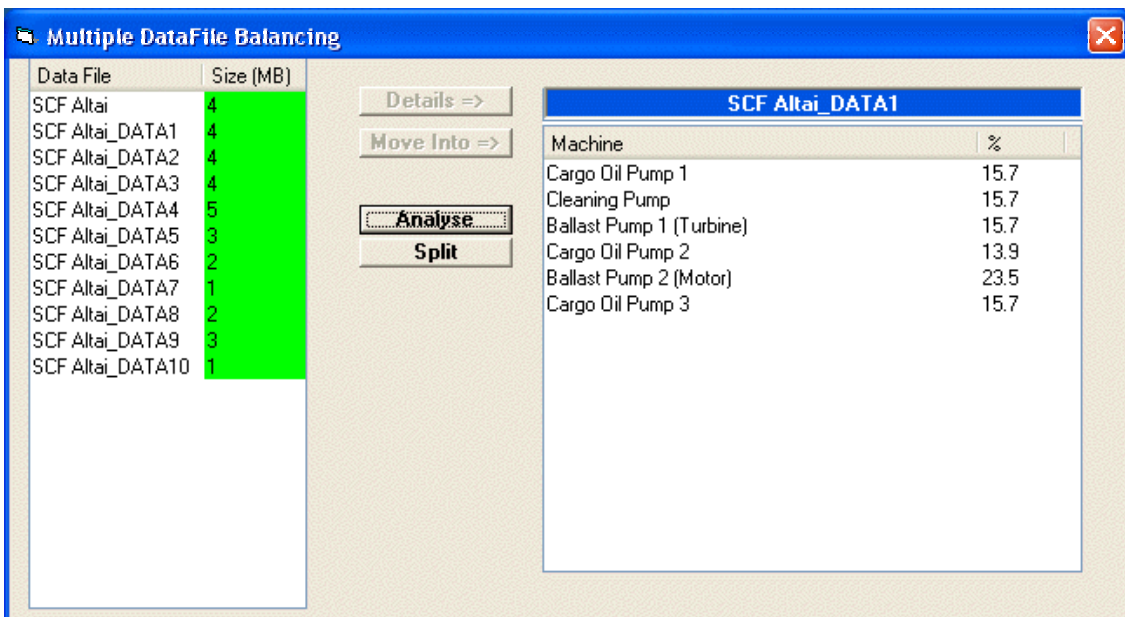


Figure 5. Logged Data balancing Display

To see which machines are using a particular file for storage, click the name of the file and then the *Details* Button. Initially only a list of the machine names will be displayed in the right-hand list, to see the percentage each occupies within this file, click the *Analyse* button.

**Note**: At present the percentage is based on number of entries, therefore this value is only approximate as some machines may be storing larger data traces than others.

If the file is getting too large, or it is anticipated that in the near future it may be, the machines held within the file can be split into two by clicking the *Split* Button. The toolkit will automatically divide the machines between this and a new file in order to get closest to a

50:50 split of data. As this may involve copying a large quantity of data, this process may take some time to complete. Once completed a new file will be added to the Data File list and the original file size will have been updated.

Later it may also be desirable to combine two small files into one, either due to a mistake or due to a change in system design.  It should be noted that there is no noticeable performance loss in having more data files, and as they are all kept within a single folder it should not become confusing. The sum size of the two files must be less than 1GB to allow them to be combined, else the button will be disabled.

To perform the join first select one data file for analysis, then select the second and click the **Move Into** Button. Again as this may involve copying a large quantity of data, this process may take some time to complete. Once completed the data files will have been renamed in order to remove to joined file, and the file sizes will have been updated.