RefreshFM Instruction Manual

About RefreshFM

RefreshFM is an automated update solution for FileMaker databases. It allows you to quickly and easily build a complete update process that is automated, fully error checked and fast and simple to run, while not requiring any modification to your live or development files.

FileMaker Update Methodolgies

FileMaker databases have a particular setup where the data and the programming logic is all contained within a single file. This means it's possible, but not simple, to separate the two and make changes to just the programming logic. Even in solutions using a separation model, there will still be times when you need to make programming changes to your data files. There are two options for that : altering a live solution or importing data into a development copy of the solution.

Altering live solutions is possible and you can manage this easily enough to cause minimal downtime. However there is always the risk, even with products like BaseElements [32] that can document a solution for you, that your changes aren't copied exactly.

Importing data can be time consuming for large data sets, but has some distinct advantages :

- Repeatable - You can run the import as many times as you need on recent backups without interrupting live files. This way you also know in advance exactly how long the process will take and how long any downtime will be.
- Testable - Once you've run an import once, you can easily test the real world results, again without interrupting data.
- Flexible - You can alter the imports to only include those files you need to change so that import time is minimised.
- Modifiable - Completely changing files allows to easily alter data structures and storage, something that is difficult and time consuming to do manually.
- Automat-able - The entire process from start to finish can be set to happen automatically, so that no user intervention is required, and no human errors occur.

The big issue with importing is the time spent on large data sets. But RefreshFM is also flexible enough so that you can run multiple imports on different machines at the same time. For a very large import you could have as many imports as you have files in your solution, all working simultaneously.

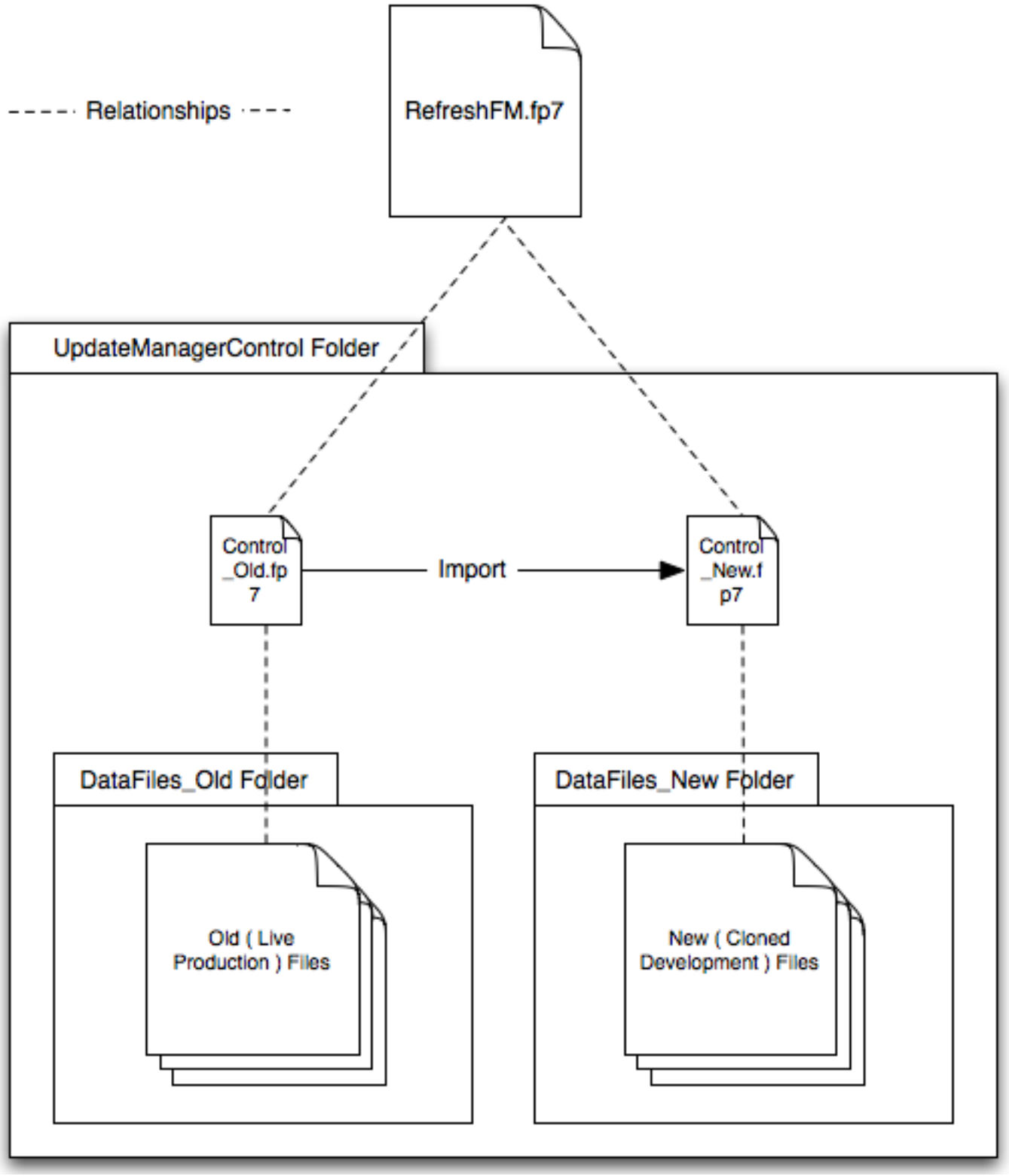
Importing gives you the most choice when making changes to your solution, you're not locked into a separation model and the constraints that that imposes for the rest of the project. So you're free to make the best decision for the long term benefit of the solution, not the one that your development model restricts you to. But even if you're using a separation model for your solutions, and doing UI only updates as needed, RefreshFM can help for those few times when a data file change is required.

How RefreshFM works

RefreshFM is a self contained file that you build your update process in. When complete, it contains all of the support files, and a complete copy of the development files for your solution. That way, when it's time to run the import you simply copy this one file to the live server and begin the update.

How it works

RefreshFM starts with the main FileMaker file. This contains all of the data and all of the scripting and programming logic that runs the update for you. RefreshFM build it's two "Control" files that reference the actual data files. These files are setup with File References to the actual files in them, and also contain all of the import steps. The following diagram gives you an idea of what is happening once all of the setup is complete.



As you can see in that diagram there are also two control files. These contain references to the working copies of your solution files. The import is between Table Occurrences in the these two control files, using Base Tables in the main files. This way the import processes can bring data from your Old to the New files without making any changes to the files themselves.

All of the setup to get to this configuration is done within RefreshFM itself, you don't need to create folders, copy files around or setup this structure. It's done for you and can be recreated at any time. Understanding the concepts here isn't critical to using RefreshFM but it does help in the setup and configuration in terms of being able to see why you need to perform each step.

Requirements

RefreshFM requires a copy of FileMaker Pro 11 to run, and the free BaseElements plugin to be active. The plugin is included with the download of RefreshFM, but can always be downloaded separately at any time from this link :

http://www.goya.com.au/baseelements/plugin [33]

FileMaker Pro Advanced isn't required for RefreshFM.

FileMaker Server

When you're running the live import it's always best to be doing this on the same machine as the files themselves, so we recommend using a copy of FileMaker Pro installed on the server machine, or a set of files copied to the working directory. You can use RefreshFM to auto close, update and re-open files on a FileMaker Server but this does require that RefreshFM reside on the server itself in order to interact with the server admin command line tool.

Runtime

RefreshFM can be used in a runtime application as well.

Import

The import tab is where the actual import happens once the setup is complete.

By choosing a copy of the live files (like a recent backup or a local copy) instead of the currently in use files, you can test the import as many times as required without interrupting the active users. Then when you want to re-run the import on the actual live files and put the completed imported files back into production you only need to alter the settings on the main Folders tab to point to the in use Live files.

Import - Folders

These settings contain the folders where the Live files come from (and will be returned to once finished) as well as an optional backup folder if required.

RefreshFM can close files that are hosted on FileMaker Server as well as copying files directly from a local drive. You can select between the two options using the "Production Files Are..." option. When you select Hosted files, the option for a "Final Data Folder" is no longer available as the files are put back onto FileMaker Server.

The Production Data Folder is where the Live files with data are copied from. Each time you run the Import, the files are copied from this location and then the import can start. Because it's a copy and not a move, you don't have to be concerned about the original files moving location. But you should also be sure to select files that are not open in FileMaker Pro or FileMaker Server as they may not be copied successfully or be still valid once copied.

Once the import has run, there is another step, Move New Files, which is the final step in the import. If the import is not successful you don't need to do anything as the original files haven't moved you can restart the files in FileMaker Server or continue using the local copy. When you do click the Move New Files button then, the first step is to move these original files to the backup location specified in

the Backup Folder field.

If the Backup Folder field is empty, then no backup is performed and the new files replace the original ones. Use this option with caution. If a backup option has been specified but the folder cannot be created then the user will be prompted for an alternate backup location.

If you're using the "Not hosted" option for the production files, you also have the option to move the Final Data files to somewhere other than the original location. This would be for the situation where you're importing from a "Version 1" folder and you want the new version to reside in the "Version 2" folder for example. If there is no folder specified it reverts to the same folder as the production folder.

Import - Import

The Import tab is where the actual work of the import happens.

Copy Files

This button will copy every file listed in the Files Tab of the review section from the Production data folder to the working folder, as well as exporting the Development files from container fields to disk. This step essentially gets you setup to run the import, with all the required files in place. The Live files are copied, not moved, so the originals are still there should anything in the import process not work.

Import

The Import button runs through the list of Tables in the portal below and does an import for each item. This has the following steps :

1. Get the Record count from the Live file.
2. Get the current Auto Enter Serial setting from the Live file.
3. Go the the import Layout in the Dev File.
4. Run an import from Live to Dev.
5. Compare the Found Count (the actual imported count) to the Live Record count.
6. Compare the Total Record count to the Live Record count.
7. Set the Dev Auto Enter Serial value.
8. Compare the Dev Auto Enter Serial Value to the Live one.

This process checks all of the required items in each step of the process. Any errors are recorded in the portal, and the field changes from green to red. Any red fields are where errors occurred and should be investigated.

Common errors will be for Layouts that don't exist (105 - Layout is Missing) or Tables that don't exist. If you get an error it should be fixed before proceeding to the next step that will replace your current live files with the imported copy. Fix the Table list, or check in the Old and New control files that all of the required items exist and that they have the correct names.

Move New Files

The final step in the process is to replace the original files with your new development copy with the data imported. There are two steps in this process. First, the original file is moved to the backup location. Second the imported file is moved into the Final Data folder.

In the case of files hosted on FileMaker Server, the files are put back onto the server and an Open request is sent to the server.

Import - Logs

The logs table is kept for debugging and testing purposes and in situations where there are issues may contain relevant information.

Review

This area contains the data the RefreshFM needs to keep track of in updating your solution. Various Setup processes (in particular the Old File References and Scripts buttons) require this information to be up to date.

If all of the other steps have worked properly, there is no need to manually edit any of these items. The list of fields is generated from the initial select step and the Tables and Serial Fields is generated from the Data button on the New Control section (5.4).

You can though review these items at any time to make changes. If you're making adjustments to the number of Files, Tables or Serial Fields after RefreshFM has been setup you can alter the values here to make sure the information is correct and every Table is being imported.

Review - Files

There are two portals on the Files tab, one for Old and one for New.

Live / Old Files

The Old file list is just a list of file names. These are intended to be the complete set of files in the currently in use version of the solution. If there are any files missing, you can manually add them to the list. If there are any files in the solution that don't need to be updated, then you can remove them from the list by clicking the red delete row icon in the portal.

The Live files are not retained at all, they're just copied to the working folder when required for an import.

Dev / New Files

This portal contains a single Container field with the development file in it. You can change the stored file by just clicking on the field and it will ask you for a file to insert into the container field.

The Dev files are intended to be the cloned versions of the newly developed files. This file is stored in the container field and is then exported to disk whenever an import is run. This way you can easily move the RefreshFM updater from your test machine to a live server by just copying the main RefreshFM file. As well, when you want to test the import it will export a clean clone of these files to disk so that you can re-run the import at any time without having to delete records or re-clone the file.

Review - Serial Fields

This portal contains a list of all of the Auto Enter Serial fields in the solution. The list of Auto Enter serial fields is generated automatically whenever you click the Data button in section 5.4 of the

Setup. You can click this at any time after doing the previous steps, and the list of Fields is cleared out and replaced.

RefreshFM only allows for a single Auto Enter Serial field per table. If you have multiple Auto Enter Serial fields, you can alter one of them to be an Auto Enter calculation based on the other field in order to reduce them to one per table.

Review - Tables

The Tables tab contains a list of all of the Tables being imported in the update. This list is set when you click the Data button in section 5 of the Setup process. You can click this button again at any time, the list is cleared and re-generated when you do. Any manual changes would be lost though.

You can delete at Tables that you don't want to import, although the best solution would be to not add them to the Relationship Graph in the first place.

The Ignore Errors checkbox is an option to not stop when there is a count mismatch after the import. This field is there for the situation where you have consolidated multiple tables into one. When you import those tables, the "Imported Record Count" will match before and after, but for the second or any subsequent imports, the "Total Record Count" won't match as you're adding to the records a second time. The Ignore Errors checkbox won't stop if this count doesn't match.

The List of Tables here is used to generate the Import Script, so it's important to have this list accurate before setting up that script.

You can delete any items that are not required or add a new Table in the empty row at the bottom of the portal. Make sure that the Table and Layout names match what is actually in the file or there will be errors when running the import.

Setup

1. Select Live Files

Click this button to select the folder where your live files are. RefreshFM will search for any files with the same file extension as the main file and copy one of each of those into the working folder.

Which folder to select?

This can be any folder that contains a copy of the Live or Production files with data in them. The only requirement is that they have some data in them to test the import with. So you might select a recent backup folder for files hosted by FileMaker Server or a local folder containing a copy of the files from a server.

Once the files are copied, the list of files found is in the Review section, on the Files tab. You can manually remove or add to the file list there.

The path to these files is also remembered, and stored on the Import section as the "Production Data Folder". If this was just a backup folder, not the actual live folder or the files are on FileMaker Server then you can alter that later.

What happens in the background?

The control folder for RefreshFM are created if it doesn't already exist. Inside that folder, a "DataFiles_New" is created and a copy of the live files is placed there. These files are deleted later when RefreshFM is closed or you change to another solution.

2. Setup the Old Control File.

These steps create the "Control_Old.fp7" which holds all of the references to the Old data files with the Live data in them.

2.1 Accounts

Overview

The "Control_Old.fp7" is the link to all of the old files containing the Live data. In order to create working File References and Table Occurences, an Account and Password will need to added to this file that exists in the Old files. The best Account for this would be one with no script or layout access, but access to view and create records, but not edit or delete. There is more information about options in the security section.

While we're doing the setup and testing you may find it's easier for this to be a Full Access Account. Once the setup is complete, then you can change the privilege levels of this Account, or switch to an Account with lesser privileges.

Instructions

Click on the Accounts link in the "Setup" section.

The Control_Old.fp7 file will appear. Use the menu to open the "Manage Security" dialog (we can't open this for you automatically unfortunately). You need to edit the account that is there as the "Admin" account, to make it have the same name and password the relevant account in your Old data files. Close the Manage Security dialog, accepting the warnings, if any, and close the Control_Old.fp7 file when finished.

2.2 File Options

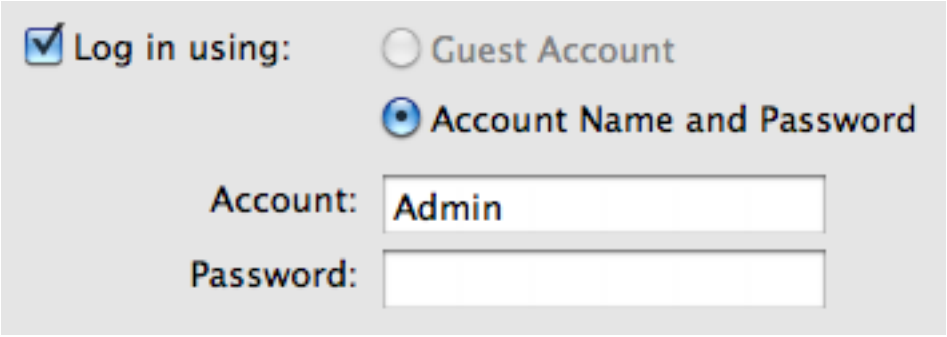
Overview

The Account you're using for the Control_Old.fp7 needs to be setup as the default, so that you don't have login dialogs appearing.

Instructions

Click on the File Options link in the "Setup" section.

The "File Options" dialog will appear. In the area where it has "Log in using" :



Change the account and password from "Admin" and blank to the same Account and Password you used in step 2.1.

Don't change any of the other details for this file. Close the "File Options" dialog.

2.3 File References

Overview

An External Data Source will need to added to the Control_Old.fp7 file for each file in your solution. This is done via a copy and paste into a script in the control file. The paste automatically creates all of the required References.

Instructions

First, make sure that the file list is complete. Check the list in the **Review** section on the **Files** tab. You can switch back and forward to this area at any time. Add any files that are missing and and remove any that are not required.

Click on the File References link. This will open the Manage Scripts window from the Control_Old.fp7 file.

There will be a script in this file called "File References". Open this script and click Paste, or use ctrl/command V to paste. This will create a collection of Open File steps.

Save the script, close the window and close the Manage Script window.

You can check the content of the actual References, or adjust them at any time by opening Manage External Data Sources.

2.4 Table Occurences

Overview

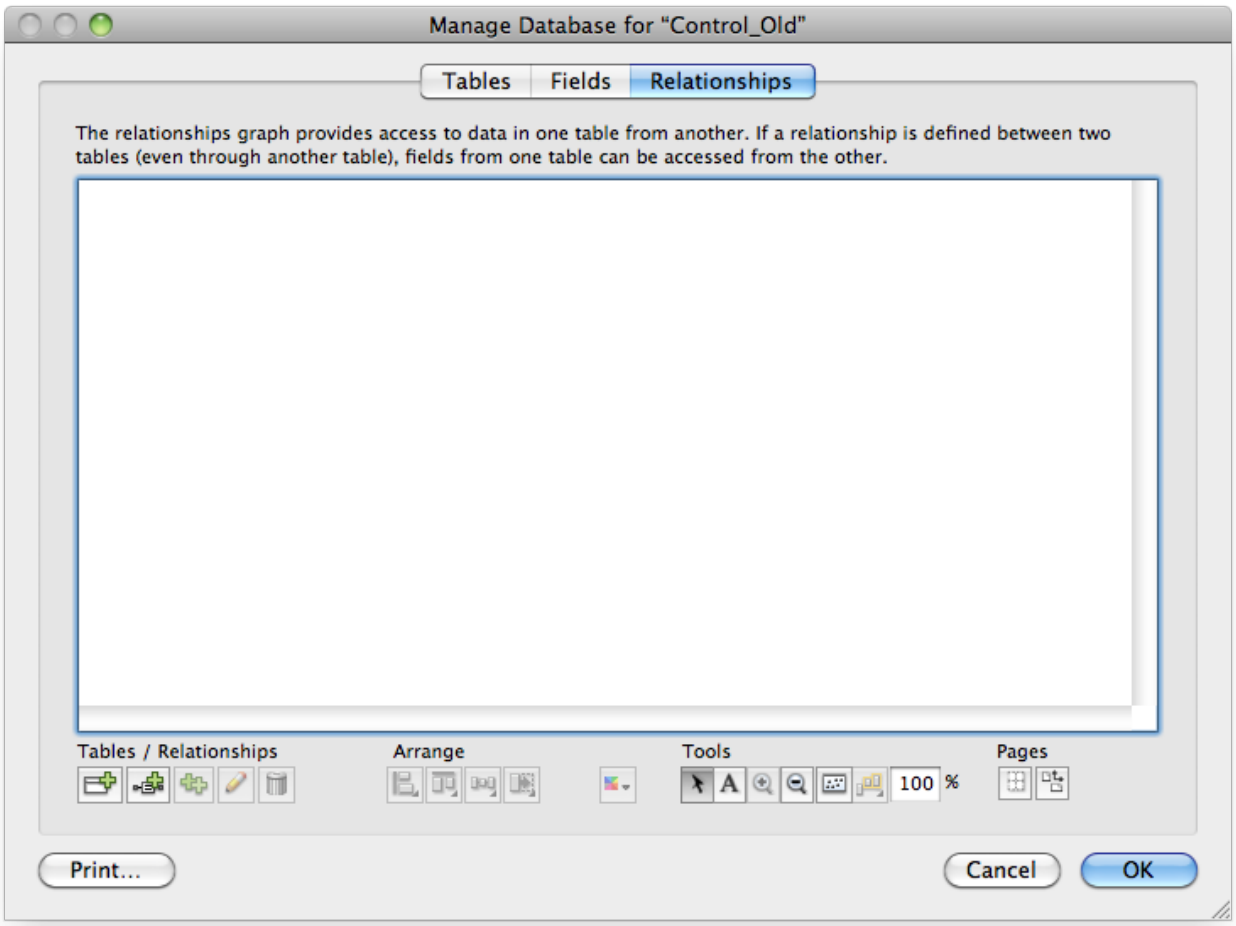
A Table Occurrence will need to added for each table in each file in this solution. The Table Occurrence is used to reference all of the old data for the import.

Instructions

Click on the Table Occurrences link on the "Setup Import" screen.

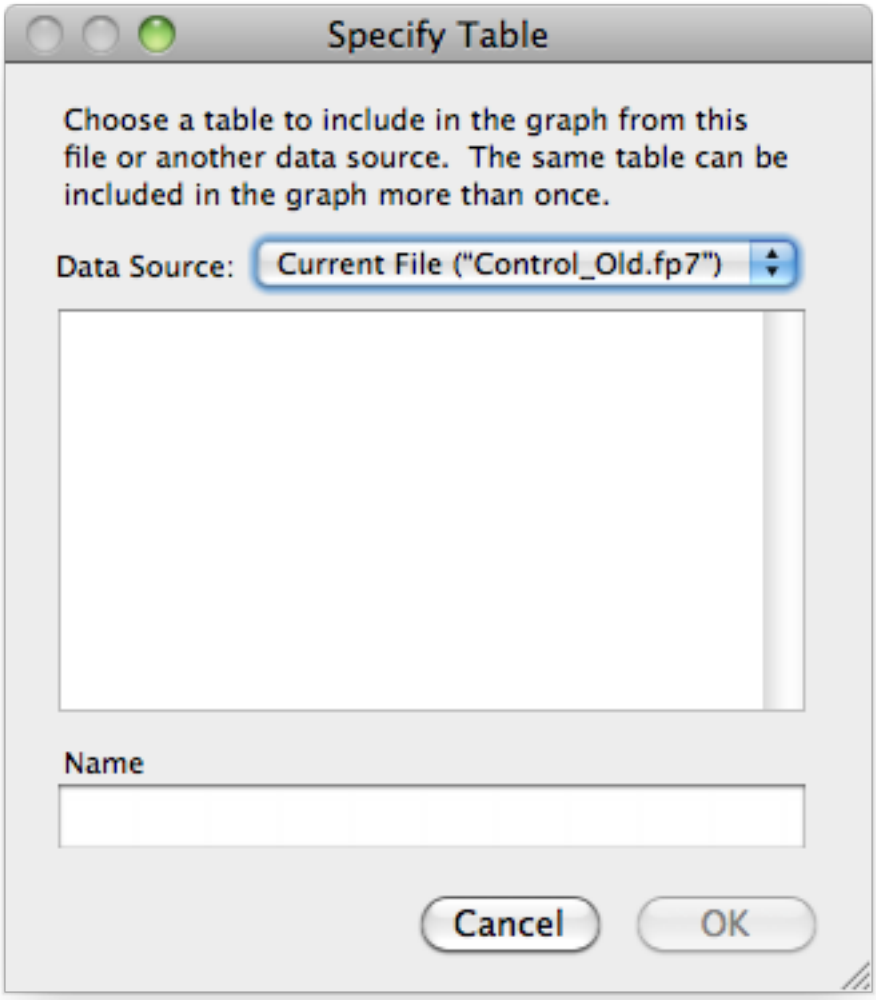
[34]

The "Manage Database for Control_Old.fp7" dialog will appear, click on the Relationships Tab.



Click the "Add Table Occurrence" button (the first icon on the left hand side under Tables/Relationships), this will open the "Specify Table" dialog.

The Data Source drop down menu should list all of the files that you added as file references earlier.



From the Data Source drop down menu, select the first File Reference in the list. Select the first Table for this File Reference and click OK. This will add the TO to the graph with the default name. The default name is easiest as it helps you manage your TOs as you progress.

You don't need to put this TO in any particular position on the graph or any specific formatting. You can arrange them neatly if you like, or just leave them where they land, it doesn't matter to the functionality.

You need to repeat this for every other Table for this File Reference and then repeat again for all of the other File References. Again, the TO names can be changed but for the purpose of matching them up to the base Tables it is easier to keep the names as they are.

When finished, close the Manage Database dialog.

Notes

When creating the Table Occurrences ensure that you only create one per Table. You can check this by looking at the name when you're adding the TO to the graph. If it appends a " 2" onto the end of the name, then it already exists, and you shouldn't add it again. If you do legitimately have two TOs of the same name, you should name them both in such a way as not to cause confusion.

There doesn't need to be any relationships between any of the Tables.

The end result is that every Table in all of the File References should have a TO in the graph.

2.5 Layouts

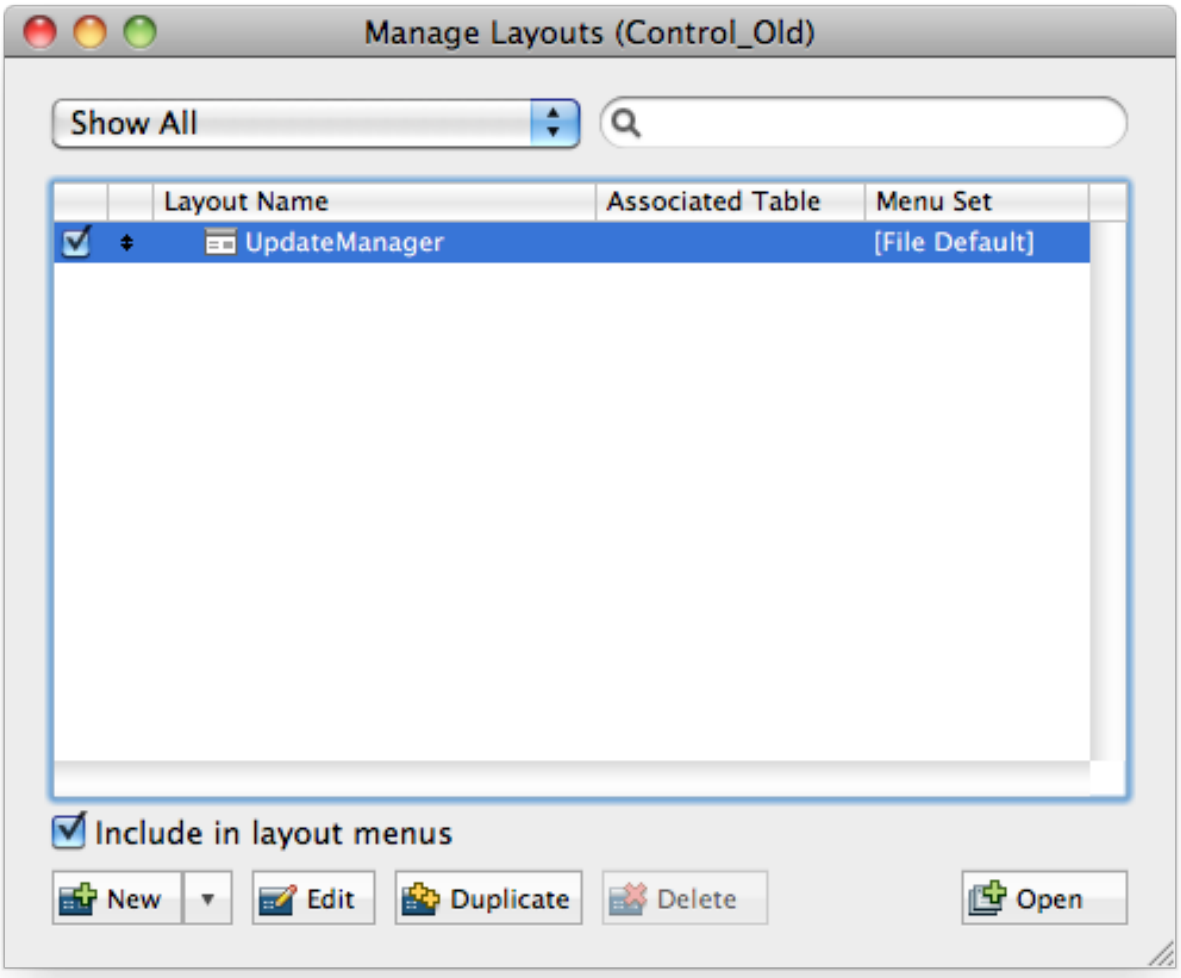
Overview

A Layout will need to added for each Table Occurrence in this file. The Layout is used for the import process.

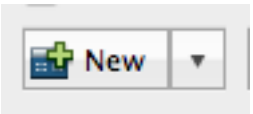
Instructions

Click on the Layout link on the "Setup Import" screen.

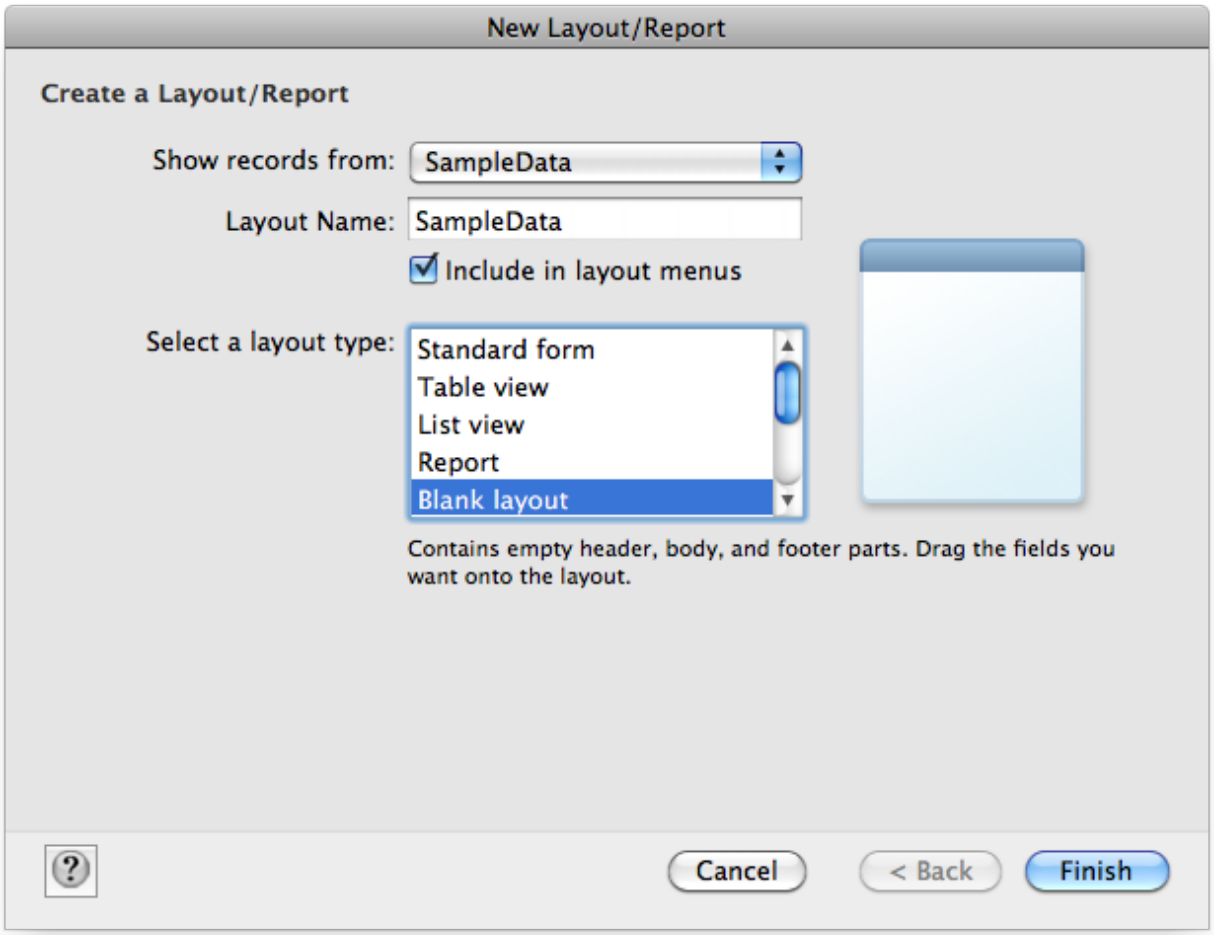
This will open the Manage Layouts dialog.



Click the "New" button at the bottom left of the dialog to create a new Layout.



The "New Layout/Report" dialog will appear.



In the "Show Records From:" option, select the first Table Occurrence in the list.

We suggest you also name your Layout the same as the Table Occurrence it's based on, it helps to match up Table Occurrences and Layouts later on, and it makes it much easier to find a Layout when you're looking for them. The Layout name isn't critical though, and you can name them anything you want.

Change the Layout Type to "Blank layout" and click the "Finish" button to continue.

Repeat this process and create a Layout for every Table Occurrence in this file.

Close the Manage Layouts dialog.

3. Save the Old Control file.

The control files need to be on disk to be edited, but once the changes are made they're stored

inside the main RefreshFM file in a container field so that you can move the entire solution update by just copying the RefreshFM.fp7 file.

Each time to click one of the links in section 2 "Setup the Old Control File", if the control file isn't already on disk, it's copied to disk from the container field. If it hasn't even been created yet then it's created from an empty template file.

Once you've finished with Accounts, File References, TOs and Layouts, you need to save this file back into the container field. You can always make changes to these items later, but remember to save the file once you've finished.

4. Select Dev Files

Click this button to select the folder where your development files are kept. RefreshFM will search for any files with the same file extension as the main file and copy one of each of those into the working folder.

Which folder to select?

This can be any folder that contains cloned copy of the your development files with the programming changes in them. It is important that these are cloned files when you start the import, but if you don't have clones you can always continue with the setup and adjust later in the Review section.

Once the files are copied, the list of files found is in the Review section, on the Files tab. You can manually remove or add to the file list there. Also next to each file is a container field with a copy of the file. If you add files manually to this list you should also insert the matching fp7 file into the container field.

What happens in the background?

The control folder for RefreshFM is created if it doesn't already exist. Inside that folder, a "DataFiles_New" folder is created and a copy of the dev files is placed there. These files are deleted later when RefreshFM is closed or you change to another solution.

As well, a copy of each file is placed in a container field next to the filename in the Files portal. This file (in the container field) is to store the actual copy of your development version of the solution. Each time you run an import, the files are exported from the container field to disk and then the import happens. This is done for two reasons :

- RefreshFM can repeat the import process easily at any time by just exporting the file to disk again. There is no need to re-clone the files or delete all the records we just imported.
- You can move the main RefreshFM file (for example from your development box to a testing server) and know that the only thing you need to bring is the main RefreshFM.fp7 file. There is no need to setup folders or copy other files.

A couple of things to be aware of :

- The intention is that the files you import are your "ready to go" dev files that are all cleaned out (cloned or otherwise), all set to have data imported into them.
- You don't have to have your set of cloned development files available right now while you do the setup if you don't want.
- You can replace these files by importing a new file into the container field at any time.
-

Be aware though that if these files have test or old data in them you will get errors about mismatched record counts when you do the imports.

5. Setup the New Control file.

These steps create the "Control_New.fp7" which holds all of the references to the New data files with the development programming changes in them.

When you first attempt one of these steps, if you haven't already saved a Control_New.fp7 file, a new is created by copying the Control_Old.fp7 file. This is done deliberately to save time in the setup. If the set of base Tables is similar (which they usually are), then by just altering just the File References we can avoid having to recreate a whole new set of File References, TOs and Layouts.

It's important to be aware that the first time you start to make changes to this file, it's a copy of the Old file and you need to adjust the file accordingly.

5.1 File References

Overview

As this is a copy of the Old control file, all of the File References you have added will need to be modified to point to the files in the New folder instead of the Old folder. If none of the files have changed their name, then it's as simple as changing the folder in the path from "DataFiles_Old" to "DataFiles_New".

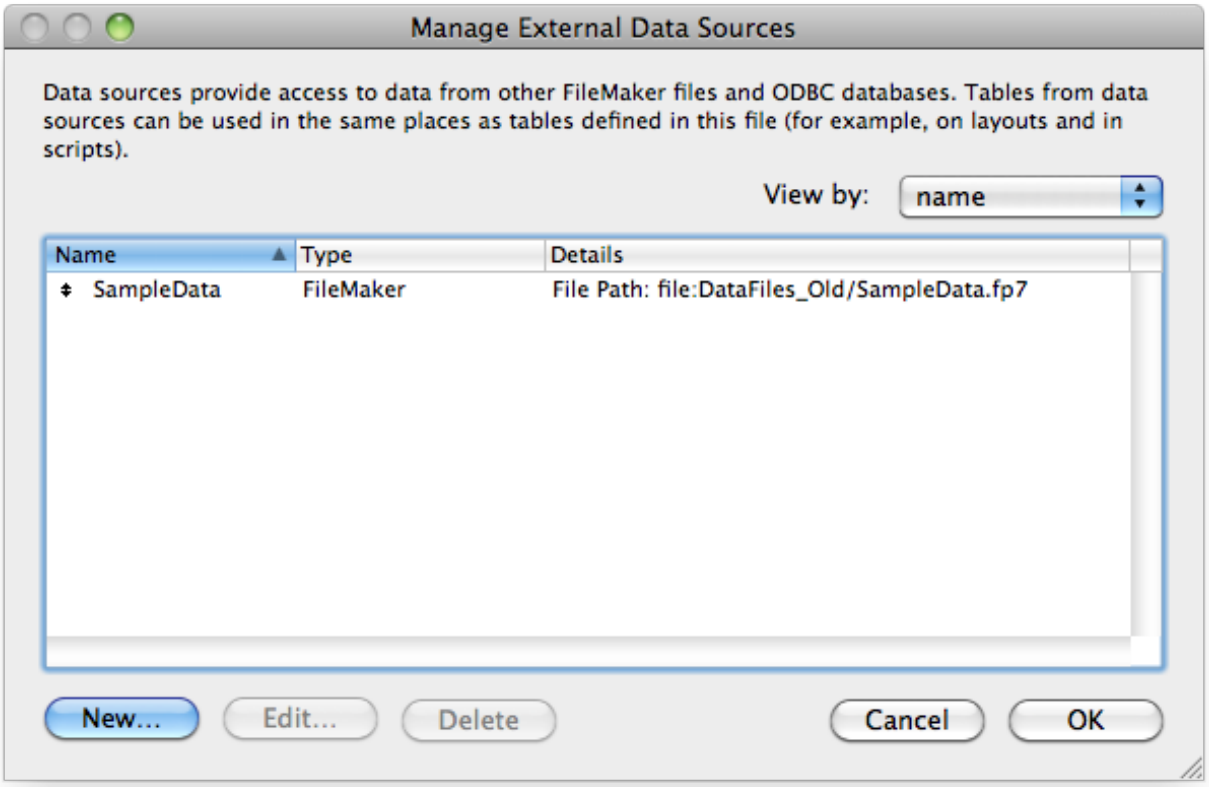
If you've renamed any Files, you will need to rename them in the File Reference. Also add a File Reference for any new File and delete any File Reference that are no longer being used (for example if you've consolidated a File).

Instructions

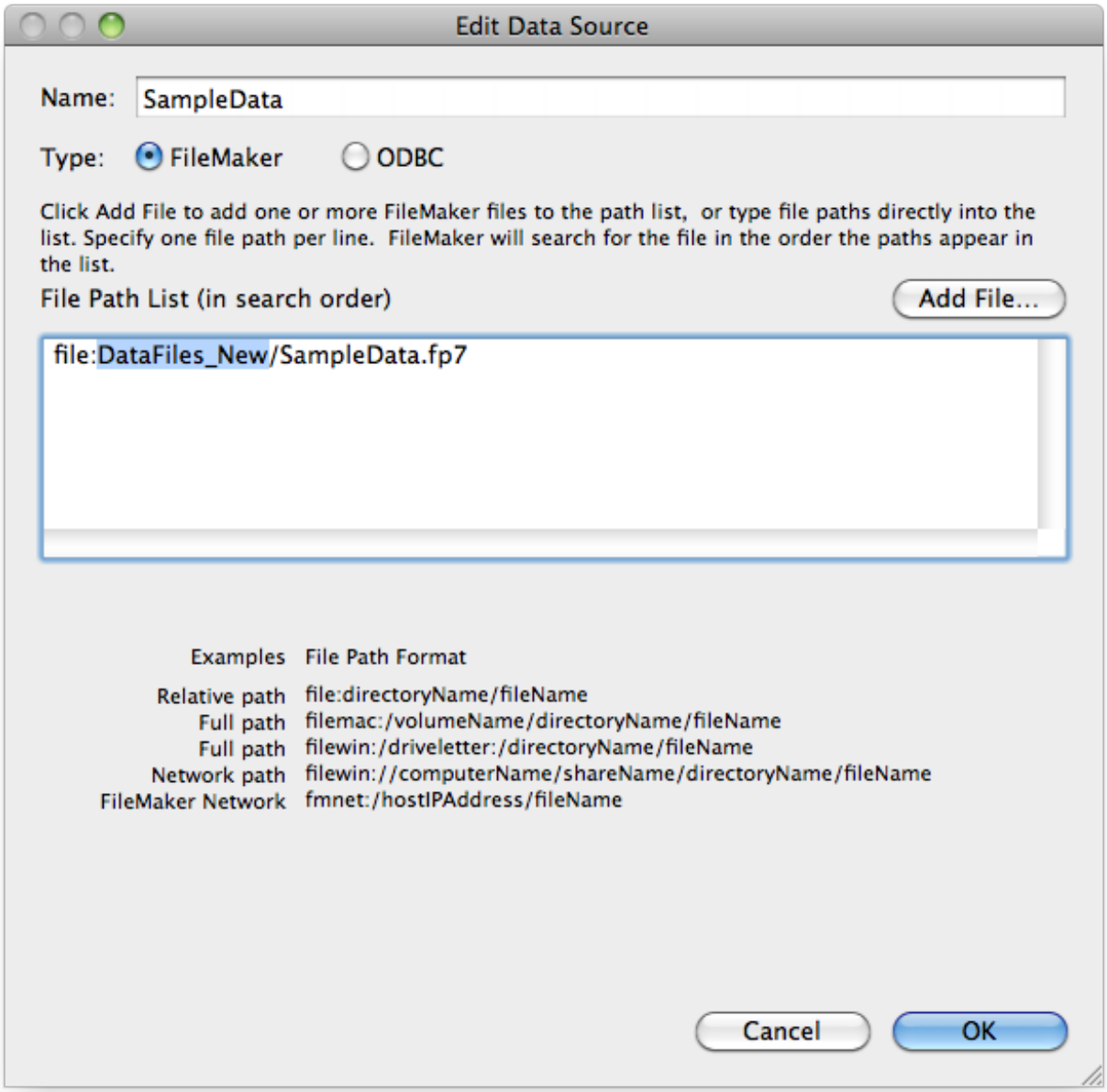
Click on the new File References link on the "Setup Import" screen.

5.1. File References

The Manage External Data Sources dialog will appear, with all of the Old references.



Edit each File Reference and change the folder in the path from "DataFiles_Old" to "DataFiles_New".



You need to do this for each and every File Reference in the list if you have more than one. Once you're done, the file paths should all be a relative path that contains only one "DataFiles_New" folder and no other folders :

file:DataFiles_New/filename.fp7

All of the file paths need to have this format, any other path won't work.

Tip : When doing this process, don't delete all of the references and start again. It will be much easier if you rename and adjust the existing references, as then all of the links to your TOs won't be lost.

You can give the file references any name you want.

Close the Manage External Data Sources dialog.

5.2 Table Occurrences

Overview

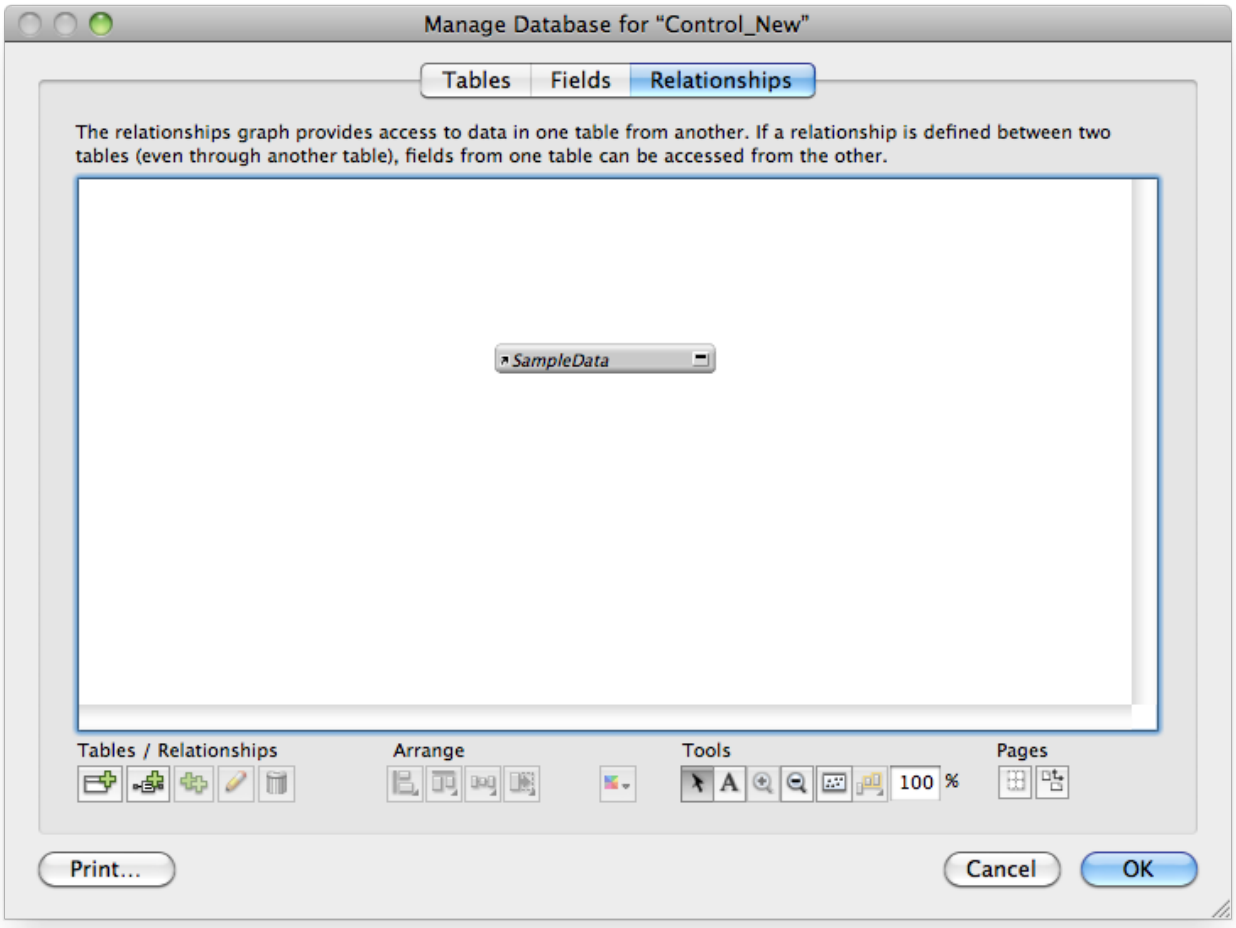
There needs to be a Table Occurrence for every base Table for every File Reference in the New Control file. Because the File has been renamed, and the File References changed from Old to New, any existing TOs should already be there. You will need to add any new TOs, and delete any unreferenced ones.

Instructions

Click on the Table Occurrences link on the "Setup Import" screen.

[34]

The "Manage Database for Control_New.fp7" dialog will appear, click on the Relationships Tab and if you've renamed the File and the File References, there should already be a set of TOs.



If you haven't changed the number of Tables from the Old to the New file, and everything is working to this point, then all the TOs should already be there and pointing to the right place.

If you've added new Tables to the New files, consolidated some Files, added more Files, or rebuilt a File from scratch (which changes the internal Table ids it uses to match with), then you will need to double check the TOs that are there, and fix as appropriate.

There isn't a simple way to go through the Files and check that everything that should be there is. You can use the Database Design Report (or BaseElements [35]) to get lists of the TOs and check them there.

When finished, close the Manage Database dialog.

5.3 Layouts

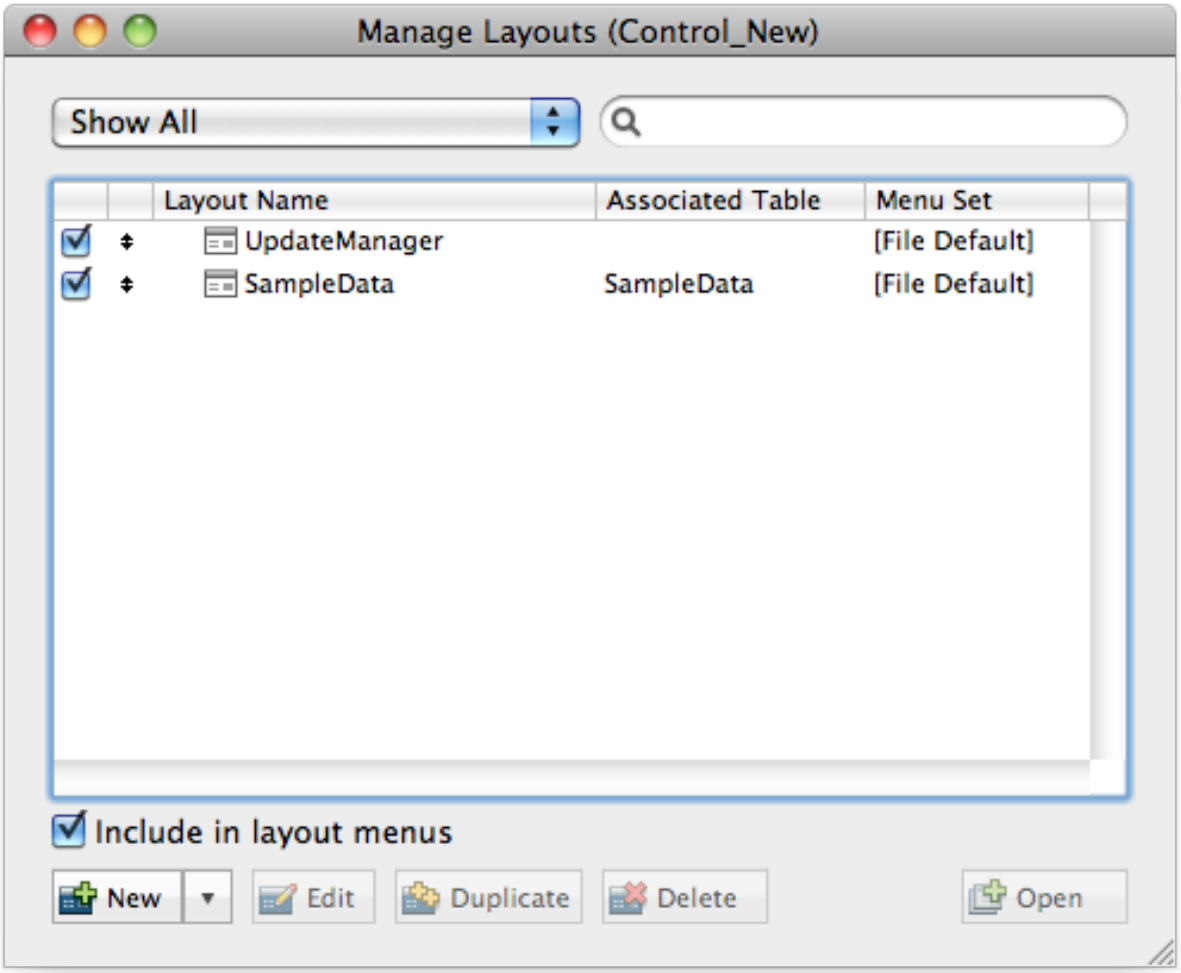
Overview

There needs to be one Layout for every Table Occurrence in this File. Because the File has been renamed, and the File References changed from Old to New, any existing Layouts should already be there. You will need to add any new Layouts, and delete any unreferenced ones.

Instructions

Click on the Layout link on the "Setup Import" screen.

This will open the Manage Layouts dialog.



There should be one Layout for every TO in the File.

If you made any changes to the number of TOs in the file at the previous step then you will need to make the same adjustments here. Check in the list that all of the layouts have a TO specified and that every TO has a layout.

When finished, close the Manage Layouts dialog.

5.4 Data

This step just processes the data that is already known about the files to generate a list of Table Occurrences and Auto Enter Serial fields. You should run this step if at any time you alter the New or Old files or change the number of Tables in a file.

You can review the data that this step collects in the "Review" section under both "Tables" and "Serial Fields".

6. Setup the New Scripts

Overview

There needs to be a script that handles all of the import process from the Old (Live Data) files into the New (Development) files. This script and all of it's error checking is built automatically for you, it's put onto the clipboard and you only need to paste the final script into the New control file and check the import steps.

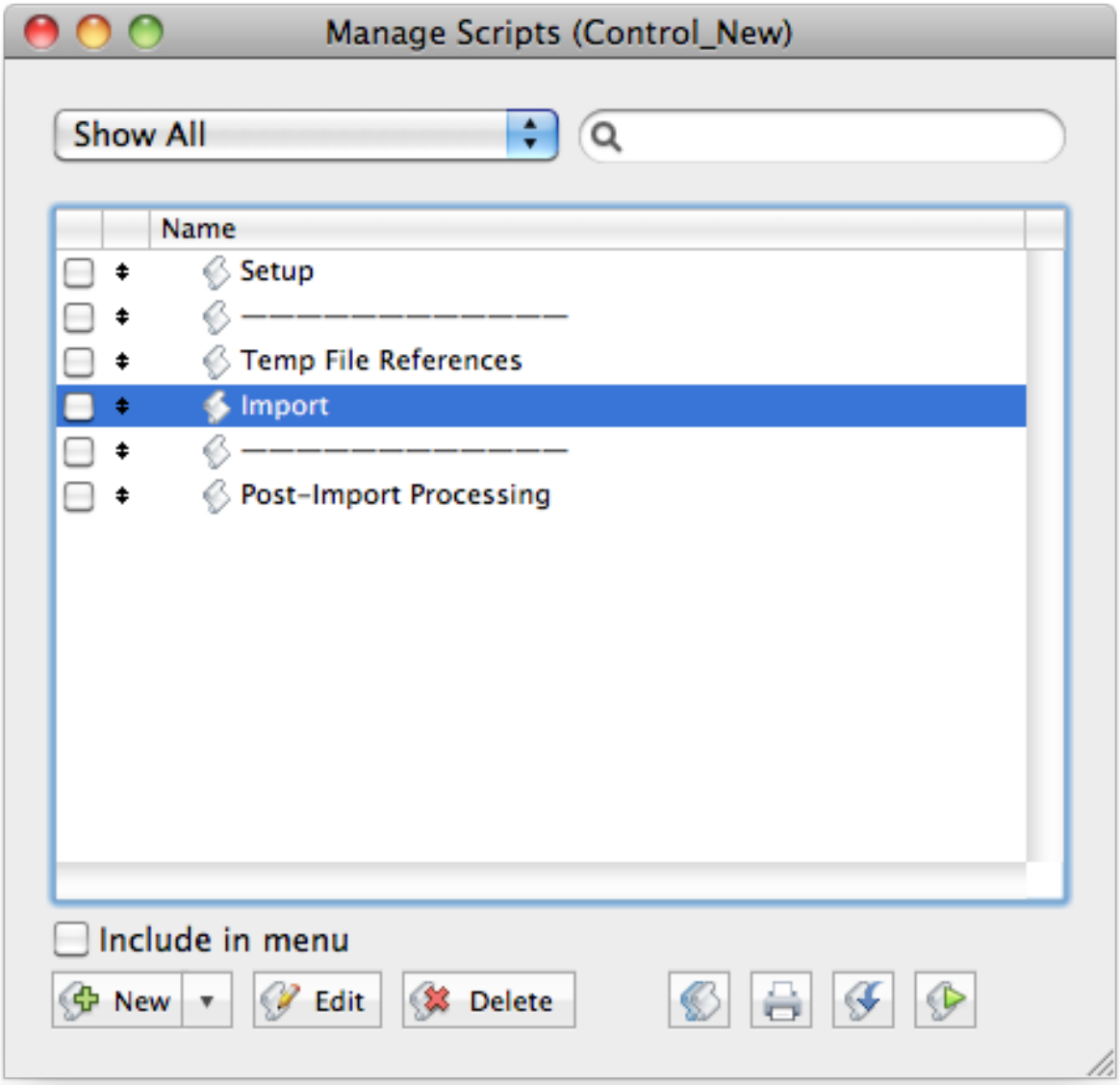
Instructions

First, make sure that the list of Tables and Serial fields is complete. Check both items in the **Review** section on the respective tabs. You can switch back and forward to this area at any time. Add any items that are missing and and remove any that are not required.

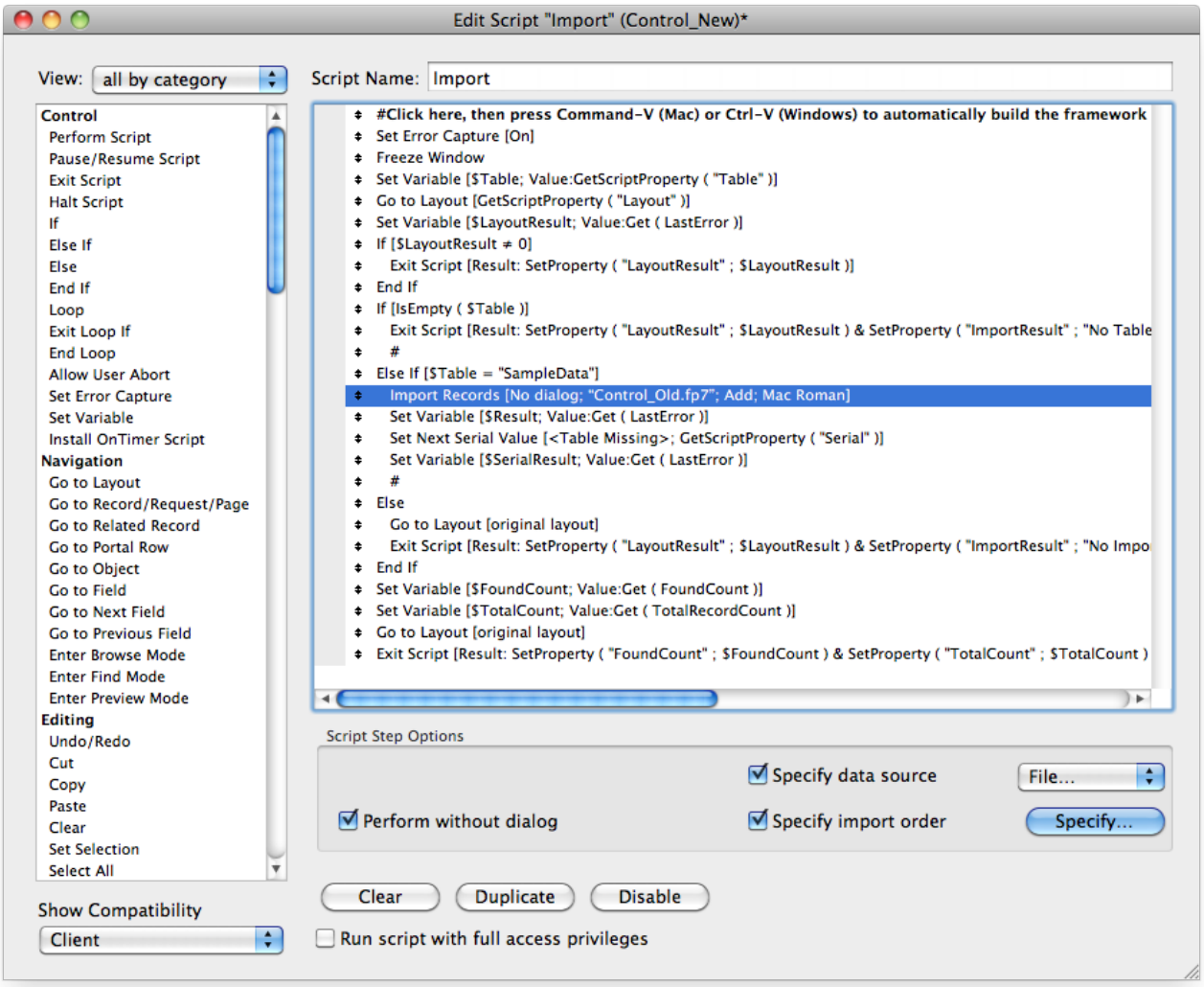
Click on the Scripts link.

6.1. Scripts

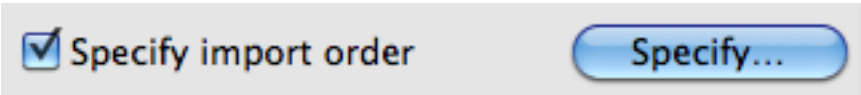
This will open the **Manage Scripts** window from the Control_Old.fp7 file.



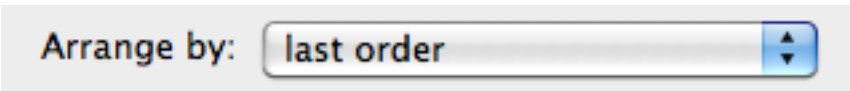
There will be a script in this file called **Import**. Open this script and click Paste, or use ctrl/command V to paste. This will create a large collection of scripts with one central set of **Else If** steps that you need to review.



There will be one **Else If** steps for every table in your solution. Just below that **Else If** step will be an **Import** step. You will need to review all of the **Import** steps as the import order will be the default. The From and To tables should be automatically set to the right TOs, but you should modify the Import Order for these. Click the **Specify** button :



This will open the **Import Field Mapping** dialog. The setting you need to review is the Arrange By setting.



Which Import Order to Use

There are three options for the Import Order that make sense in RefreshFM : Matching Names, Creation Order or Custom Import Order.

Matching Names is for when you have deleted fields in the Development file (relative to the file being imported from) but you have kept the field names the same. This means it will adjust the field

mapping at import time, and any new fields added are included, but any field without a matching field in the old file won't be imported.

Creation Order is for when you've renamed fields in the Development file, but no fields have been deleted. This means every single field in the table is still there, even if the name or function has changed so the import order can be auto set to be the same fields you have in the original file.

Custom Import Order is for when neither situation above applies. In this case your best to choose the one that is closest, and then make manual adjustments to the order. Once you start making changes manually, the Arrange By option will change to suit. Obviously this is more work than either option above, so using a development methodology that allows you to use one of the other options is a better long term option.

Once this is done for every Import step in the list, save the script, close the window and close the Manage Script window.

If you later make changes to the number of tables, you will need to either re-paste and adjust this script or manually add another Else If group for the new tables.

7. Save the New Control File

The control files need to be on disk to be edited, but once the changes are made they're stored inside the main RefreshFM file in a container field so that you can move the entire solution update by just copying the RefreshFM.fp7 file.

Each time you click one of the links in section 5 "Setup the New Control File", if the control file isn't already on disk, it's copied to disk from the container field. If it hasn't even been created yet then it's duplicated from the Old control file.

Once you've finished with File References, TOs and Layouts, you need to save this file back into the container field. You can always make changes to these items later, but remember to save the file once you've finished.

Solutions

RefreshFM allows you to keep multiple solutions in the one RefreshFM.fp7 file. This way you can update many solutions at once, or keep a single record of everything you're working on.

Also the RefreshFM licence allows you to have multiple copies of RefreshFM for your own use, so you can keep just a single solution per file so that you're not retaining all of the development files in one place.

To add a solution just click the + button at the top of the portal. Once created it automatically is selected as the currently chosen solution and you can proceed to the Setup tab to begin setting up.

You can select an alternative solution at any time as well, or delete solutions using the buttons in the portal.

What happens in the background?

Any time you're running an import there can only be one set of active control files, and data files. This is a limitation of the way File Reference paths are setup in FileMaker, where they can only be fixed, not dynamic. So when you change the active solution, all of the current control files are saved into container fields, any working files (ie copies of the Live or Dev files) are deleted, and the new

control files for the selected solution are made active.

You can see what is happening by looking inside the RefreshFMControl folder while RefreshFM is open, although you don't need to modify these files at any time.

When RefreshFM is closed, the whole folder and any items within it are deleted.

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