Data Warehouses

A user guide for unique environments
in the core in which to manage your
specialized data

INTRODUCTION

True credit union pioneers know that
above all else, data drives this business.
Correctly using the data available to you
can steer your credit union towards
efficient marketing, lending, and
strategic decisions that shape the future of your business for everyone from
the Board of Directors to the brand new member. While there are many
options already in existence in which to explore your data; dashboards,
trends, query, and reports to name a few, data warehouses allow you to use
your data in ways that have not been done before on the core. Integrating a
data warehouse solution will harness the power of your data and put the
control at your fingertips to further position your credit union to propel
forward in the marketplace by making data-wise and well informed moves
towards your unique strategies.

This guide will function as your companion to all things data warehouse,
including information about database administrators, the set-up of your
warehouse and subsequent authority decisions, timing and functionality of
your warehouses, and further information on ways you can harness the
power of your data.

For more information on currently available data warehouse solutions, how
to manage your current data warehouse solution, or how to best utilize your
data trends and gain opportunities for strategic success, contact the
Asterisk Intelligence team at ai@cuanswers.com.

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WHAT IS A DATA WAREHOUSE?

A data warehouse is digital storage architecture designed to hold data extracted from transaction systems, operational data stores, and external sources.

A data warehouse is the digital location of your specialized datasets that are used for curating member trends, marketing campaigns, strategic analysis, and other uses defined by credit union teams to further credit union data driven decisions.

These data warehouses, often associated with the term "data silos", are not complex technological concepts, but merely a way to house the specific data that makes your credit union run. Below is a look at the multiple data warehouses that run the production of daily operations at CU*Answers, as well as the data warehouse options that are available for your credit union needs.

SPECIAL NOTE: ANALYTICS BOOTH

Analytics Booth is a data warehouse that resides in an Intel 3rd party warehouse. Analytics Booth is currently tracking 70+ data points across Balance, Member and Transaction data categories in order to produce easy to digest Trends and Alerts using your member data in a convenient web application built via dashboard style views over self-selected data sets.

View more information about Analytics Booth and get started with your own customizable analytics warehouse today by visiting the Asterisk Intelligence website, here https://www.cuanswers.com/solutions/asterisk-intelligence/analytics-booth/

SPECIAL NOTE: DEX (DATA EXCHANGE)

There is a growing movement of DIY'ers looking to bring all their operational data into one central data warehouse for analysis and reporting capabilities. Anyone heading down this road knows that ETL (Extract, Transform, and Load) can be a time consuming chore.

CU*Answers DEX packages are a special type of service that provides the ability to receive various CU*BASE file transmissions from CU*Answers in order to apply those files to your credit union's external data warehouse. See how automated daily DEX transfers will simplify your workflow and allow you to spend less time managing and more time analyzing your data.

View more information about DEX and get started with your own data exchange package today by visiting the Asterisk Intelligence website, here https://store.cuanswers.com/product-category/asterisk-intelligence/dex-vendor-data-exchange-asterisk-intelligence/

WHAT ARE THE TYPES OF DATA WAREHOUSES?

There are several warehouses of data that are already used in daily credit union operations (the core processing silos below) and data warehouse solutions available ala carte (the custom work for analysis). As a data warehouse is a repository of data tables and information, the very structure of your core is built from warehouses.
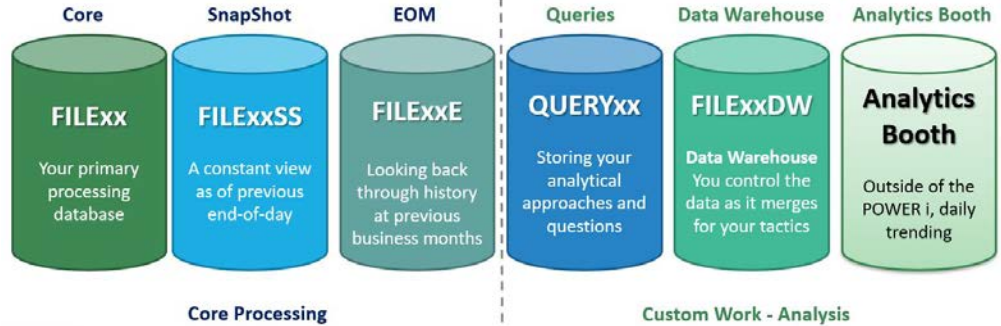
CU*BASE Data Warehouses

	FILExx and FILExxE	QUERYxx	FILExxDW	FILExxSS
What is this warehouse?	Production and End of Month	Custom Report Definition	Data Warehouse	SnapShot
Data Included	Daily production tables. Some production tables are also saved in an EOM format.	Custom Report definitions, files generated by CU*BASE programs	Custom uploads and files, system files that CUs choose to keep for additional retention, system files for some optional programs	A full copy of FILExx collected every day at the latest possible moment of End-of-Day (EOD) processing. Creates a standardized set of your production files at a specific point in time.
Purpose	This is where the daily tables that house member and transaction data are stored	A storage warehouse for tables and custom reports	Unlimited retention of data tables and custom sets for analytics	Accessible via Query tools to research, extract, or use in custom reports
Cost	Included	Included	Priced Per Usage	FREE
Availability	24/7	24/7	24/7*	24/7*
Data Uploads	NO	YES	YES	NO
Data Downloads	YES	YES	YES	NO
Data Transfers	YES – FILExx NO - FILExxE	NO	NO	YES
Query-able	YES	YES	YES	YES

Library Authority Controls	Restrict tool authority, but can't restrict changes to the files	Restrict tool authority, can also restrict authority to custom report	YES	Restrict tool authority, but can't restrict changes to the files
Retention Rules	Varied, 30-90 days average	90 Days for tables	Unlimited Retention	Once Daily Refresh
Manual Purge/Delete	NO	YES	YES	NO

View information regarding SnapShot and Data Warehouse availability in a rollover situation on Page15.

YOUR CU*BASE DATA WAREHOUSE (FILExxDW)

The custom Data Warehouse (DW) solution is designed to allow capability to bring outside data right next to core data, which then supports several uses; deeper opportunities for analytics, and increased user control over data storage, retention, and management.

A CU*BASE Data Warehouse gives you the opportunities to fine tune and explore data in new ways; create a SEG profile that matches the SEG on record for your member, use Member Connect to contact interested members of an external member survey campaign, work with reports from a 3rd party email processor to create additional analytics, and store your data in a warehouse with unlimited retention (unlike QUERYxx, which only retains files for 90 days).

This data warehouse environment inside CU*BASE is built to support strategies around data collection, retention, and analysis. A CU*BASE warehouse centers on the fact that it brings all the benefits of living directly inside the CU*BASE core, such as

- Accessible by the same IBM Query tools
- Direct support from CU*Answers teams
- Native tools to support usage & authority controls

A data warehouse environment is available upon request from Asterisk Intelligence at CU*Answers. There is a cost associated with both the set-up, and the ongoing usage of your data warehouse. The Asterisk Intelligence team will create the data warehouse environment and begin to work alongside your credit union with supporting documentation and training.

Asterisk Intelligence handles all back-end configurations to initially establish your data warehouse, and provides ongoing technical support or consulting on best practices with managing a data warehouse.

Your credit union is responsible for all internal procedures or policies, data entry, maintenance, and management of your data warehouse.

GETTING STARTED WITH YOUR DATA WAREHOUSE

Obtaining a Data Warehouse

Your native data warehouse requires a period of configuration and training before ready to use. As mentioned above, the Asterisk Intelligence team manages this process with you and provides ongoing support. The process of obtaining a data warehouse takes an average of 2-5 weeks from request until the end of training.

First, access the CU*Answers online store and order your Data Warehouse – store.cuanswers.com/product/data-warehouse-library/. The order will be received by the Asterisk Intelligence (AI) Team. Once your order is received, the AI team will reach out with next steps required to create and prepare your Data Warehouse. Asterisk Intelligence handles all back-end configurations, but you will need to designate at least one person as the

primary authorized user/admin. See more information about Database Administrators on Page 7.

A period of training and testing will be necessary to prepare administrators and any additional staff for the use of the data warehouse. AI participates in video webinar training sessions and provides resources to facilitate the learning process for all.

What Does a Data Warehouse Cost?

Currently, a data warehouse is priced at $1,000 initial cost, plus a $100/month maintenance charge and $10/GB per month data cost. Contact Asterisk Intelligence for current pricing on Data Warehouse products at ai@cuanswers.com or **800-327-3478 ext. 870**

Requesting Permission to FILExxDW

Using the FILExxDW library to upload and manage files requires users to have special **Upload and Download Authority**. You can find the form here, cuanswers.com/wp-content/uploads/Data-Warehouse-Security-Request-Form.pdf. Before submitting the form, the AI team can help you determine your database administration plan, such as what tables will be used for data uploads, and who will have access to those tables.

The Role of the Database Administrator

The database administrator at your credit union is the gatekeeper of the data warehouse. This does not necessarily mean that the administrator is the key operator of the warehouse, in fact, the administrator may not ever touch a single file – conversely, an administrator may be the only staff member to use the warehouse. For the purposes of this document, and operation of a CU*BASE Data Warehouse, a Database Administrator is the contact person for the Asterisk Intelligence team during set-up, and is the first person assigned authority, who may then apply permissions to other staff.

DATA WAREHOUSE MANAGEMENT TOOLS

Managing your data warehouse requires understanding of multiple tools within CU*BASE, and how they can assist you in making the most of your data warehouse.

CU*BASE Tools for Data Management

There are several tools in CU*BASE that work in conjunction with your data warehouse,

Tool Name	Function	Description
Tool #100 CU*BASE Report Builder (Query)	View (Read), Refine, Write Reports and Data Tables	Use this tool to create custom report definitions, combine tables to create custom reports, and generate tables.
Tool #1310 Library	Analysis	Use this tool to research and analyze your credit union's CU*BASE data footprint

Tool Name	Function	Description
Statistics Dashboard		across FILExx, FILExxE, QUERYxx, and QUERYxxDW.
Tool #1375 *Data Transfers (Upload or Download)*	Read, Download, Write, Upload	Use this tool to download data from CU*BASE to your computer or upload data from your computer to CU*BASE. Use this tool to download data from a custom report to an Excel worksheet, or upload data from your PC to CU*BASE to further manipulate data and create custom data sets from a combination of external and internal data. **This tool requires special authority.**
Tool #1980 *Library Dashboard*	Copy, Rename, Delete Tables	Use this tool to manage your data warehouses by copying, renaming, deleting, or changing existing database tables to increase the ease of use.
Tool #1981 *Library Authority Management*	Administrative controls	This tool supports authority controls for the FILExxDW custom warehouse and is the responsibility of the database administrator.

Purging or Deleting Data

Full control of data tables belongs to the credit union as there is no automated purge or deletion schedules run by the software. Authorized credit union users can delete tables via the Library Dashboard. Keep in mind, deleting a table will remove the entire set of data inside the table. Once deleted, limited recovery options may be available as a charged service through Asterisk Intelligence.

Using Report Automation to Add to the Data Warehouse

Considering automating your reports and queries to add files to your data warehouse? Review the resource booklet, Automated Reports and Queries, available in the CU*Answers Reference Library, under "A".

MANAGING ACCESS WITH LIBRARY AUTHORITY MANAGEMENT

There are two main layers of security to consider when configuring users of a data warehouse;

Tool Authority

Tool authority is the ultimate gatekeeper for access to various possible actions with your data warehouse. Removing access to a related tool via **Tool #327** *Employee Security* immediately restricts a user's ability to access or manage the data warehouse, even if they still have library authority, and upload/download authority. View tools related to managing the data warehouse on page 7.

More Information:

[What are the layers of authority for a Database Administrator who manages a Data Warehouse?](#) (KB Item #4332)

Library Authority

Tool #1981 *Library Authority Management*, is a tool which allows your database administrator access to set up user authority and define which users can view and use the data in a data warehouse. The tool <u>only</u> supports management of data warehouse (FILExxDW) authority. Library authority for other environments such as QUERYxx or FILExx are a system-standard and controlled by CU*BASE.

Library Authority Management (Tool #1981)
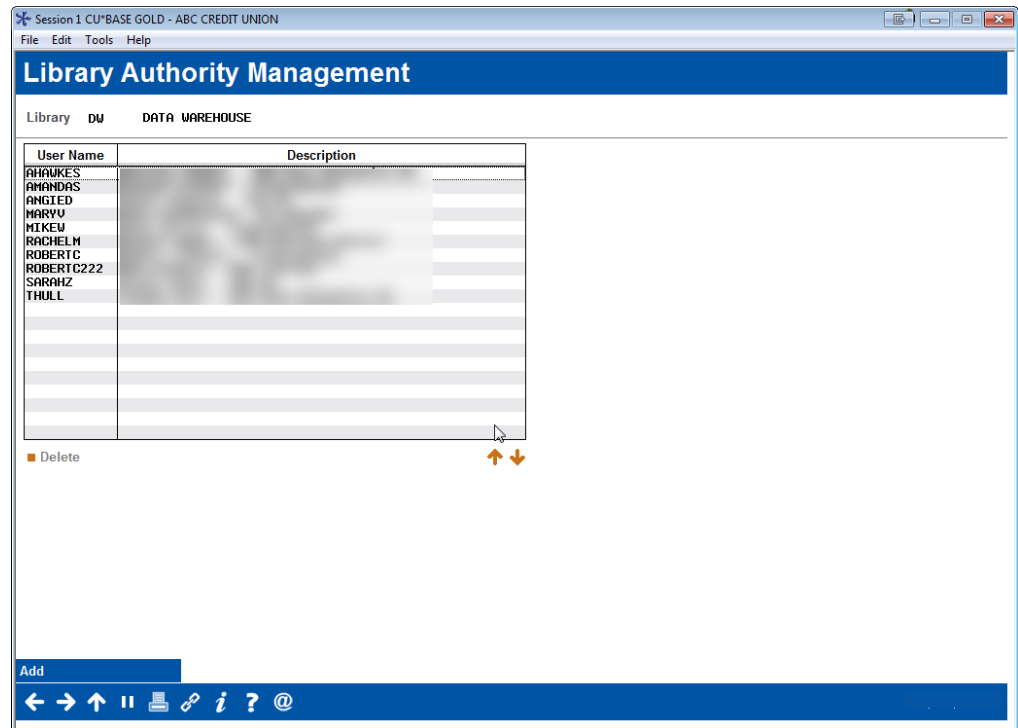
To add user permissions to the data warehouse, simply access the tool in CU*BASE and select to "Add", which will prompt a one-field box in which to enter the staff member's CU*BASE log in ID. The system will add the remaining credentials as it logs the new user. To delete a user's authority, highlight the entry and select "Delete".

CAUTION: Controlling the library authority list is only restricted through tool authority. Anyone with the tool authority to access **Tool #1981 Library Authority Management** *will also have full capability to use the features inside the tool; adding and deleting users. Database administrators are encouraged to work with the staff member who assigns employee security to carefully choose who is allowed access to this very powerful tool.*

ADDING OR UPLOADING DATA TO YOUR DATA WAREHOUSE

There are currently two ways data tables can enter the data warehouse and both are user-controlled, as well as creating, refreshing, and deleting data or tables.

Manual Query Output (Transfer) of CU*BASE Data

These are tables created or refreshed by custom query definitions. Data inside these tables will not change until the query which generates it is run to refresh the table, manually or automatically. See more about automated reports and queries on page 8.

Query is a CU*BASE tool that works exclusively with CU*BASE data. This option is designed for creating specialized lists or copying data from elsewhere in CU*BASE into the Data Warehouse.

Manual Import of External Data

These are tables uploaded to the data warehouse by a user and remain static until either overwritten/refreshed by another user, or are deleted. Read more about uploading files to your data warehouse on page 10.

Special Note: Security Requirements

Special authority is required to download and/or upload files between the CU*BASE system and your PC. Start by completing the **Upload/Download Security Request for Data Warehouse** form to request access privileges. You can find the form here, cuanswers.com/wp-content/uploads/Data-Warehouse-Security-Request-Form.pdf.

Authorization by your credit union's designated Security Officer is required to grant these permissions. On a monthly basis, your Security Officer should confirm the staff that have been given clearance to download files. This can be done using the monthly LSECAUDM report, available in CU*Spy.

DO YOU KNOW WHERE YOUR MEMBER DATA IS? Data that is downloaded to an employee's workstation or a credit union file server is no longer under the protection of normal CU*BASE security features. That means it is vulnerable to unauthorized access if not properly secured. Make sure that proper security precautions have been put in place to protect your sensitive member data!

USING THE CU*BASE FILE UPLOAD TOOL TO UPLOAD FILES TO THE DATA WAREHOUSE

This section will cover both steps to begin uploading data to the data warehouse,

1. Creating the destination table before your first upload, and
2. Uploading your file to the data warehouse

As there are multiple steps required to set up the correct file repositories in CU*BASE and then upload your data file to the repository, if any questions arise we recommend contacting the Asterisk Intelligence team ai@cuanswers.com or **800-327-3478 ext. 870** for more information and to get your environment set up correctly for data.

First, a clarification on terminology for this process; a "file" is referring to a PC file, such as your Excel file, that contains data which is uploaded to the data warehouse. A "table" is the database table that will contain the data inside the data warehouse (FILExxDW).

The File Upload tool within CU*BASE (Tool #1375) has two distinct options available, 1) A Wizard to create a table within FILExxDW based on the desired file to upload, and 2) functionality to transfer data from a file to a table located in the FILExxDW library.

Understanding the distinction of the two functions and terms are important to the uploading process. If you only create the table through the Wizard, and do not perform a data transfer, the table will be empty.

If a table already exists in FILExxDW, and it only needs to have data transferred to it, the Database Creation Wizard does not need to be used.

Building the Destination Table

You will only need to perform this process if you need to build a compatible destination table in your Data Warehouse before preparing to upload a file that has never before been mapped, or you have deleted the original destination table for the file in question.

During the process to build the destination table, you will follow the steps in a creation wizard that will do the following:

- Select a file that you wish to upload and tell the system to scan it for recommendations on settings and column formats.
- Generate a special FDFX file specific to this set of data which will be required in your upload workflow later.
- Have the option to add or change details such as the names, descriptions, or formats of each data column.
- Hit a button to build a matching database table in CU*BASE

A Word About the File Description File (.FDFX)

The file description file (FDFX) is created during the Wizard process. The FDFX file is specifically designed to be compatible with this new database table and will be required for future uploads to this table as well.

For example, if file needs to be uploaded every month to the data warehouse you will need to use this file within that process each month. If you accidentally delete this first FDFX file, it can be recreated by downloading the database table in question and choosing the option to generate an FDFX file at that time.

Formatting the Upload File

This step is optional but highly recommended. Making sure column formats are friendly and optimal before designing a database table to hold it in CU*BASE will save quite a bit of time in future.

File Format

The most common format of data to upload to FILExxDW is referred to as comma-delimited or the comma-separated values (*.CSV) format. Programs such as Microsoft Excel can produce this format, which is then translated during the upload process to the fixed format used by CU*BASE tables.

The software can also easily process files in both Microsoft Excel formats of Excel Workbook (.XLSX) and Excel 97-2003 (.XLS).

As a rule, datasets intended to be uploaded through the Data Transfer tool should not include other extraneous information such as blank rows, titles, graphics, or other special layout formatting. Column headings are recommended for the top row of your file and should be one to ten
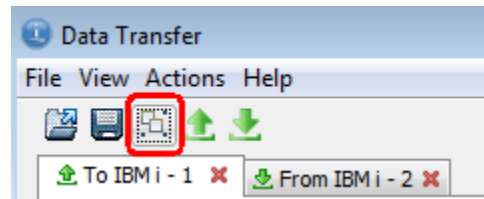
characters long. Column headings may also be applied or updated during the upload process.

Data Format

Files intend to be uploaded to FILExxDW may contain columns with various different formats. The Asterisk Intelligence team recommends ensuring the format of the values, match that of the desired new file. Furthermore, it is recommended that following guidelines are followed for date and time values:

Upload File (on PC)	Recommended CU*BASE Format for Value
Short Date	ISO International Standard separated by a forward slash (/)
Time Values	HMS (Hours Minutes Seconds) separated by a colon (:)

After the desired upload file is formatted properly, it's time to create the table within the FILExxDW library. **Tool #1375 *Data Transfer (Upload or Download)*** is the tool that unlocks the world of uploading to CU*BASE. The Transfer Wizard window that pops up contains a *Create Database Table Wizard* that walks a user through the creation of a table in the FILExxDW library. The wizard is accessed in the top left-hand tool bar of the Data Transfer window. Click this tool to begin building the destination table in your data warehouse.

Step One: Welcome

The welcome message discusses the use of the Wizard. You may proceed through.

Step Two: PC File Name

Select the desired file to upload. Use the browse feature to locate the PC file you wish to map to a destination table and eventually upload to FILExxDW. Click next.

Step Three: File Type

Review the type of file being mapped. If the software has incorrectly guessed the type of file format you are mapping, make the change now. The file will need to be in one of the formats presented in order to use the Wizard. Click next.

Step Four: Create File Description File

A file description file (FDFX) is a file that describes the fields in the table that will be created in FILExxDW. *The tool will overwrite previously created description files, if it is assigned the same name.* The file name will default in with the same name assigned in step three, along with the same location.

Step Five: Change Data Options

By selecting 'Data Options', you can ensure the tool will recognize the contents of the desired upload file correctly. Confirm the Date/Time, and Decimal settings are correct based on the file being uploaded. The 'Scan Data Options' does not need to be adjusted unless you wish to default a particular data type for the character or numeric fields in the file.

Step Six: Spreadsheet Range

Options on this step are not required. Click next.

Step Seven: Scan Client (PC) File

Be sure to check the box for 'First row of data contains field names' if the file you are mapping does hold column headings in row one. Once 'Start Scan', is selected, the tool will analyze the desired upload file to determine the layout and other characteristics of the file. Click next once the progress bar completes.

Step Eight: Contents of PC File

Although the tool analyzed the file in step seven, some fields may need further review and editing. On this screen, you can manually update the field information, including:

1) Adjusting the field length and decimal scale.
2) Adding a long description to the column names

The first step to ensuring successful upload to the destination table you're creating in this process is to confirm the number of fields being displayed on the screen match the number of fields in the file being uploaded. The second step is to ensure field types match that of the desired upload file.

If there is a difference in the number of fields presented, confirm that column headers were not included in the upload file.

If the field types are not correct, there two options to take. First, ensure the file being upload has the fields properly formatted. If they are, the field type will have to be manually updated. It is recommended that field names be adjusted regardless, to apply proper naming conventions and ensure contents are correct.

Updating Field Types

Correctly formatting the field types is arguably the most important part of the mapping process. All fields should be reviewed to ensure each is properly configured. To do so, select the field name followed by 'Details', or simply double click the field name.

NOTE: When analyzing the source file to determine the layout and field structure, the Wizard only looks at the first value of every column. This is important to note, because the field type and length will be based off the first value.

Special characters in the source file may not be registered correctly by the tool, for example currency within an Excel .csv file format. In this case, the '$' symbol would be registered as a character. *Once the tool defaults a field type to character, it cannot be changed to numeric unless the file is rescanned. Similarly, a field that defaults to numeric cannot be changed to character.* **Therefore, it is important to have these fields formatted correctly within the desired source file.**

Field	Description
Field	The name of the field found in the table being created. *Note: Query will only allow for 10-character file names.
Type	The type of field it is. If the field consist of characters, time, or date, it will default in as CHARACTER. If the field

	consist of numbers (not formatted as time or date), it will default in as NUMERIC. These may be changed to match the actual format of the source file fields
Length	The maximum length of characters in the field. Particular fields such as account base may only have a maximum of 9, but many fields such as email address will have a large variance in the number of characters needed for the field.
Scale	Number of available positions to the right of the decimal on NUMERIC values (if value in source file does have a decimal point)
Description	A long description of the field found in the table being created. It is recommended to fill out this option for better database management.

Step Nine: IBM i Name

Select the IBM i location in which the destination table should be created.

- **Online CU*BASE Clients**: PROD.CUANSWERS.COM
- **Site-Four CU*BASE Clients:** PROD.SITE-FOUR.COM

Step Ten: IBM i File and Library

On this screen, decide what library you would like to create the new table in, and the name of the table. The format is: LIBRARY/TABLENAME (i.e. FILExxDW/UPLOADFILE). Table names are limited to 10 characters.

Messages restricting you from moving forward could be encountered at this phase if:

1) The table already exists in the data warehouse library. The tool will not allow a user to override an existing table during the Wizard stage. In order to override the data within a table, see 'Uploading a data file to the database table' section on page 15.
2) The user does not yet have special upload authority permissions to the FILExxDW location. Even though this process is only mapping the destination table and doesn't involve uploading yet, the upload authority permissions are the level of permissions which include the authorization to map files as well.

Step Eleven: File Description Text

Assign a file description indicating the contents of the file. This will be beneficial when utilizing **Tool #1980** *Library Dashboard* to manage the data warehouse. File descriptions are limited to 50 characters.

Step Twelve: Confirm Create Options

Confirm the values presented match the desired outcome. If an item needs to be changed, select the 'Back' option to make the adjustment.

Step Thirteen: Congratulations!

Confirmation that the database file was successfully created.

At this point both the destination table and the FDFX file have been created with the layout and formatting that was assigned throughout the Wizard.

The table exists in your Data Warehouse (FILExxDW), and the FDFX table exists on your computer or shared drive.

Although the table exists, it has not been populated with any data yet. It is a shell that is ready to receive your first upload! Even without any data uploaded to it yet, you can utilize query to view the database file in FILExxDW and verify its layout and column formats.

Uploading a Data File to the Database Table

Once a compatible table exists in FILExxDW, the data from your PC file can be transferred to populate the table. Again selecting **Tool #1375 *Data Transfer (Upload or Download),*** you will begin the process to upload the data file from your PC to CU*BASE.

Data Transfer Wizard
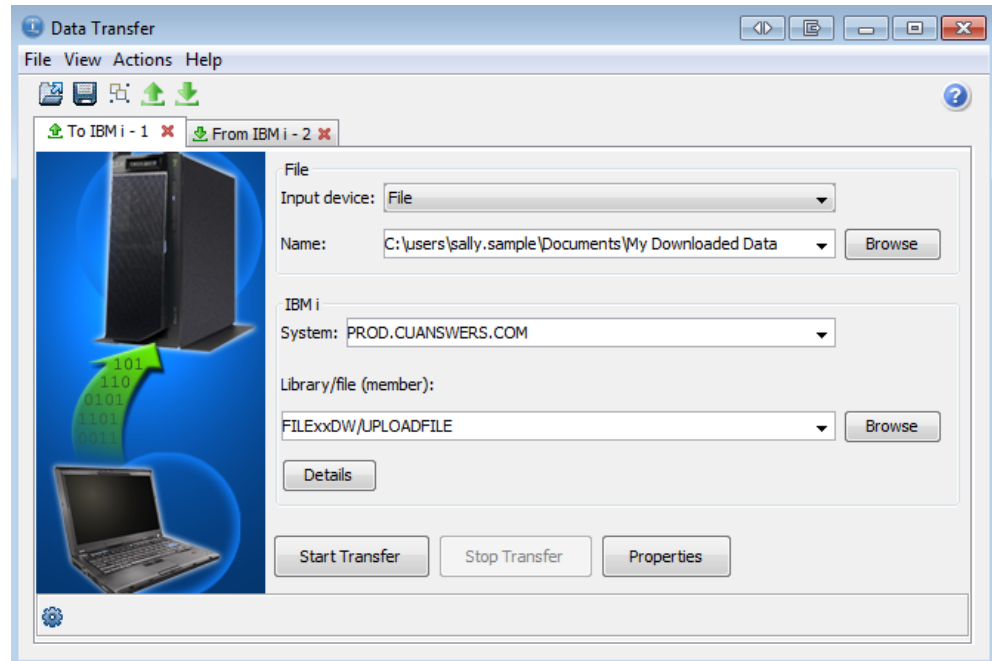
Using this wizard, the first section is where you enter the name and location of the Excel Workbook (.XLSX) or Excel 97-2003 (.XLS) file on your PC. Utilizing the 'Browse' option, you may locate the file containing the desired data to upload to the table in the data warehouse.

Next, complete the IBM i section, which is the system into which the data is being transferred. Your system is based on your data processor;

- **Online CU*BASE Clients**: PROD.CUANSWERS.COM
- **Site-Four CU*BASE Clients:** PROD.SITE-FOUR.COM

The Library/file (member) is the location of table in which the data is being transferred to on CU*BASE. The format is: LIBRARY/TABLENAME (i.e. FILExxDW/UPLOADFILE). This is the table name you created in Step 10 of generating the destination table.

Next, select the Details button and enter the file path for the upload's companion file (FDFX). **Remember**; in order to complete an upload from a PC to the System i, a companion file, which the system uses to format the data properly, must also be located on your PC. You will get an error

message if the system cannot find these files in that directory. If you are having trouble please review these resources for managing and troubleshooting your FDFX files, or contact a CSR.

[What are the instructions to create an .fdfx companion file for my custom upload to CU*BASE?](#) (KB Item #4422)

After the required fields are updated, select the 'Transfer data to IBM i' option. You will then be presented with a window requiring credentials to complete the transfer. These credentials are the same ones used to log into CU*BASE. The Data Transfer program only requires credentials the first time the user has signed into that particular session. Therefore, until the user closes their CU*BASE session, they will continue to be able to upload files without inserting credentials.

After the data transfer has completed, a confirmation screen will appear with statistics regarding the data uploaded. Refer to the upload file to validate accuracy.

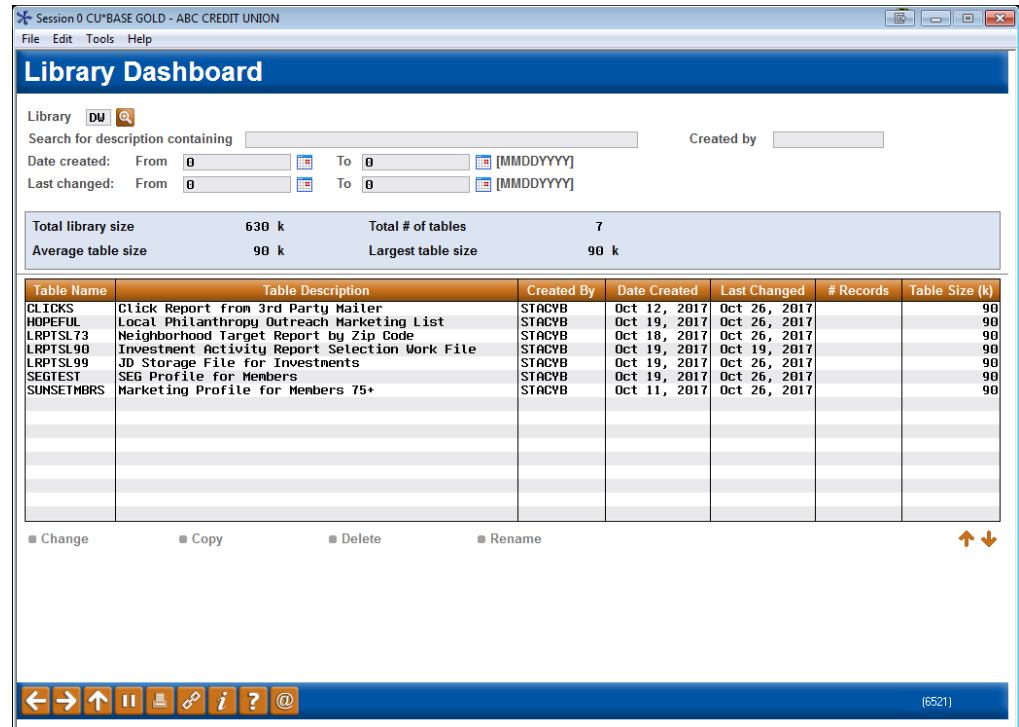The table in the data warehouse (FILExxDW) now contains the data from the file being uploaded. It is recommended you view the table to ensure data successfully transferred. At this point, an external database file has successfully been uploaded to a table in the data warehouse. Tools such as the Library Dashboard and Report Builder in CU*BASE may now be used to manage the table within FILExxDW.

WORKING WITH DATA IN YOUR DATA WAREHOUSE

As mentioned above, the library dashboard is the one stop tool for managing the data within the data warehouse. To manage your warehouse, access **Tool #1980** *Library Dashboard* in CU*BASE. From there, you can filter out results to only the records you want using the search criteria at the top of the page.

Library Dashboard (Tool #1980)

Field Descriptions

Field Name	Description
Library	The library dashboard can be used to manage both QUERYxx as well as FILExxDW. Select "DW" to manage your custom data warehouse.
Search for description containing	Enter the search criteria in the search field. This field is not case sensitive, and partial word look up is allowed.
Date created	Enter a range of creation dates to search by the date created.
Last changed	Enter a range of dates to search by the date the table was last changed.
Created by	Enter the user name of the table creator. Partial look up is allowed in this field.
Functions	• **Change** - Enter the new table description and select Confirm to complete the change. • **Copy** - Enter the new table name and select Confirm to copy the table into the new table name.

Field Name	Description
	• **Delete** - Select Delete to confirm the table deletion. • **Rename** - Update the relevant information to rename the table or table description, then select Confirm to save your changes.

Using the dashboard is intuitive; highlighting a table and selecting one of the functions above will allow you to manipulate your tables for further use in other tools.

Using Report Builder (Query) to Create Custom Data Sets

Once you've deposited files in your data warehouse, it is up to you how you choose to use them. **Tool #100** *Report Builder (Query)* can be used to create custom inquiries and reports that can be viewed, printed, or even saved as a database file ready for downloading. The CU*BASE Report Builder uses **IBM Query** as its engine, allowing you to manipulate data from any of your tables (files), using any layout, calculation and formatting parameters you wish.

For more information on using Report Builder to create custom data sets, view the resources below:

- **Show Me the Steps: Query Overview**
  - *help.cubase.org/steps/steps.htm#Query.htm*
- **Show Me the Steps Video Tutorials: Query Videos**
  - *help.cubase.org/steps/steps.htm#Videos_Query.htm*
- **Online Help: Report Builder**
  - *help.cubase.org/cubase/cubase.htm#WRKQRY02g.htm*

Created a data set that you'd like to share externally?

- **Reference Booklet: File Transfers**
  - *cuanswers.com/wp-content/uploads/FileTransfersDownloadingDatafromiSeriestoPC.pdf*

OPTIONAL DATA WAREHOUSE SERVICES

Phone Optics

Turn on Phone Optics data collection to feed a richer analysis of both your phone support engagements and the members who call you with questions. What *non-transactional* support items are your staff handling? Which members are repeatedly calling for just a transaction history recap? How many and how often?

The answers start with recording the Phone Optics data so that it's available to begin tracking and analyzing. Ordering this product is a request to begin the data collection program in CU*BASE. Separate pricing applies to purchase a Phone Optics Analysis from Asterisk Intelligence.

A Data Warehouse is a prerequisite to Phone Optics Data Collection. https://store.cuanswers.com/product/phone-optics-data-collection/

Coming Soon Automated Purge Tracker Archiving

Soon, CU*Answers will begin running automated purges of older tracker data, based on criteria set by CU*Answers for standard system tracker types, as well as criteria set by your credit union using **Tool #277 *Configure Tracker Types***. At a date to be determined, we'll start running a monthly purge according to new configured retention periods:

Tracker Type	<u>Maximum</u> Online Retention Period	<u>Minimum</u> Online Retention Required
Audit Trackers (AT)	7 years	3 years
Notice Trackers (NT)	10 years	5 years
Sales Trackers (ST)	3 years	6 months
Collections Card (XX)	Permanent	10 years
All Other Tracker Types	Permanent	6 months

If you are interested in retaining/archiving your trackers before they are purged, the Asterisk Intelligence team is ready to set your credit union up with a FILExxDW Data Warehouse (currently the only location to which these Trackers can be archived).

Contact ai@cuanswers.com or visit the store for more information store.cuanswers.com/product/data-warehouse-library/.

WHEN IS MY DATA WAREHOUSE AVAILABLE?

Data Retention

Tables placed within your data warehouse are retained indefinitely. As there is no automatic purge schedule, it is a task of the database administrator to decide when to delete.

Availability During HA Rollovers and Failovers

CU*Answers periodically runs scheduled disaster recovery tests called "rollovers" to transfer all system processing to the high-availability servers. Email alerts are sent to notify all credit unions well in advance of any scheduled rollover test. An unscheduled, emergency transfer of system processing to the high-availability servers is called a "failover".

During either of these events, your data remains within the production server and is not replicated to the high availability servers. This is by design, as the data warehouse is not intended to run daily processes, only to be an area of storage for special analysis. See more information on page 15.

Back-Ups

Copies of your data warehouse are stored and archived for a limited period of time. If data in your warehouse needs to be restored to a prior version, contact Asterisk Intelligence to determine if these files are available.

YOUR CU*BASE SNAPSHOT WAREHOUSE (FILExxSS)

Another data warehouse solution that serves an incredible purpose is the CU*Answers SnapShot warehouse (FILExxSS). This database library is a daily copy of the entire production and processing database (FILExx) from the previous day's end-of-day routine. Information stored in FILExx can change at any time, so creating a daily copy of yesterday's production database locks your static "snapshot" of the information. Now any data exchanges can be done off a consistent and *reconcilable* set of data.

The ability to have a view of all member files from the prior EOD cycle allows you to easily reconcile figures that are present within a warehouse such as Analytics Booth. Imagine a supervisor has received an alert that there was an increase of 50 closed end loan accounts yesterday. This supervisor may want to task you with diving into the details of which members are responsible for those 50 closed end loan accounts. Credit union managers, supervisors, and board members will have the capability to reference the SnapShot warehouse for reconciliation to the dollar amounts and numbers that they are seeing in their alerts. Third party data transfer senders and receivers will be able to know which records were sent based upon reviewing what was present within the SnapShot warehouse. The SnapShot warehouse is your consistent resource to reference for any prior day reconciliation and activity.

In addition, the Operations team at CU*Answers will be able to utilize FILExxSS rather than the production warehouse, which provides innumerable opportunities and failsafes for data transfer activities.

GETTING STARTED: OBTAINING SNAPSHOT

The best part of SnapShot is…Snapshot is free! To request SnapShot for your credit union, visit the Asterisk Intelligence online store at https://store.cuanswers.com/product/snapshot-data-library/and submit the form. Once SnapShot is turned on, everyone at the credit union has access to the SnapShot files by accessing Report Builder.

WHEN IS SNAPSHOT REFRESHED?

The SnapShot environment is refreshed immediately *after* each end-of-day/beginning-of-day (EOD/BOD) processing cycle. If there is no EOD/BOD cycle, the SnapShot will not refresh and instead retains the current set of data until there is an EOD/BOD cycle processed.

There is no dedicated EOD/BOD cycle for Sunday night. So, in a normal week, all the Saturday data inside SnapShot is retained through Monday and only refreshed after Monday's EOD/BOD cycle is processed.

A normal rotation for SnapShot data collection

Day of the Week	FILExxSS will hold...	SnapShot of EOD from
SAT	➔	FRI
SUN	➔	SAT
MON	➔	SAT
TUE	➔	MON
WED	➔	TUE
THU	➔	WED
FRI	➔	THU
SAT	➔	FRI
SUN	➔	SAT
MON	➔	SAT
TUE	➔	MON

Sunday Processing

On any average week, Sunday will not normally include an EOD/BOD processing cycle. All the Saturday data within SnapShot is normally retained through Monday until Monday's normal EOD/BOD cycle is completed.

Holiday Processing

EOD/BOD processing is important to understand in this scenario. A Federal holiday is not considered a business day so EOD/BOD cycles treat the day as if it were a Sunday. Since an EOD/BOD cycle is skipped for the holiday, the SnapShot environment is not refreshed and will retain the current copy of data until the next normal EOD/BOD cycle is processed on the next business date.

End-of-Month (EOM) Processing

The one trump card that overrules all other scenarios is EOM or EOY processing. Dividend calculations and payments must be processed when each month rolls over, even on Sundays or Holidays. If the last day or first day of any month falls on a Sunday or holiday, there will be a normal EOD/BOD processing cycle in addition to an EOM or EOY cycle.

Since an EOD/BOD cycle is run on this day, the SnapShot environment will also refresh with an EOD copy of the prior calendar date's FILExx.

WHEN ARE DATA TRANSFERS PROCESSED FROM SNAPSHOT?

Data transfers which rely on the SnapShot set of data, are initiated *after* the SnapShot warehouses have been generated. The earliest point data transfers could begin is following the refresh, but some specific programs may be intentionally scheduled for later points in the business day. Remember, SnapShot's structure as a static copy of FILExx allows for a wider, more flexible processing window to control when vendors are sent their data.

A single-day timeline for normal SnapShot warehouse processing:

MON thru SAT	Actions
12:00am – 3:30am	EOD runs and following BOD is completed
3:30am – 5:00am	SS warehouses are refreshed
5:00am – 12:00am	Data transfer programs are run
SUNDAY	
12am – 12am	EOD/BOD is **not** run. SS warehouse is **not** refreshed and instead retains Saturday's EOD copy of FILExx

ACCESSING DATA ON THE HIGH AVAILABILITY SERVERS

Remember a rollover is a planned, scheduled transfer of system processing from the regular Production (PROD) box to our High-Availability (HA) box for disaster recovery testing. The standard for rollovers is to schedule the roll to HA for Sunday evening, then back to PROD on Wednesday evening of the same week.

DATA WAREHOUSE AVAILABILITY

As the data warehouse is not designed to run daily processes, data warehouses are not available on the high-availability servers during planned or emergency rollovers.

Due to this, some key differences in user experience and warehouse availability while on the HA servers are as follows:

- When accessing **Tool #1980 *Library Dashboard***, you will be presented with your QUERYxx library instead of your FILExxDW library, as the DW library does not exist on the present server.
- When accessing **Tool #1981 *Library Authority***, CU*BASE will show you the authority list, though a warehouse does not exist.
- Any reports or queries set to use the FILExxDW library, including automated reports or queries, will not run as the library is not available on the present server.
- The option to upload or download data from the data warehouse is not available during HA period. As the scheduled rollovers are announced in advance, reviewing your processes during that period can help to eliminate delays.

SNAPSHOT AVAILABILITY

This table explains the availability of the SnapShot library during a planned rollover, assuming no holidays or End-of-Month scenarios. The dashed lines represent that the SS box contains no data for that day.

Estimated Time	Day of the Week	Action	FILExxSS (Production)	FILExxSS (HA)
	FRI	Fri EOD/Sat BOD	THU	--
	SAT	Sat EOD/Mon BOD	FRI	--
10PM EST	SUN	Roll from PROD to HA *X no EOD/BOD run*	SAT	--
	MON	Mon EOD/Tue BOD	--	--
	TUE	Tue EOD/Web BOD	--	MON
10PM EST 12am – 3am	WED	Roll from HA to PROD Wed EOD/Thu BOD	--	TUE
	THU	Thu EOD/Fri BOD	WED	--
	FRI	Fri EOD/Sat BOD	THU	--
	SAT	Sat EOD/*Mon BOD*	FRI	--
	SUN	**X no EOD/BOD**	**SAT**	--

	MON	Mon EOD/Tue BOD	SAT	--
	TUE	Tue EOD/Wed BOD	MON	--
	WED	Wed EOD/Thu BOD	TUE	--
	THU	Thu EOD/Fri BOD	WED	--
	FRI	Fri EOD/Sat BOD	THU	--
	SAT	Sat EOD/*Mon BOD*	FRI	--

PRIMARY FUNCTIONS AFFECTED BY EACH SCHEDULED ROLLOVER

There are two key points of any rollover which require attention to understand impact on data availability in SnapShot.

Data Transfers (to Vendors)

Currently, these are automated through daily operational procedures. There is no credit union action required to maintain or process.

However, the timing of any rollover does affect these automated programs due to the procedure typically falling on Sunday evenings. Remember, there is no EOD/BOD cycle normally run Sunday night into Monday morning.

Custom Queries

Any custom queries which use FILExxSS will not function on the Monday immediately following a rollover. The first moment these queries will function again is ~5:00am after Tuesday's BOD and SS refresh programs have completed. The SnapShot will hold Monday EOD data at that time.

Special Note – Know that any custom queries which use FILExxSS and are scheduled for automatic refresh via **Tool #758** *Report Automation – Custom Rpts/Files*, will fail to run if their scheduled run day happens to occur on the Monday immediately following a rollover. Credit Union staff are recommended to review their daily PRUNAQ report in CU*Spy for any queries which fail to run within this timeframe.

FAQ: DATA DURING ROLLOVERS

Below is a list of potential frequently asked questions that could be published to alert our credit unions of what data is available during both a scheduled rollover and an emergency rollover.

Q: Each credit union is configured to store a set number of months of transaction history. The default transaction history retention is 12 months for savings/checking products and 48 months for all other products. Will this data be available?

This data will be present in both a scheduled rollover and an emergency rollover.

Q: Every credit union has their own warehouse of both data and query definitions within the QUERYxx library. Will all tables and query definitions be available?

Both tables and query definitions will be present in both a scheduled rollover and an emergency rollover.

Q: EOM tables exists within the FILExxE library for the last 6 months (as a default) for each credit union. Will this data be available?

This data will be present in both a scheduled rollover and an emergency rollover.

Q: Will all scheduled query definitions and scheduled report data continue to be generated?

This data will be present and will continue to be generated as defined by the credit union.

Q: Each credit union has the ability to create custom fields to be used for both membership information and sub-account information. Will this data be available?

This data will be present in both a scheduled rollover and an emergency rollover.