
User Manual

HLA Fusion™ Research Database Utility

HLA Fusion™ Research Software v. 2.0

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For Research Use Only.



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Please note that this document was prepared in advance of the HLA Fusion software release. Therefore, you may notice slight differences in the content of the actual application screens.

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HLA Fusion™ Research Database Utility

With the HLA Fusion™ Research Database Utility, you can access and select a SQL Server database from any location within your system network connected to your computer, provided the database configuration has been set up for remote access.

The HLA Fusion Research Database Utility allows you to create and connect to SQL Server databases, as well as perform all of the following tasks.

- Create a new database
- Connect to an existing database
- Make a backup copy of your database or create a schedule for regular backups
- Restore a database
- Detach from a database
- Attach to a database
- Create or connect to an audit log to record user activity in HLA FusionResearch
- Merge databases
- Migrate HLA Visual and HLA Tools database to HLA Fusion Research
- Upgrade a database from a previous version of HLA Fusion Research to the current version.

Caution: Please back up your database before performing any database utility function.

Opening the HLA Fusion Research Database Utility

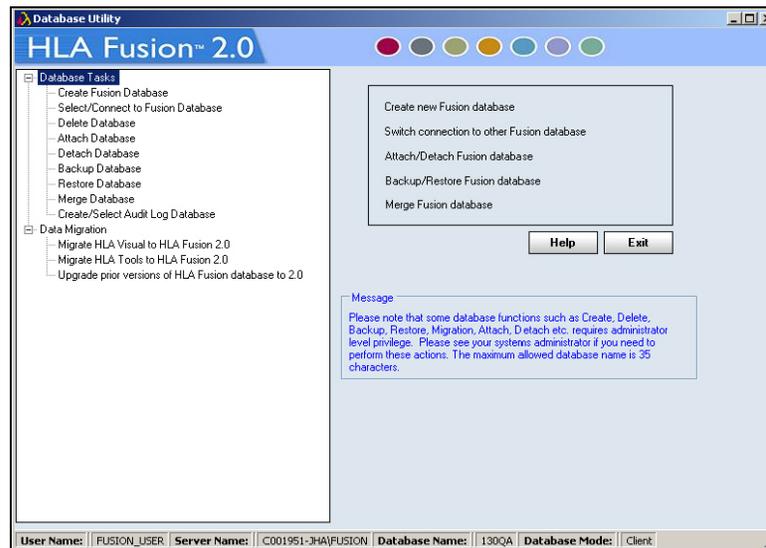
The HLA Fusion Research Database Utility allows you to connect to any SQL server on your computer or the network, depending on your permissions and your organization's security policies.

To use any of the Fusion ResearchDatabase Utilities, you must first connect to a SQL Server. With the exception of connecting to a database, the database tasks can be executed only on the server or on the computer on which the database resides.

The following are guidelines for using the Fusion Research Database Utility:

- You can connect to the SQL Server using either Windows Authentication or SQL Server Authentication. If you use SQL Server Authentication, the Server dialog box displays the default database administrator user name and password for a local client/server installation.
 - It is highly recommended that you do not switch collation and regional settings between databases. The collation of databases and the SQL Server play a major role during database merge and migration.
 - Please do not alter the permission
1. Click the **Database Utility** icon on your computer desktop. The **Database Utility** main window is displayed.

Figure 1: Fusion Research Database Utility Main Window



Note: There is a status bar at the bottom of the Fusion Research Database Utility window that displays the active user, server, database, and database mode (the User Name field says *Not Set* if you are using Windows Authentication).

The **Help** button is available on every Database Utility window. Just as when you press F1,

clicking **Help** displays a context-sensitive HLA Fusion Research help page with guidance related to the current window.

2. Click the +/- signs to the left of the main database utilities to display or hide related database utility menu options.

Database Tasks

The **Database Tasks** option offers various means to configure and manage a Fusion Research database. These functionalities are described in the following sections.

Creating a New Database

New databases can be created only on the server on which the database resides.

1. Within the **Database Utility** window, click the **Database Tasks > Create Fusion Database** option.

Figure 2: Create Fusion Research Database

The screenshot shows a dialog box titled "Create Fusion Database". It has two main sections: "SQL Server" and "Database". In the "SQL Server" section, there is a text box containing "localhost\FUSION" and a browse button "...". In the "Database" section, there is a "Database Name" text box containing "FUSION" and a "File Size (GB)" dropdown menu currently set to "0.5". Below these fields are three buttons: "Create", "Help", and "Exit". At the bottom of the dialog, there is a "Message" box with the following text: "Please note that some database functions such as Create, Delete, Backup, Restore, Migration, Attach, Detach etc. requires administrator level privilege. Please see your systems administrator if you need to perform these actions."

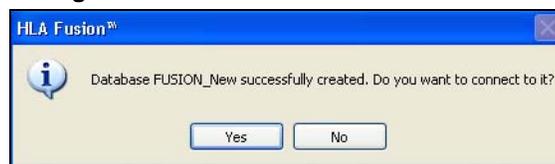
2. Enter a name for the new database, select the maximum database size (in increments of .5 GB), and click the **Create** button.

Note: HLA Fusion Research software by default creates a smaller database of size 25MB, and allows growth to the maximum size you select in the **File Size (GB)** field. For SQL 2000 Express, the maximum size is 2GB. For 2005 Express and SQL 2008 Express, the maximum allowed database size is 4GB. For a purchased SQL server, the maximum database size is 500GB.

Please ensure that you maintain consistent collations of your Fusion Research SQL Server database. Different SQL Server collations use different comparison rules for data handling which can cause a conflict during database merges if collation consistency is not maintained.

If the newly created database does not already exist, the system creates the new database and displays the following message.

Figure 3: Database Creation Confirmation



3. Click **Yes** to connect to it. Click **No** if you do not wish to connect to it at this time. If you click **Yes**, a connection confirmation message is displayed.

Figure 4: Database Connection Confirmation



4. Click **OK**.

If the newly created database already exists, the system displays the following error message.

Figure 5: Database Creation Error Message



5. Click **OK**. Verify that the database name you have entered is unique to the server you have selected, and retry.

Note: The Fusion Research database utility creates a user ID called FUSION_USER within the database at the time of creation. Please do not alter the status of this user.

Selecting and Connecting to a Database

From the Database Utility window, you can choose to connect to a databases that already exist on the selected server. The subsequent analysis using HLA Fusion Research uses the selected database.

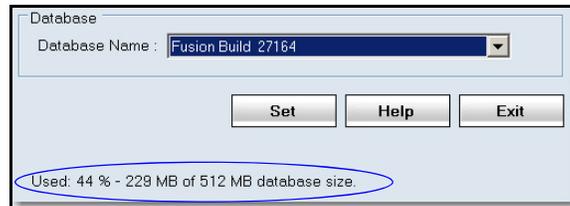
1. Within the **Database Utility** window, click the **Database Tasks > Select/Connect to Fusion Database** option.

Figure 6: Select/Connect to Fusion Database



2. From the **Database Name** drop-down list, select a database. The percentage used as well as current and maximum sizes of the selected database are displayed.

Figure 7: Selecting from Existing Fusion Databases



3. Click the **Set** button. The following message is displayed.

Figure 8: Successful Connection Confirmation



-
- Click **OK**. The database you selected is listed in the Database Name field in the status bar of the Database Utility window.

Deleting a Database

From the Database Utility window, you can delete an existing database from the server.

- Within the **Database Utility** window, click the **Database Tasks > Delete Database** option.

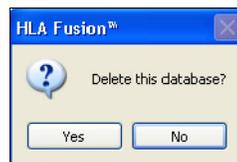
Figure 9: Delete Fusion Database



- From the **Database Name** drop-down list, select a database and click the **Delete** button. The following prompt is displayed.

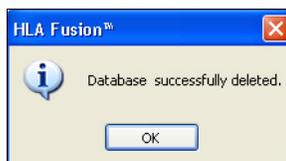
Note: If you receive a message that the selected database is busy, please try this action again in a few minutes.

Figure 10: Prompt for Database Deletion Request



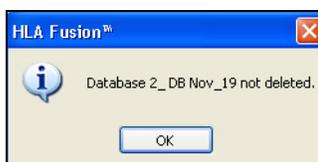
- If you click **Yes**, the following confirmation message is displayed. Click **OK**.

Figure 11: Database Deletion Confirmation



4. If you click **No**, a message verifying that the database was not deleted is displayed. Click **OK**.

Figure 12: Verification that a Database was Not Deleted



Attaching to a Database

You may wish to use the Attach and Detach Database options together when you want to move a database to another location and then link to that new location. Here is a sequence to follow if you want to do this:

- Detach the database (see [Detaching from a Database, p. 8](#)).
- Move the database .mdf file to the desired location on another server or disk.
- Attach the database, using the steps below to specify the new location of the moved database.

You can use Attach database to link to any Fusion Research database .mdf file. However, the database .mdf file you are attaching must reside on the selected server.

Note: It is recommended that you back up the database before using the **Attach** feature.

1. Within the **Database Utility** window, click the **Database Tasks > Attach Database** option.

Figure 13: Attach a Fusion Database



2. Click the **browse** button  next to the **MDF file to attach** field, and locate the database file you want to attach to Fusion Research.
3. Select the database (*.mdf) file, and click **Open**. The selected (*.mdf) file displays in the **MDF file to attach** field.
4. Enter a name for the database in the **Attach as** field.
5. Click the **Attach** button.

Detaching from a Database

If you wish to move a database file to another location for disk space considerations or other reasons, you must first detach it from Fusion Research. Then, you can relocate it and link to its new location (see [Attaching to a Database, p. 7](#)). You may also simply no longer want to have HLA Fusion Research Software linked to a particular database, but you do not want to delete it yet.

Note: You cannot detach the database currently in use.

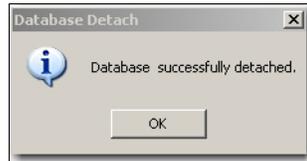
1. Within the **Database Utility** window, click the **Database Tasks > Detach Database** option.

Figure 14: Detaching a Database from Fusion



2. From the **Database Name** drop-down list, select a database and click the **Detach** button. The following message is displayed.

Figure 15: Confirmation that Database is Detached



3. Click **OK**.

Note: A detached database .mdf file is located in the directory where the Fusion instance of SQL was installed (e.g., the default is C:\Program Files\Microsoft SQL Server\MSSQL1\MSSQL\Data).

Creating a Database Backup File

It is recommended that you create regular, frequent backups of your HLA Fusion Research database(s). If some event occurs that corrupts a database, or makes it inaccessible, having a backup copy of the database allows you to restore all data up through the date of the most recent backup. Use the Schedule Backup feature to set up automated regular backups of a specified database—any day or time, and as often as desired. For information on restoring a database with a backup copy, see [Restoring a Database, p. 15](#).

The backup database must be saved to the local drive of the server or the computer on which you are creating the backup copy. The filename of the backup file is the name of the database with a .bak extension.

Note: You can use a shared or network mapped drive to store backups if the SQL agent is given the appropriate permissions to that directory. For more information, please refer to <http://support.microsoft.com>.

1. Within the **Database Utility** window, click the **Database Tasks > Backup Database** option.

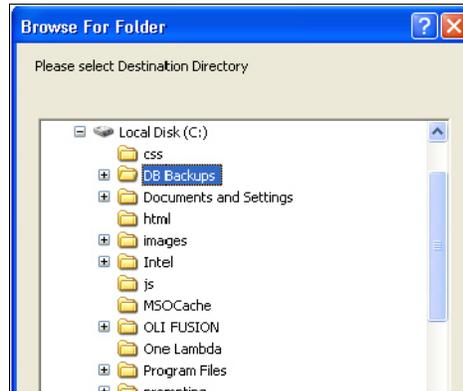
Figure 16: Fusion Database Backup



2. From the **Database Name** drop-down list, select a database.
3. Click the **browse** button  next to the **Destination** field. This brings up a new window where you can browse to select a destination folder for the database backup.

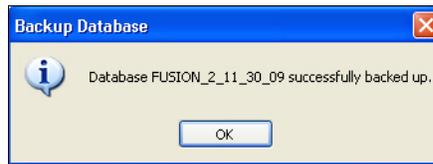
Note: Make sure you select a destination directory that is on the selected SQL server. Do not choose your desktop as the location for backups. It is recommended that you create a special folder for these on the C: drive (e.g., C:\DB Backups).

Figure 17: Browse for Backup Database Location



4. Indicate a database backup file name in the **Backup File** field (by default, it is the database name). The backed up files are stored with a (*.bak) file extension.
5. Do one of the following to either back up the database immediately, or schedule for another day(s) and time:
 - To perform a backup of the database immediately, click the **Backup** button. When the following message is displayed, click **OK**.

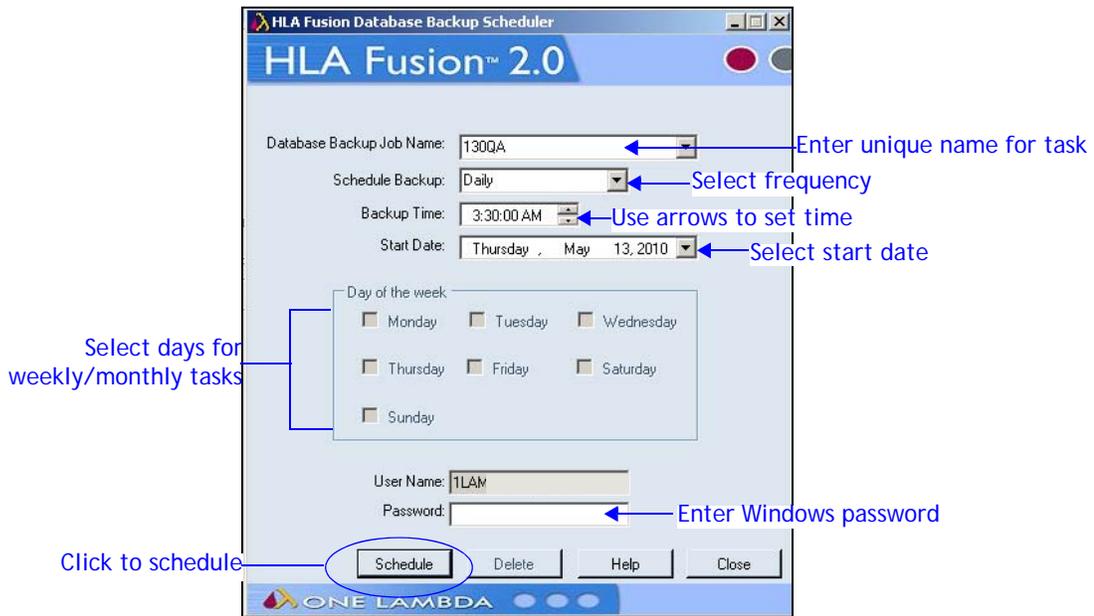
Figure 18: Backup Confirmation



Note: The length of time required to back up a database is proportional to its size—the larger the database, the longer it takes to back it up.

- To schedule a backup(s) for a future date and time, or on an automated schedule, click **Schedule Backup**. The backup scheduler is displayed.

Figure 19: Fusion Database Backup Scheduler

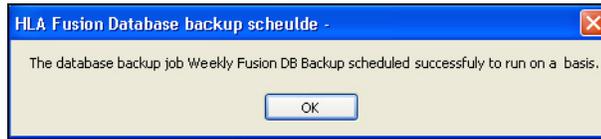


- Complete the fields in the scheduler to set up the database backup day and time:
 - **Database Backup Job Name:** Enter a name for the backup. Each scheduled backup task requires a unique name.
 - **Schedule Backup:** Use the drop-down arrow to select the backup frequency (Daily, Weekly, Monthly).
 - **Backup Time:** Use the up/down arrows to set the time at which to start the scheduled backup. Please note that the length of time required to back up a database is proportional to its size—the larger the database, the longer it takes to back it up.
 - **Start Date:** Click the drop-down arrow and select the date on which you want the scheduled backup to begin.
 - **Days of the week:** If you selected a frequency of weekly or monthly, select the check box for the day-of-the-week for which you would like to schedule backups. This option is grayed-out if the specified frequency is Daily.
- Enter your Windows password in the **Password** field. You must enter your Windows password to ensure you have the correct privileges to back up the database as specified.
- Click **Schedule**.

Note: You are not required to have HLA Fusion Research running or to be logged in to run the scheduled backup task. However, you must have your computer on during the backup period.

If your scheduling is confirmed, the following message is displayed, and you should click **OK**.

Figure 20: Backup Job Creation Confirmation



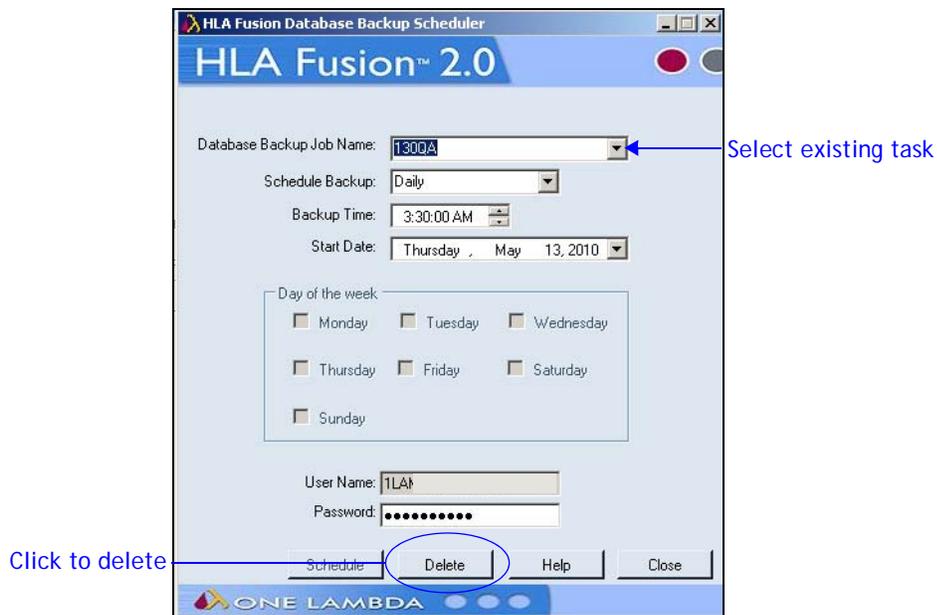
Note: The directory you specified for the scheduled backups will, at the specified frequency, contain the database backup file as well as a log file that documents the job status.

Deleting a Scheduled Backup

Take the following steps to delete a scheduled backup.

1. Click **Schedule Backup**. The backup scheduler is displayed.

Figure 21: Delete a Scheduled Backup Job

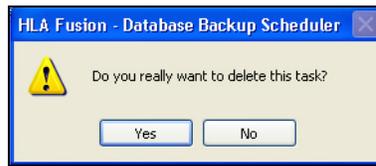


2. Use the drop-down arrow in the Database Backup Job Name field to select a scheduled backup task to delete. (You are not required to provide a password to delete a backup task.)

Note: The drop-down list for backup jobs may display more tasks than the Fusion Research tasks, so be careful to select only the Fusion database backup task you wish to delete.

3. Click **Delete**. You are asked to confirm the deletion of the task.

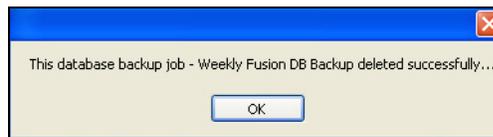
Figure 22: Prompt for Backup Job Deletion



4. Click Yes.

If your scheduling is confirmed as deleted, the following message is displayed, and you should click **OK**.

Figure 23: Backup Job Deletion Confirmation



To create a new backup task, follow the steps for scheduling a backup in the section above, [Creating a Database Backup File, p. 9](#).

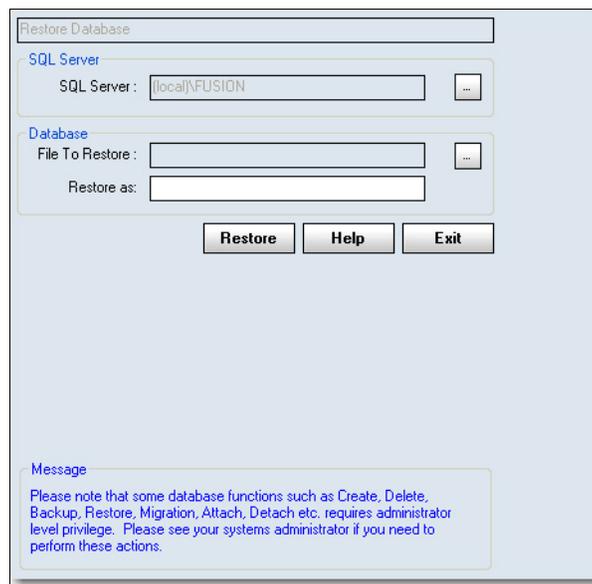
Restoring a Database

You can use any database backups to restore (replace) a database that is no longer useful. The backup database copy contains all HLA Fusion Research data up through the date of the backup creation. For information about creating backup copies, see [Creating a Database Backup File, p. 9](#).

You can restore a database backup to any existing or new database—except for the current database. If you wish to restore a database backup for the current database, use the Merge Database feature described below. Restoring a database can only be performed on the server or the computer where the backup database file resides.

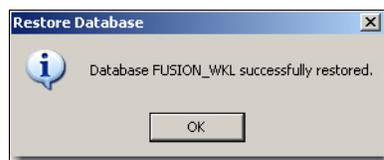
1. Within the **Database Utility** window, click the **Database Tasks > Restore Database** option.

Figure 24: Restore a Fusion Database



2. Click on the **browse** button next to **File To Restore** text box. This brings up the file importer window. Browse to select the database backup file to restore, and click **Open**.
3. Enter a file name for the restored database in the **Restore as** field.
4. Click the **Restore** button. The following message is displayed.

Figure 25: Database Restore Confirmation



5. Click **OK**. The database is restored with the specified backup file.

Note: SQL Server does not allow you to restore databases from certain sources, such as a network drive or local computer desktop.

Merging Databases

This function allows you to combine two databases into one, regardless of their location. There are certain guidelines to follow when merging databases:

- Both databases must be the same version of HLA Fusion Research database.
- Both databases should be backed up before performing a merge.
- The source database information is copied into the target database.
- When merging into an *existing* HLA Fusion Research database, ensure that destination database size is big enough to store the source database if you are merging into an existing database. By existing database, we mean that it has lab and user information at minimum. The source database lab data will be copied if it is missing from the target database.
- When merging into a *new* HLA Fusion Research database, first create a new database using **Create Database** function (see [Creating a New Database, p. 3](#)), and make the size large enough to accommodate the source database.

1. Within the **Database Utility** window, click the **Database Tasks > Merge Database** option.

Figure 26: Merge Fusion Databases



2. Select a database from the **Database Name** drop-down list under **Source Database**.

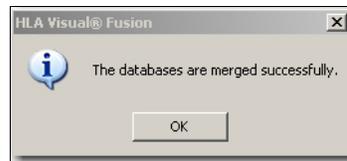
-
3. Select a database from the **Database Name** drop-down list under **Target Database**.

Note: HLA Fusion Research checks the MesfEquivalent and MesfNormal columns in the well data table for NaN or infinity values, and replaces these with a null or empty space. These columns have been found to contain inconsistent data in earlier versions of One Lambda software.

Occasionally a database merge may fail due to an incompatibility of collation (data handling rules established when the database is created) between the source and target databases. For more information, please refer to <http://support.microsoft.com/kb/325335>.

4. Click the **Merge** button below. The following message is displayed.

Figure 27: Database Merge Confirmation



5. Click **OK**.

Managing an Audit Log Database

This function allows you to set a database as the audit log to record all user activity in HLA Fusion Research Software.

1. Within the **Database Utility** window, click the **Database Tasks > Manage Audit Log Database** option.

Figure 28: Manage Audit Log Database



2. Do one of the following:

- Select a database from the **Database Name** drop-down list and click **Set**.
- Enter a unique database name in the **Database Name** field and click **New Database**.

A message is displayed confirming audit log database creation and asking whether you want to connect to it.

Figure 29: Audit Log Creation Confirmation



3. If you want to connect to the audit log database now, click **Yes**. Otherwise, click **No**. If you choose to connect, a message displays to confirm the connection.

Figure 30: Audit Log Database Connection Confirmation



Data Migration

The **Data Migration** option allows you to migrate legacy data stored on your computers from previous versions of the One Lambda's software applications to the new version in an acceptable data format.

Migrate HLA Visual to Fusion 2.0

Using this tool, users can migrate their HLA Visual legacy data to the current HLA Fusion Research data format.

Note: Please note that only the latest released version of HLA Visual database is supported, version 2.2.0. If need be, please upgrade to the latest version of HLA Visual program before migration.

1. Within the **Database Utility** window, click on the **Data Migration > Migrate HLA Visual to Fusion** item.

Figure 31: Migrate HLA Visual to Fusion

Migrate HLA Visual to Fusion

Source

SQL Server: (local)\FUSION

Database Name: [dropdown]

Target

SQL Server: (local)\FUSION

Database Name: [text box]

Backup Location: C:\Documents and Settings\All Users\Application Data\On...

Migrate Help Exit

Message

Please note that database migration may take some time depending on the size of the database.
It is required that the backuo location must be a physically attached disk or the SQL Server service account must have access to the network share.
Please check whether there is disk space on the selected drive for back up and migration of the database.

2. From the **Database Name** drop-down list under **Source Database**, select an HLA Visual database to migrate.
3. Enter a name for the new database in the **Database Name** field under **Target Database**.
4. Click the **Migrate** button. This migrates the HLA Visual database to the HLA Fusion Research format.

Note: Please note that in some cases, the migration process results in an error if some of the expected data elements are not in the format that HLA Fusion is expecting. In such cases, please verify data and address any issues in the HLA Visual database before migration.

Please report migration errors to One Lambda so the handling of inconsistent legacy data can be improved.

Migrate HLA Tools to Fusion 2.0

You can use this tool to migrate your HLA Tools legacy data to the current HLA Fusion Research data format.

Note: Please note that only the latest released version of HLA Tools database is supported, version 1.2.2365.28840. If need be, please upgrade to the latest version of HLA Tools program before migration.

1. Within the **Database Utility** window, click the **Data Migration > Migrate HLA Tools to Fusion** item.

Figure 32: Migrate HLA Tools to Fusion

Target server must be SQL Server 2005 or higher.

Message
Please note that database migration may take some time depending on the size of the database.
It is required that the backup location must be a physically attached disk or the SQL Server service account must have access to the network share.
Please check whether there is disk space on the selected drive for back up and migration of the database.

2. Select an HLA Tools database from the **Database Name** drop-down list under **Source**.
3. Enter a unique name in the **Database Name** field under **Target**. (The Target must be version 2005 or higher of SQL Server.)

4. Click the **Migrate** button. This upgrades the HLA Tools database to the HLA Fusion Research format.

Note: Please note that in some cases the migration process results in an error if some of the expected data elements are not in the format that HLA Fusion Research is expecting. In such cases, please verify data and address any issues in the HLA Tools database before migration.

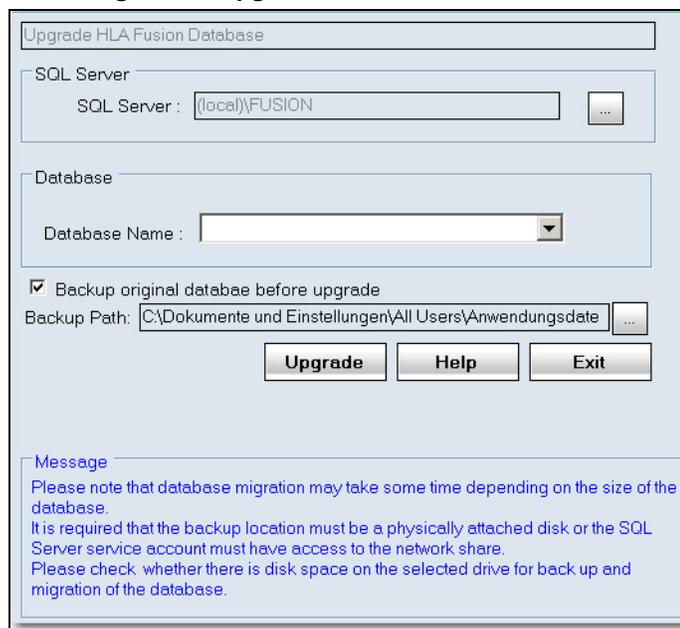
Please report migration errors to One Lambda so the handling of inconsistent legacy data can be improved.

Upgrade prior versions to HLA Fusion database 2.0

You can use this tool to upgrade a database created with a previous version of HLA Fusion Research to HLA Fusion Research version 2.x.

1. Within the **Database Utility** window, click the **Data Migration > Upgrade prior versions to HLA Fusion database 2.0**.

Figure 33: Upgrade HLA Fusion Database



2. Select your SQL server instance by accepting the default or by clicking the browse button  in the **SQL Server** field.
3. From the **Database Name** drop-down field, select the Fusion Research database you want to upgrade.
4. If you want to back up the database you are upgrading before it is upgraded, select the check box next to **Backup original database before upgrade**.

-
5. Click the **Upgrade** button. This upgrades the specified database to the most current HLA Fusion Research format.