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# Exactly User Guide

## Version 0.1.6

### 2018-04-25

#### Contact information

AVP

<http://www.weareavp.com/>

#### GitHub repository

<https://github.com/WeAreAVP/uk-exactly>

#### Download pages for application

Windows: <https://www.weareavp.com/wp-content/uploads/2018/04/Exactly-Win.zip>

*sha256 (.exe) :*

*9d48330b112798c8c714b151e459aa4572e1cf5f2f3a2528b944454625dccabf*

Mac: <https://www.weareavp.com/wp-content/uploads/2018/04/Exactly-macOS.zip>

*sha256 (.dmg) :*

*8a10407cb5de61bdfaa5402c12c8525fc2754dfa8ed1e5a0a58670edf5b6f1db*

#### Notes

This application is in beta. Please help refine it further by reporting all bugs to

<https://github.com/WeAreAVP/uk-exactly/issues/>

If existing packaging does not meet your needs, please contact us.

# Change log

## **2018-04-25 Version 0.1.6**

- Fixed bug with transferring files to a Dropbox managed folder caused by locks during synchronization process.
- Updated the [BagIt Library](#) from LOC to the latest version (v5). This is what prompted the most changes as a lot of the old API methods were deprecated due to v5 being a complete rewrite of the library.
- Preserve all file metadata (including modified time, ownership, etc) during Transfer by explicitly reading from source and writing to destination after Transfer. Not valid for FTP transfers.
- Lock destination files during copy. This prevents external programs (like Dropbox) from locking files until we have finished copying to destination.
- Changed the lookandfeel to use system default because “Nimbus” had some strange behavior on Windows (particularly scroll bars being cut-off)
- Place sources directly into “/target\_destination/data/” directory before bagging instead of “/destination/”. This prevents the need to move the files after they have been bagged.
- Added a retry when trying to delete unserialized version of a bag. This is file-lock related.
- Minor UI changes: better modal dialog placement, improved logging of progress, and better scrolling in the metadata window.
- Add metadata before bagging to remove the need for rewriting and recalculating the md5 of baginfo.txt after bagging.
- Remove the nbproject folder, because maven takes care of project structure now.

## **2017-09-20 Version 0.1.5**

- Added new checksum creation and validation within the app while copying files internally before preparing a BagIt bag. Anytime files copied in the app, checksums are created and validated before and after the copy operation to ensure no change in file fixity, even during internal processes within the source file system.
- To fix a problem where Exactly created bags with Reserved Metadata Fields that stray from the requirements outlined in BagIt specification section 2.2.2, the spaces have been replaced with dashes in the hard-coded strings within this function.
- Fixed problem where Exactly failed to create bags for folders that contain files without a file extension.

## **2017-02-03 Version 0.1.4**

- Adjusted codebase of Exactly to adjust for delayed database initiation and application initiation within the new Mac OS: Sierra.
- Made corrections to email code logic to reduce java exceptions when sending mail for users.

- Added data element in TransferComplete.txt to note the email address of the user and the email address(es) of the recipients when email functionality is turned on.

### **2016-10-03 Version 0.1.3**

- Added SFTP option for package delivery. New SFTP preferences page allows users to test and save SFTP delivery credentials. Users can select SFTP as preferred method for delivery of files during any transfer.
- Fixed an error in FileSystemData.txt file creation caused when filenames include reserved characters or spaces.
- Fixed an error where Exactly changed filenames when reserved characters (such as colons “:”) appear. Now Exactly will report an error to the user and request for the user to rename the file before proceeding.

### **2016-05-13 Version 0.1.2**

- Improved FTP performance for FTP servers that frequently disconnect during the transfer session. Fix was tested against BrickFTP.com because of common failures by users using this service.
- Fixed a Microsoft Email Exchange issue.
- Added new feature to capture original file system information for transferred files as an additional text document: FileSystemData.txt. Exactly uses a directory listing on Windows and the “stat” command on MacOS to extract original create/modify/access dates, owners/groups, and file paths before packaging targeted files for delivery.

### **2016-03-01 Version 0.1.1**

- Update bug that adds “.zip” Bag Name in Exactly TransferComplete Report when a bag is zipped as part of the transfer process. Bag Name now remains the same as what the user entered into the Exactly UI.
- Update look and feel of Export/Import pop-up windows on Windows version of Exactly.

### **2016-01-13 Version 0.1**

- First release.

### **Known Issues**

- Current version attempts to capture original timestamps for files as they are copied from the storage environment of origin to the destination environment. This feature is under development and will likely change as users provide feedback.
- Exactly has a 200GB size limit for bag transfers. Fixes for this issue are currently under development.

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# Brief Overview and Background

Exactly is a simple and easy to use application for remotely and safely transferring any born-digital material to the archive. Exactly is a user-friendly application that utilizes the [BagIt File Packaging Format](#)<sup>1</sup>, which defines a structure for metadata and content (payload) in “bags” or “packages.” It supports FTP and SFTP transfers, as well as standard network transfers, and integrates into desktop-based file sharing workflows such as Dropbox or Google Drive.

Building on work began by the Gates Archive, AVP and the Louie B. Nunn Center for Oral History at the University of Kentucky Libraries developed Exactly to meet the growing need for archives to acquire digital content directly from donors and to begin the activities of establishing provenance and fixity early in the process of acquisition. Although Exactly was developed with this use-case in mind, the application can be used in any circumstance where there is the need to securely send and receive data.

Additionally, Exactly allows the archive to create customized metadata templates for the donor to fill out before submission. With structured metadata coming into the archive with the digital object, the accessioning process will be a quick importing activity. Exactly can send email notifications when files have been delivered to the archive. Exactly is addressing one of the greatest challenges facing any archive working with born-digital material.

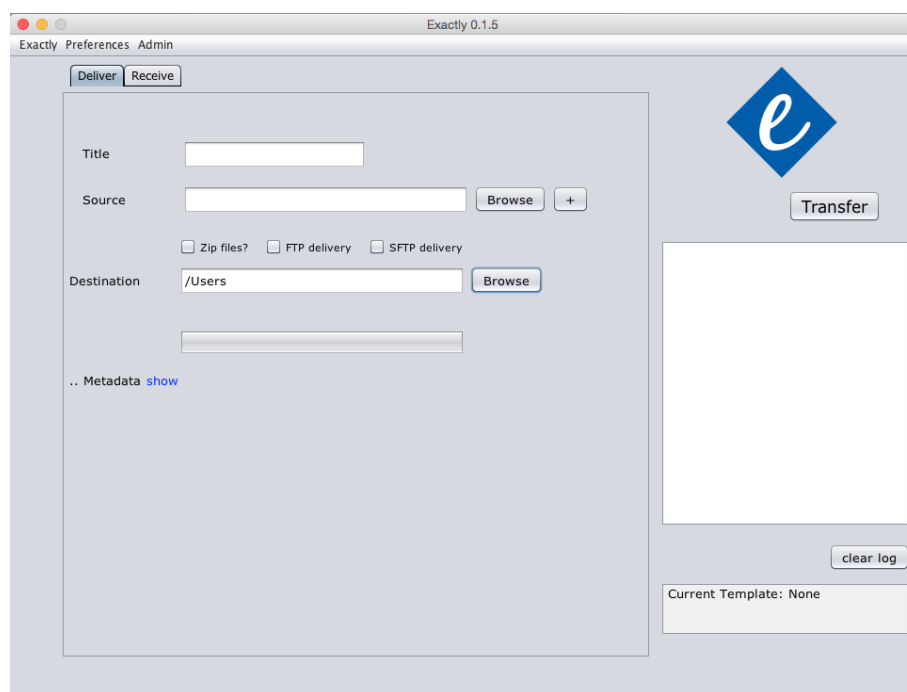


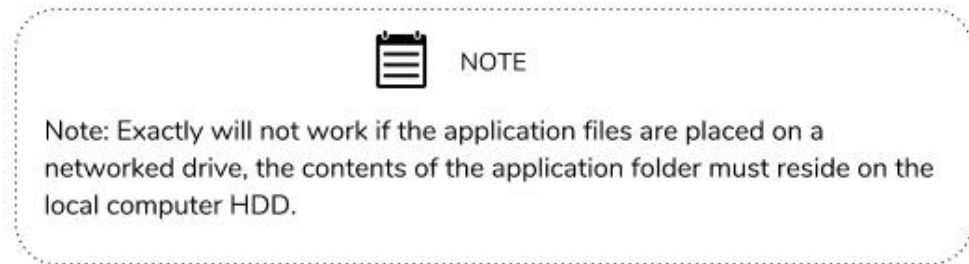
Figure 1: Exactly user interface.

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<sup>1</sup> A standard by the Internet Engineering Task-Force, developed by the Library of Congress and the California Digital Library, with current support from George Washington University and the University of Maryland)

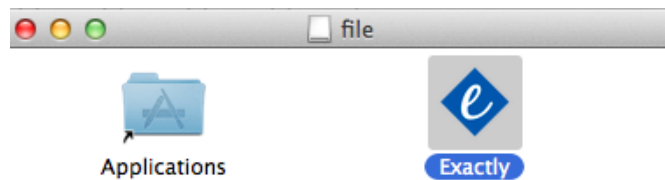
# Installing Exactly

Exactly can be installed as a Mac OS Build (application file) or as a Windows executable file (.exe). Download links for each option can be found on the [cover page](#) of this user guide.



## Mac OS Build

Once unzipped, double-click on the .dmg file. A window will open (see image below). Drag and drop the Exactly icon to the Applications folder. You can find Exactly in the Launchpad or in the Applications folder in Finder. Simply open the application file and it will run as any application runs on your Mac.

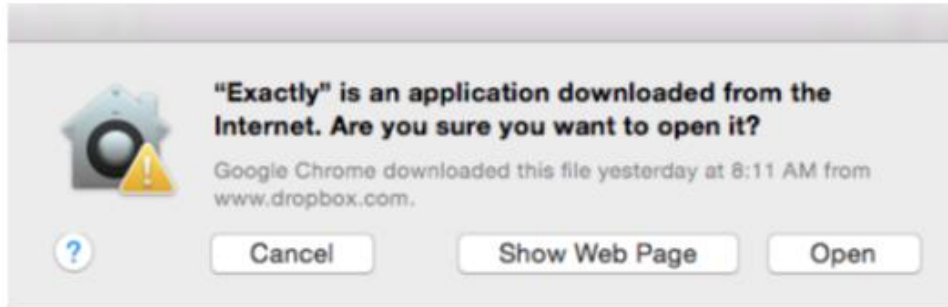


*Figure 2: Drag and drop Exactly into the Applications folder to install..*



#### NOTE

If it is your first time opening the application your machine will ask confirmation to launch it. You can either right click on the application file and choose "Open" or just double-click on the executable file. A pop-up will ask you if you are sure you want to open the application. Choose "Open".



## Windows Executable

Once unzipped, the Windows Executable (.exe) can be opened from anywhere you choose to store the file. Because this is a java application, Exactly comes complete with the necessary java files to run on your Windows machine. Exactly will install those files in a local temp area while the application is running.



#### NOTE

If it is your first time opening the application your machine will ask confirmation to launch it. In the pop up warning message, select "Run anyway".

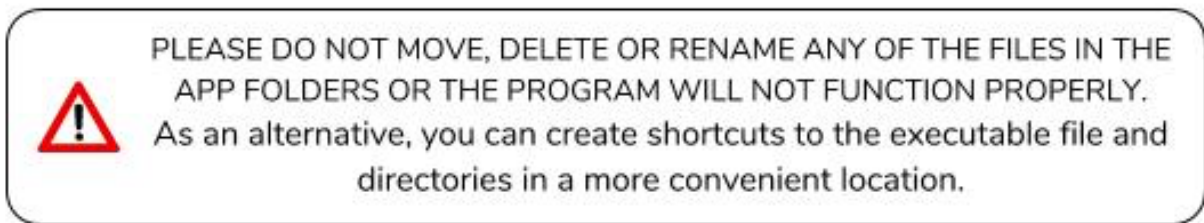
## Exactly Directory

On Windows, upon first launch, Exactly will create logs and database files in the same directory as the application. This directory can be placed anywhere on your computer but it must stay formatted as-is; if you move any of the directories from the parent folder the program will not function.



Figure 3: Exactly directory structure in Windows after first launch.

On a Mac, the log and reports folders will be created in the same directory as the app the first time the application is run. To access logs and reports, right-click on the application and select “Show Package Contents.”



Within the parent directory you will find the following subdirectories:

- **ukexactly:** Contains all database files and configuration settings for the database — these files/folders cannot be changed or the program will not function correctly.
- **logfile:** a text file where logs are stored for troubleshooting.
- **Java** (mac): a folder containing the Java executable file.



# Exactly Interface

Exactly has a graphical user interface (GUI) called the “Transfer Center.” When the application opens, the default view for Exactly is the Transfer Center as seen below in Figure 4.

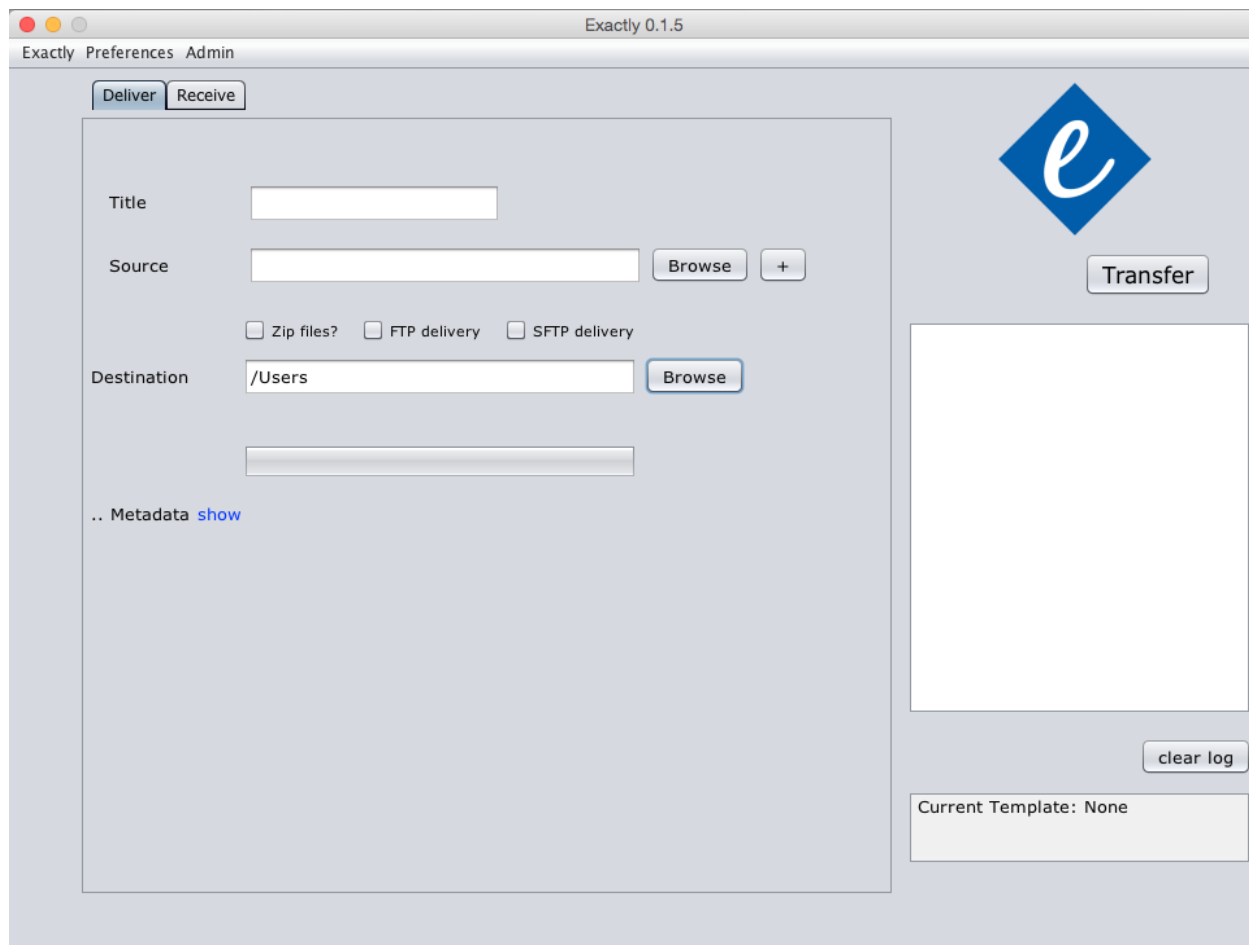


Figure 4: The Transfer Center

At the top left, and common to all the different views in the application, the user can find the [Main Menu Settings](#). Right below, there are two Function Tabs, [Deliver](#) and [Receive](#), which are core to Exactly’s main functions.

# Deliver Tab

The “Deliver Tab” allows the user to set up and initiate transfers. This tab contains four sections or “quads,” as seen in the image below.

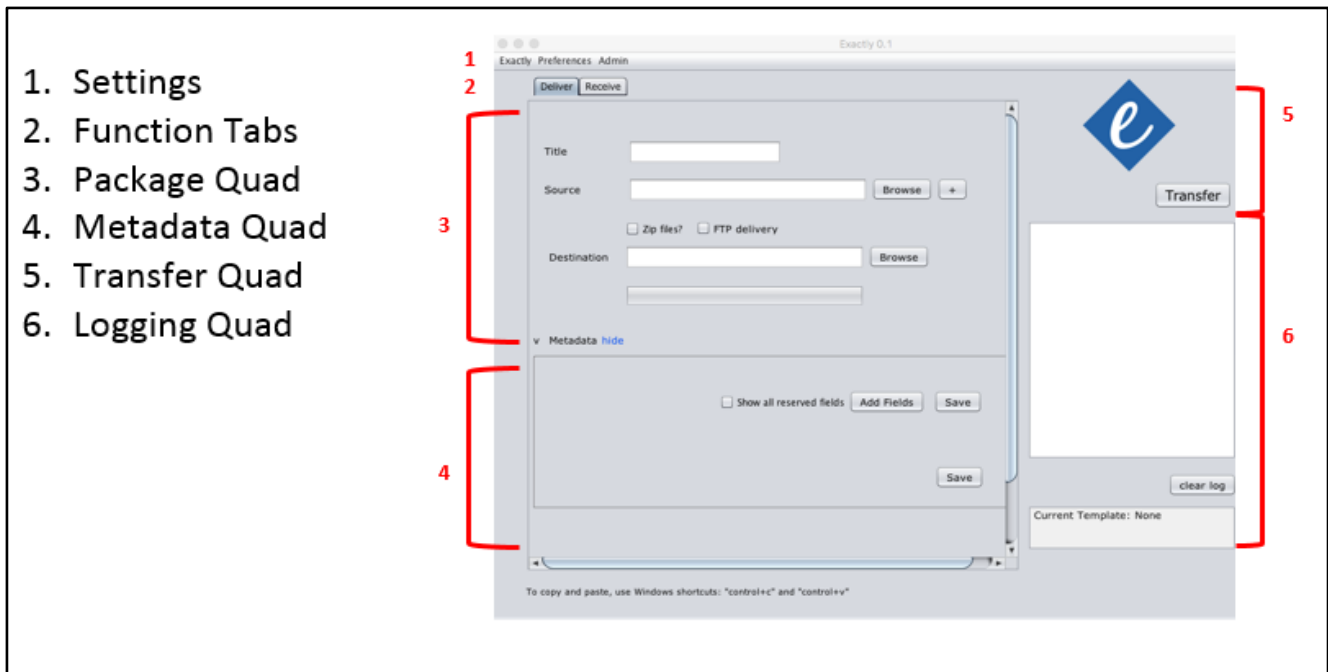


Figure 5: The Transfer Center (in Deliver Tab)

## The Package Quad

The large, upper left-hand box in the application houses the main configuration elements for creating a “bag” or “package” for transfer.

- **Title (required):** The user can name the package. This will be the name given to the highest-level directory that will hold all the contents of the package when it is created. See [Exactly Package Anatomy](#) for more details on title best practices.
- **Source (required):** The user can browse directories and/or files that will be included in the package.



Use this button to select additional directories and/or files to include. You can select multiple files or directories in the browse window (Control+click for Windows or Command+click for Mac) in order to add more than one selection at once.

- **Zip files?:** This check box allows the user to serialize the package into a single zipped file. If selected, the package will be zipped.
- **FTP delivery:** This check box allows the user to designate that the transfer will make use of the FTP configuration settings to deliver the package to a recipient's FTP server. Exactly will still create a local copy of the package first before attempting to deliver the package via FTP. The Destination field must be filled out. And the FTP Settings must be validated before Exactly will deliver via FTP.
- **SFTP delivery:** This check box allows the user to designate that the transfer will make use of the SFTP (Secure FTP) configuration settings to deliver the package to a recipient's SFTP server. Exactly will still create a local copy of the package first before attempting to deliver the package via SFTP. The Destination field must be filled out. And the SFTP Settings must be validated before Exactly will deliver via SFTP.
- **Destination (required):** The user can browse directories in order to determine the local destination where Exactly will deposit the package. Exactly will create a new directory at the destination with the Title of the bag. Within this directory, Exactly will create a folder containing all the elements of the package. This new folder will also be named with the value that is set in the "Title" field.
- **Progress Bar:** This bar illustrates the progress of the transfer as it is being performed.

## The Metadata Quad

By default, the metadata details are hidden from the user (unless the user has imported an [Exactly configuration template](#)). To reveal the metadata details, the user can click on the word "show" just to the right of the Metadata label. Likewise, the Metadata Quad can be hidden by clicking on "hide." Exactly will retain the settings in this quad when hidden.



Figure 6: Revealed metadata details.

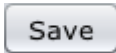
In essence, the Metadata details area is composed of a user-definable set of key:value pairs that will be included in the package as [bag-info.txt](#) (XML and CSV, as well) as metadata for the entire package. Users can select all [BagIt](#) reserved fields by selecting the “Show all reserved fields” check box.



Use this button next to each label of a key:value pair to remove Metadata fields.



Custom Metadata fields can be added by selecting this button. When a field is added, users can define the “label” and the “value” for each key:value pair. The “label” is the name of the metadata field; the “value” is the actual content of the field. Users can add as many fields as needed.



In order for Exactly to recognize new fields, the user must select the “Save” button to save any changes or additions before completing the transfer.

Users can establish a metadata template by adding a set of predetermined labels with empty (or filled) values. After the user saves these values, the user can then export ([see Export](#)) the configurations to share with other users. In this way users can create custom metadata schemas and share them for easy loading ([see Import](#)).



#### NOTES

- Label fields have a limit of 256 characters. Value fields have a limit of 5,000 characters.
- Label fields will be scrubbed to meet XML label character requirements.

## The Transfer Quad

Once a user has completed at minimum a Title, Source, and Destination (all other elements are optional), the “Transfer” button initiates the packaging and transfer process.

## The Logging Quad (Deliver)

On the right of the application, the log window communicates the ongoing activities of the tool and reports on success and failure.

The “clear log” button clears the log window but does not clear the logfile.txt file that is in the Exactly folder. This log file contains a record of the current Exactly session and can be used for troubleshooting if Exactly is not performing as expected. See [Exactly Error Report](#) for more details.

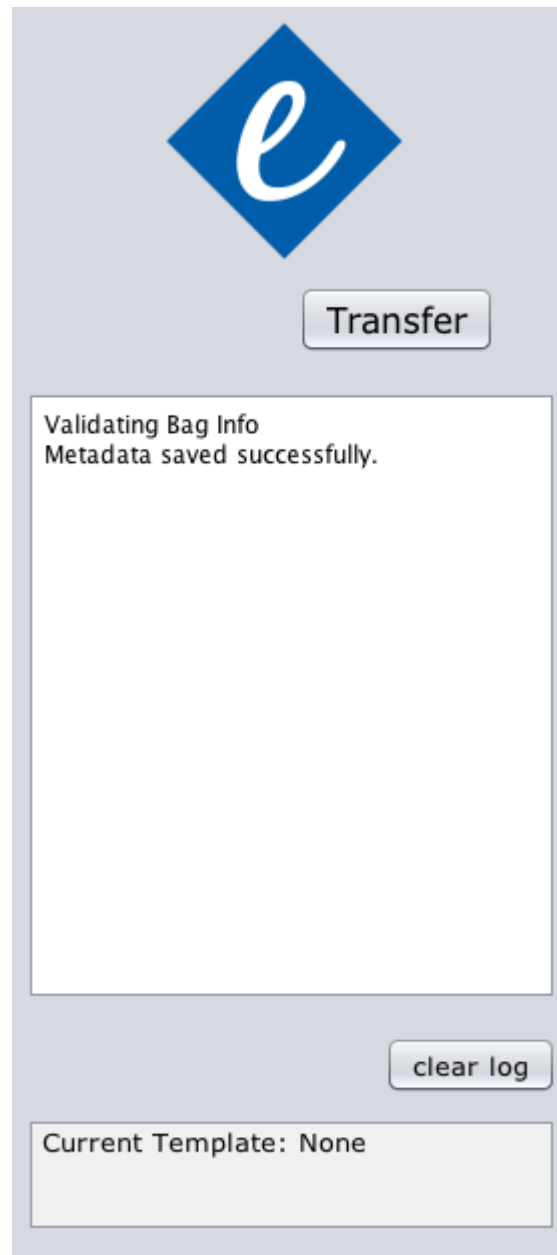


Figure 7: The Transfer and Logging Quads

# Receive Tab

The main section of the “Receive tab” focuses on giving the recipient an opportunity to verify packages (or bags) to make sure these are unchanged and complete, as well as to unpack the bag in order to move the contents out of the [BagIt structure](#) and to a designated location.

The Receive Tab contain two quads: the Package Quad and the Logging Quad, each explained below.

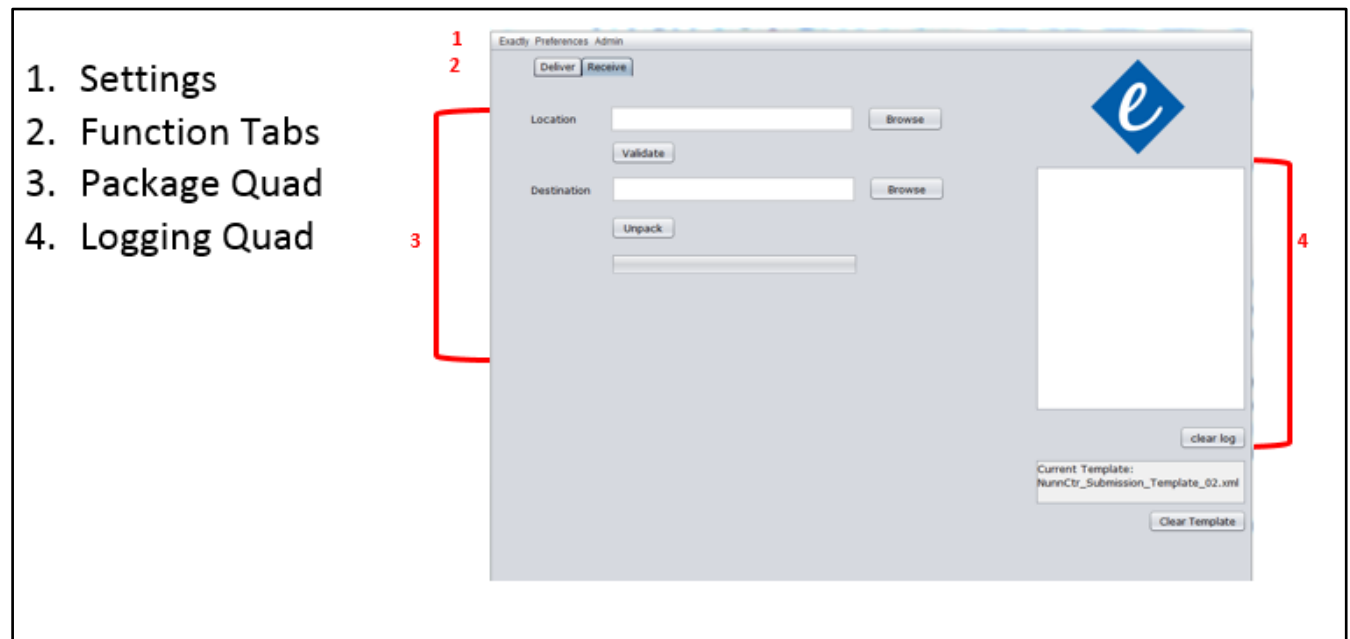


Figure 8: The Transfer Center (in Receive Tab)

## The Package Quad

This section allows the user to select and validate packages for BagIt compliance, and unpack BagIt bags.

### Validating Bags

- **Location:** The user can point Exactly to a directory that supposedly is the high-level directory of a BagIt bag, or to a zip file that contains a BagIt compliant bag. Once the directory is selected, Exactly will investigate the location and determine whether the destination is indeed a compliant BagIt bag. The results will show up in the [Logging Quad](#).

- **Validate:** If the target is recognized by Exactly as a compliant BagIt bag, then the user can click on the “Validate” button to engage the BagIt library to perform a full verification. Exactly will determine if a target is:
  - Complete: all files are present as expected and no additional payload files exist, or
  - Valid: all payload files’ checksums currently match the stored checksums in the manifest-[algorithm].txt file within the package. The results will show up in the [Logging Quad](#).

## Unpacking Bags

- **Destination:** If the user would like to remove the BagIt structure from the received package, a destination must be set for where Exactly will unpack the bag. Exactly will move the contents of the payload (i.e., the data directory) into a new directory labeled with the Title of the package (extracted from the bag) at the designated destination.
- **Unpack:** After a Destination is set above, the user can select the “Unpack” button to engage the process. Exactly will move the contents of the payload (i.e. the data directory) into a new directory labeled with the Title of the package. Additionally, Exactly will create a directory named “[BagTitle]\_metadata.” Inside of this folder, Exactly will place all bag-info.txt, bag-info.csv, bag-info.xml, manifest-md5.txt, and TransferComplete.txt files. The bagit.txt and the tagmanifest-md5.txt files will be deleted. Exactly performs a full BagIt verification before completing this process.

## The Logging Quad (Receive)

Just as in the [Deliver Tab](#), the Logging Tab will show the status of the processes being performed. In the log window, Exactly will display the results of the validation investigation and inform the user whether the target content is packaged in compliance with the BagIt specification. See [Exactly Error Report](#) section for more details.

# Exactly Main Menu

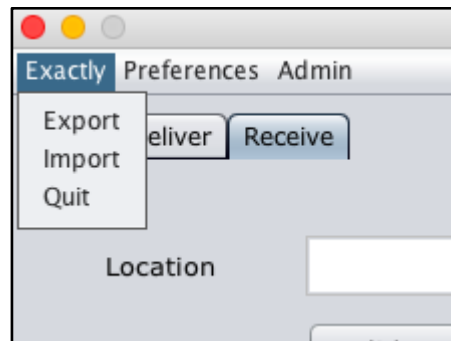


Figure 9: Detail of Exactly File menu.

## Export

Choose this option each time you wish to create a snapshot of all current configurations in the Exactly GUI. Exactly will generate an XML configuration file and write it to the destination that you select. This XML configuration file will contain all settings, including Email Notifications, Email Settings, FTP Settings, and Metadata fields currently saved in the Metadata section. This XML configuration can be shared with colleagues, donors, or saved for reuse if you want to establish multiple FTP profiles.

## Import

Select this option to load an existing XML configuration file into Exactly. Exactly will read the file and mimic all settings in the configuration file, including Email Notifications, Email Settings, FTP Settings, and Metadata fields depending on whether these are present in the imported configuration file. In the GUI, Exactly will display a notification of which configuration file is currently loaded (if any). Users can clear a loaded configuration template by selecting the “Clear Template” button in the Log Quad of the Exactly interface.

### Button

This will reset the Exactly configuration settings to the previously saved settings before the configuration file was imported.

## Quit

Choose the option to close the application.



Figure 10: Clear Template



# Preferences Menu

Only one option exists in the preferences menu currently: Email Notifications.

## Email Notifications

Selecting this option will open a new page in the Exactly GUI. This page collects a list of recipient email addresses to which Exactly will send notification upon completion of a transfer operation.

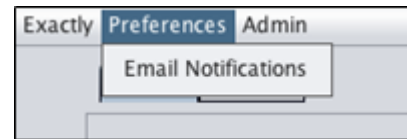




Figure 11: Preferences Menu

-  Select this button to open a new email address field. Users can add as many email addresses for notification as they would like.
-  Simply select this button next to a given address to remove it. Select "Save" to save the addresses and/or any changes into Exactly's internal database. When finished, select "Close" to return to the main Exactly GUI window.

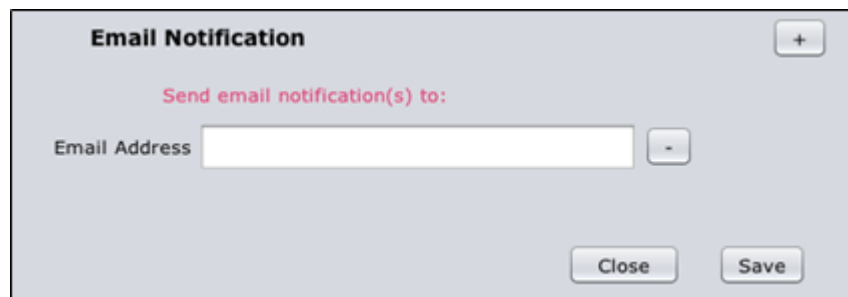


Figure 12: Email Notifications Option



### NOTE

Emails will only send if the "Enable Email notifications" box is checked on the [Email Settings](#) page.

# Admin Menu

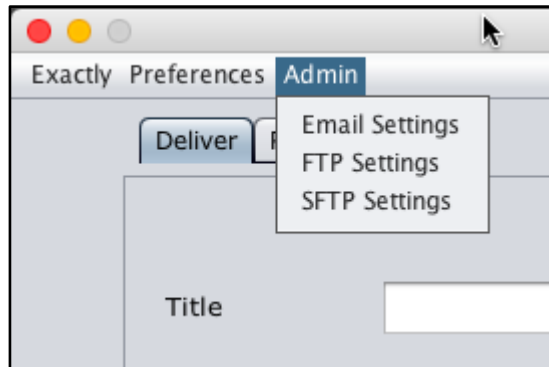


Figure 13: Detail of Exactly Admin menu.

## Email Settings

Chose this menu to configure email settings for the Exactly application. Exactly will send emails on behalf of the Exactly user upon completion of a transfer operation.

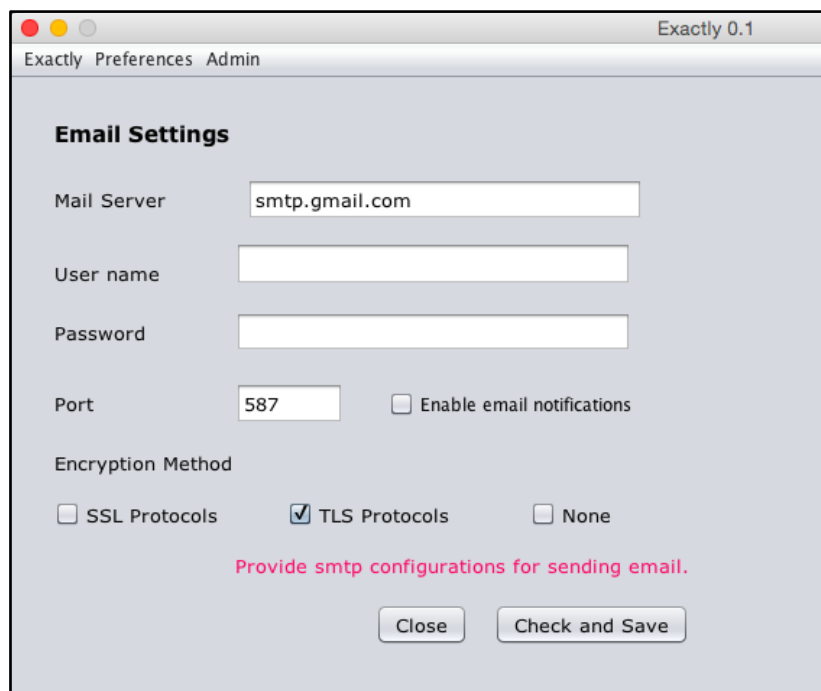


Figure 14: Detail of Exactly Email Settings page.

In Figure 14 you see how Exactly allows you to configure the email settings associated with the account used for emailing reports. Without setting this preference, Exactly will not be


able to send report emails. Note that Exactly will encrypt the credentials before storing them in order to provide account security.

By default, Exactly populates the server, port, and security fields with Gmail default settings. If these values are different for your email account (for example, if your email account is provided through your organization), you will need to provide the appropriate information. This is the same information you would find in your email application configuration settings, so you may be able to obtain the information by looking at your email application account settings. If not, the information needed can be obtained from your email provider or by contacting your IT administrator.

You must select the “Enable email notifications” box and “Save” the configuration details in order for Exactly to send email notifications to the addresses (if any) that you added to the [Email Notifications](#) list in the Preferences menu.

The email account can be tested with the “Check and Save” button, which will report in the log window the results of the testing. If the account is verified, then Exactly will save the settings and report to you in the log window that it was able to check and save the settings correctly.

Any time you need to make changes, be sure to select “Check and Save” again to update Exactly’s internal database.

 **NOTE**  
**Users must be connected to the internet in order to “Check and Save” Exactly email settings.**

## FTP Settings

Choose this option to configure FTP settings for the Exactly application. If FTP settings are set, then users can select “FTP” as a delivery option during a transfer operation in the [Deliver Tab](#). Users must be connected to the internet in order to set and use FTP settings.

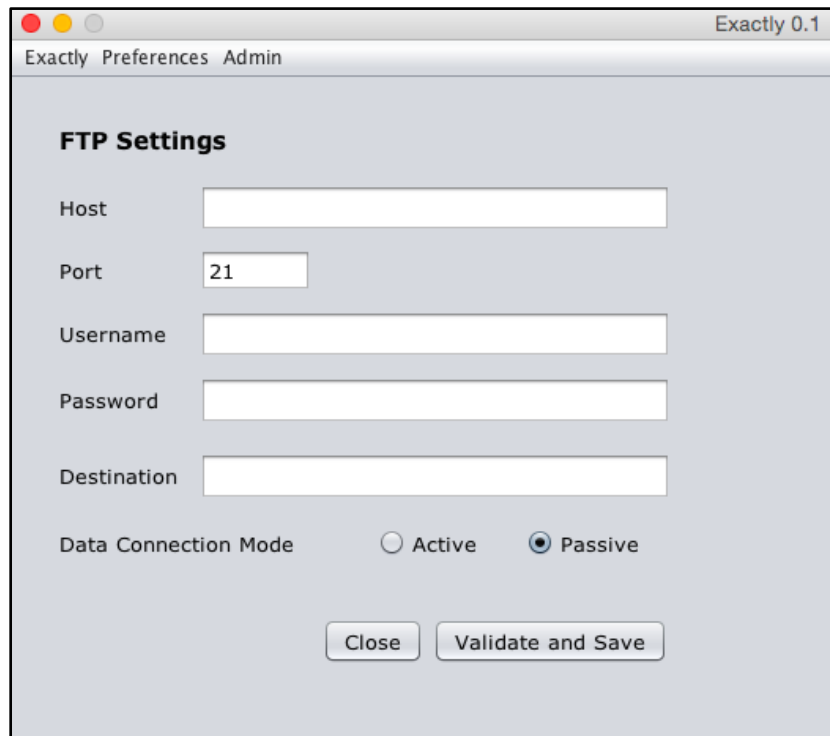
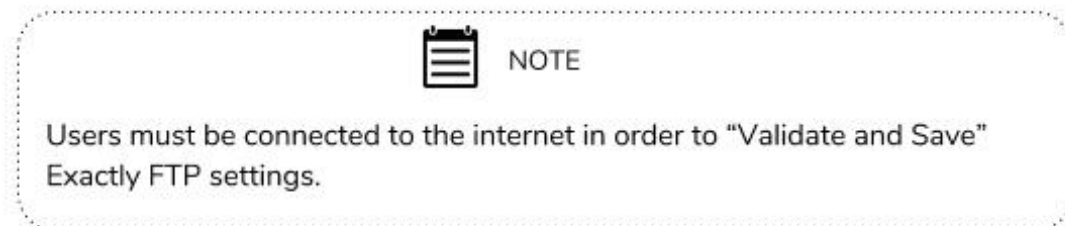


Figure 15: Detail of Exactly FTP Settings page.

In Figure 15, you see how Exactly allows you to configure the FTP settings that will be used to deliver content remotely to an FTP server if the user desires. Without setting this preference, Exactly will not be able to send packages via FTP. Note that Exactly will encrypt the credentials before storing them in order to provide account security.

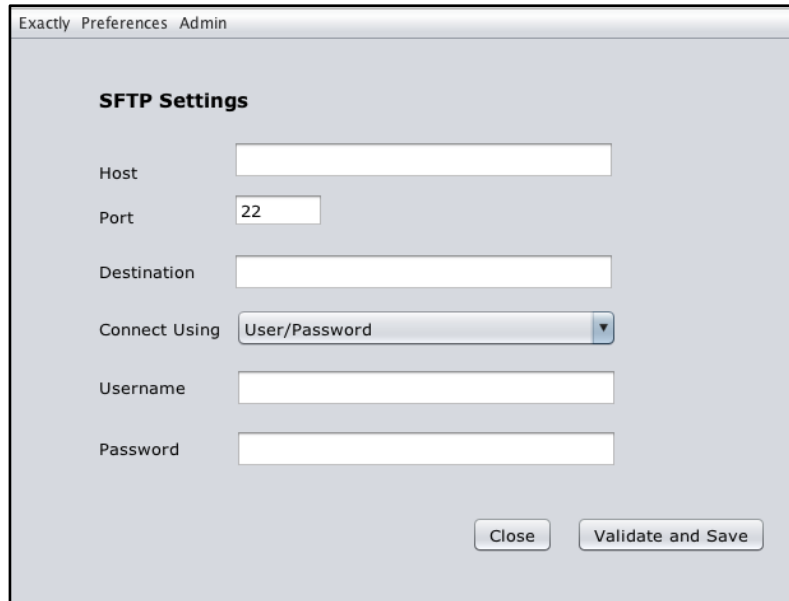
The FTP connection can be tested with the “Validate and Save” button, which will report in the log window the results of the testing. If the connection is verified, then Exactly will save the settings and report to you in the log window that it was able to validate and save the settings correctly.

Any time you need to make changes, be sure to select “Validate and Save” again to update Exactly’s internal database.



## SFTP Settings

Choose this option to configure SFTP settings for the Exactly application. If SFTP settings are set, then Users can select “SFTP” as a delivery option during a transfer operation in the [Deliver Tab](#). Users must be connected to the internet in order to set and use SFTP settings.



Exactly Preferences Admin

**SFTP Settings**

Host

Port

Destination

Connect Using

Username

Password

Close Validate and Save

Figure 16: Detail of Exactly SFTP Settings page.

In Figure 16 you see how Exactly allows you to configure the SFTP settings that will be used to deliver content remotely to an SFTP server if the user desires. Without setting this preference, Exactly will not be able to send packages via SFTP. Note that Exactly will encrypt the credentials before storing them in order to provide account security.

The SFTP connection can be tested with the “Validate and Save” button, which will report in the log window the results of the testing. If the connection is verified, then Exactly will save the settings and report to you in the log window that it was able to validate and save the settings correctly.

Anytime you need to make changes, be sure to select “Validate and Save” again to update Exactly’s internal database.



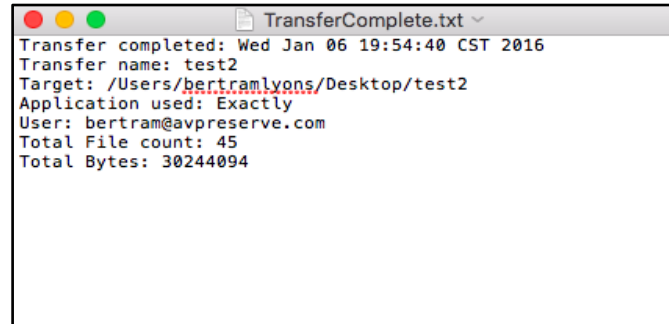
### NOTE

Users must be connected to the internet in order to “Validate and Save” Exactly SFTP settings.

# Exactly Reporting

## Exactly “TransferComplete” Report

After each Exactly transfer operation, Exactly will include a report “TransferComplete.txt” within the completed bag.



```
Transfer completed: Wed Jan 06 19:54:40 CST 2016
Transfer name: test2
Target: /Users/bertramlyons/Desktop/test2
Application used: Exactly
User: bertram@avpreserve.com
Total File count: 45
Total Bytes: 30244094
```

Figure 17. Example Exactly transfer report details.

Exactly’s transfer report documents the time and day of the transfer, the name of the transfer, the local destination, the FTP/SFTP destination (if used), the email address of the current user (if email settings have been set), a count of the total files included in the transfer, and a count of the total bytes included in the package (this includes all reports and BagIt TXT, CSV, and XML files).

## Exactly Notification Email

After each Exactly transfer operation, if the user has enabled Exactly to send email notifications, Exactly will include the contents of both the “TransferComplete.txt” file and the [bag-info.txt file](#) within the text of the notification email. Additionally, a copy of the [manifest-md5.txt file](#) will be included as an attachment to the email. This gives the recipient a notification of the transfer, a snapshot of the transfer metadata, and a list of files and checksums to expect with the transfer.

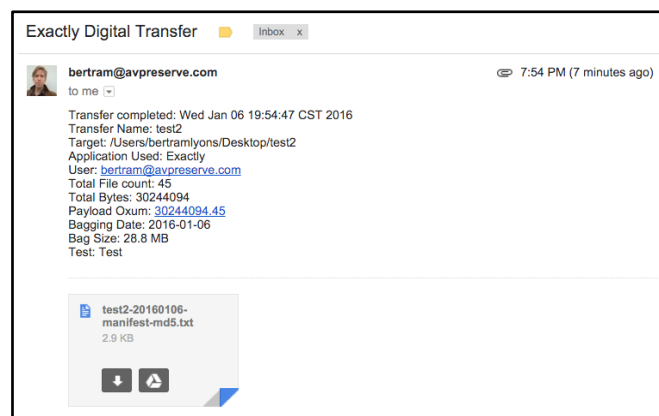


Figure 18. Example Exactly notification email.

## Exactly Error Reporting

Here you can find a list and short description of possible errors that may appear in the Logging Quads for both the [Receive](#) and [Deliver](#) tabs.

### Receive Tab

<b>Error</b>	<b>Description</b>
Bag Recognition: Not organized in BagIt structure	During validation, Exactly detected that the bag does not comply with BagIt specifications for structure.
Bag does not have any payload manifests.	During validation, Exactly detected that the bag does not contain the required metadata for the payload.
Invalid bag	Exactly was not able to validate the bag, reasons are unknown.
Invalid bag after copying to destination.	Exactly was able to validate the bag when first imported, but it failed validation when moved unpackaged to final destination.

### Deliver Tab

<b>Error</b>	<b>Description</b>
Please select Transfer destination.	User has failed to select a Transfer destination (required).
Please provide Transfer name.	User has failed to assign a Title to the bag (required).
Folder already exists in destination with this title. Please change the title.	User has selected a destination folder that contains a directory with the same Title.
Please add at least one recipient.	When email settings are defined, user must enter at least one email address to send report.
Invalid bag after copying to destination.	Bag failed verification after transfer.

FTP transfer failed.	Bag could not be transferred via FTP.
An error occurred while uploading on FTP. Cannot upload file.	Bag could not be transferred via FTP because upload failed.
FTP transfer failed; local transfer completed successfully.	Bag was successfully created and stored locally, but FTP transfer failed.
Issue while writing file.	Bag metadata or payload failed to write to destination.
Issue while updating tagmanifest-md5.txt	The creation of the tag-manifest report has failed.
Error closing the bag.	The packaging process could not be finalized.
Following Folder name(s) contain special characters <>\/?* ": Please rename before transferring [filename]	Certain files or folders to be transferred contain file names with special characters.

## Email Settings Tab

Credentials not valid. Please update Email Settings.	The email settings for the sender's email account are not valid.
--	--

## FTP Settings Tab

Credentials not valid. Please update FTP Settings.	The FTP settings provided for the transfer are not valid.
--	---

## Unknown Error

An error occurred. Please contact support.	Generic error message. Contact support for assistance.
--	--



# Exactly Package Anatomy

At its heart, Exactly is a BagIt-compliant packager. It uses the bagit java library to create BagIt bags (see The BagIt File Packaging Format v0.97 at this URL, <https://tools.ietf.org/html/draft-kunze-bagit-14>, for definition of a BagIt bag).

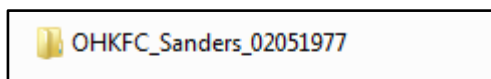
As a supplement to the standard elements of a BagIt bag, Exactly produces a report to document the transfer event (i.e. [TransferComplete.txt](#)) and transforms the [bag-info.txt file](#) into an XML and a CSV file for ease of use if users prefer XML or CSV for metadata imports.

Each Exactly package will be manifest as a directory or a zip file entitled with the “Title” given by the user during the [Transfer preparation](#). This top-level directory is the packaging for the shipment. It is the equivalent of a shipping box. All of the files and packing lists will be inside this directory.

The name given to this directory is generally considered to be the Title of the bag.

There is no standard naming practice for BagIt bags. A general guideline, though, is consistency and uniqueness, particularly if you are going to be using the bags for digital preservation in long-term storage. For example, at the Louie B. Nunn Center for Oral History at the University of Kentucky, for any given oral history interview, they include the project ID, the last name of the interviewee, and a date as the ingredients of their bag names:

[Project ID]\_[Last Name of Interviewee]\_[MMDDYYYY]



Within this directory (or within the directory once unzipped) will be the expected BagIt structure with a “[data](#)” directory that contains all the files and directories selected by the user for transfer.

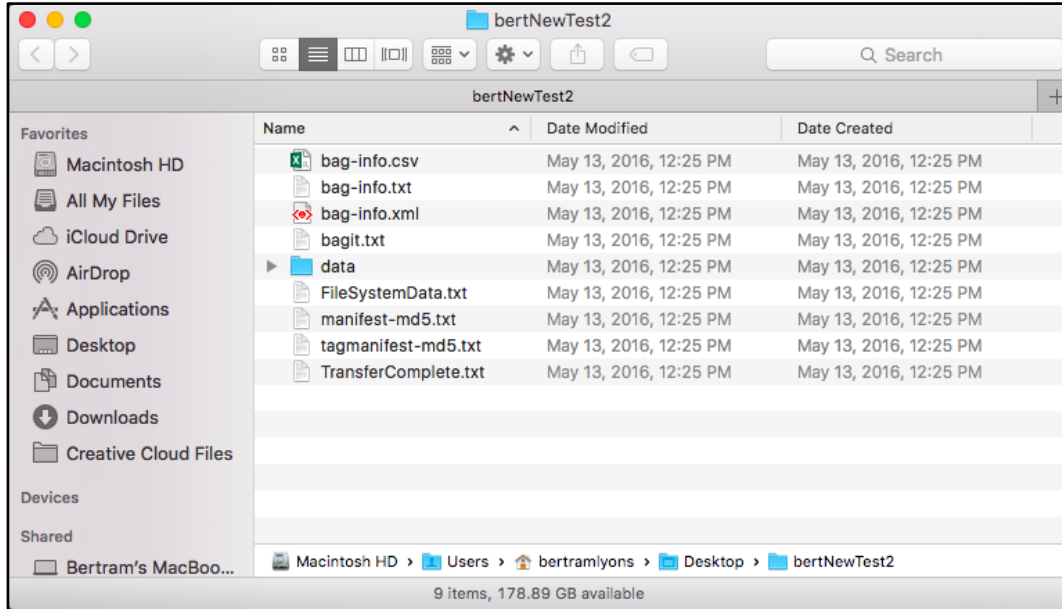


Figure 19. Example package structure.

## Data Directory

The data directory holds all of the files you are planning to deliver. These files include metadata in any format, media of any type and accompanying Word or text documents. They can be single files or directories and multiple levels of subdirectories. This collection of files is collectively called the payload. During the Transfer process, you choose the files to be included in the payload and Exactly places them automatically in the data directory.

## Bag-Info

The bag-info.txt file is a text file that is a lot like the shipping label on a physical package. It has information about who sent it and to whom it is going, as well as information about the bag generated in the bagging process. Exactly creates this file and uses the information you create in the Metadata Quad during the Transfer preparation process. Exactly creates a bag-info.txt, bag-info.csv, and bag-info.xml file for each package. These are just different ways of encoding the same set of information.

## BagIt.txt

The bagit.txt file is another text file that Exactly creates with information about the bag itself. This is the bag declaration file that informs other systems that this package purports to be a BagIt bag. There is no need for the user to do anything with this file.

## Manifest

The manifest-md5.txt file is a text file that is the equivalent of a packing list for shipping. This file is automatically generated and is an inventory of files in the payload along with their checksum.

A checksum is a type of digital fingerprint for a file. The [validation process](#) after transfer creates a new list of checksums and compares it to the old one. If the fingerprint of a file has changed, then something has been corrupted and a replacement needs to be requested. The validation process also checks the inventory to see if files were lost or added in the process. The most common type of checksum is MD5, which refers to the name of the algorithm that creates it. There are other types but for transfer and digital preservation, md5 is most widely used. The text of the file will look something like this ([checksum] [filepath]):

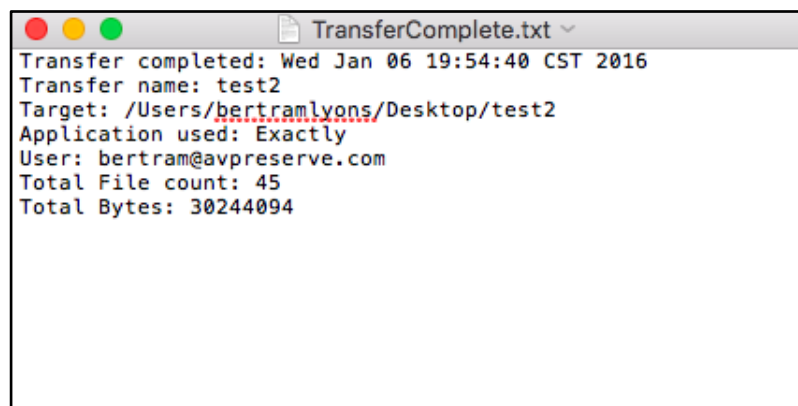
```
1fce6033e68ff6bc2a45da317ce9dbc3      data/qatar_2011_06.mrc
18b786ad6ebd2b0ae164023a2dc0e6d7      data/852 HLM.MRK
e9b9fd83898b46f77d65dd04063202ce      data/810 HLM.MRK
736790981dcf5ee4b93ffac8631e0809      data/25488/0001.tif
c6a7de1aa7c34ee4737502ad1aceaa7d      data/25488/0002.tif
```

## Tag Manifest

The tagmanifest-md5.txt file is a text file automatically generated by Exactly that does not need to be edited by the user. It is used to lock all the bagit.txt, bag-info.txt, and manifest-md5.txt files in place, through the creation of md5 checksums for each of them. This is an additional security mechanism to ensure that all elements in the bag remain unchanged.

## TransferComplete Report

As mentioned in the previous section, after each Exactly transfer operation, Exactly will include a report "TransferComplete.txt" within the completed bag.



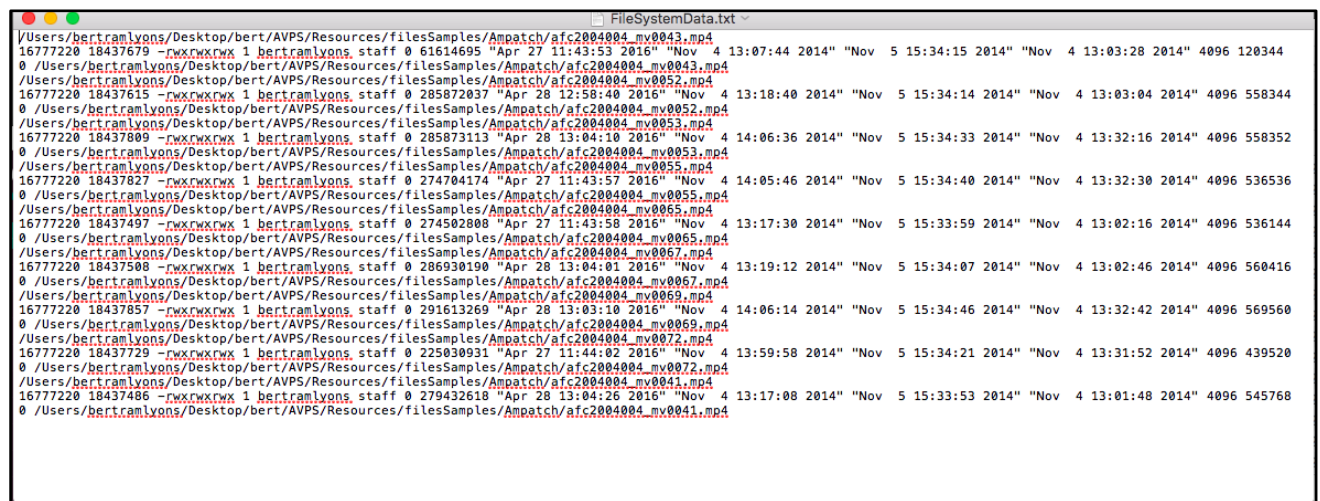
```
Transfer completed: Wed Jan 06 19:54:40 CST 2016
Transfer name: test2
Target: /Users/bertramlyons/Desktop/test2
Application used: Exactly
User: bertram@avpreserve.com
Total File count: 45
Total Bytes: 30244094
```

Figure 20. TransferComplete.txt example.

Exactly's transfer report documents the time and day of the transfer, the name of the transfer, the local destination, the FTP destination (if used), the email address of the current user (if email settings have been set), a count of the total files included in the transfer, and a count of the total bytes included in the package (this includes all reports and BagIt TXT, CSV, and XML files).

## FileSystemData Report

A new feature, currently in development, is that Exactly will attempt to capture the file system information for all targeted files before packaging the files for delivery.

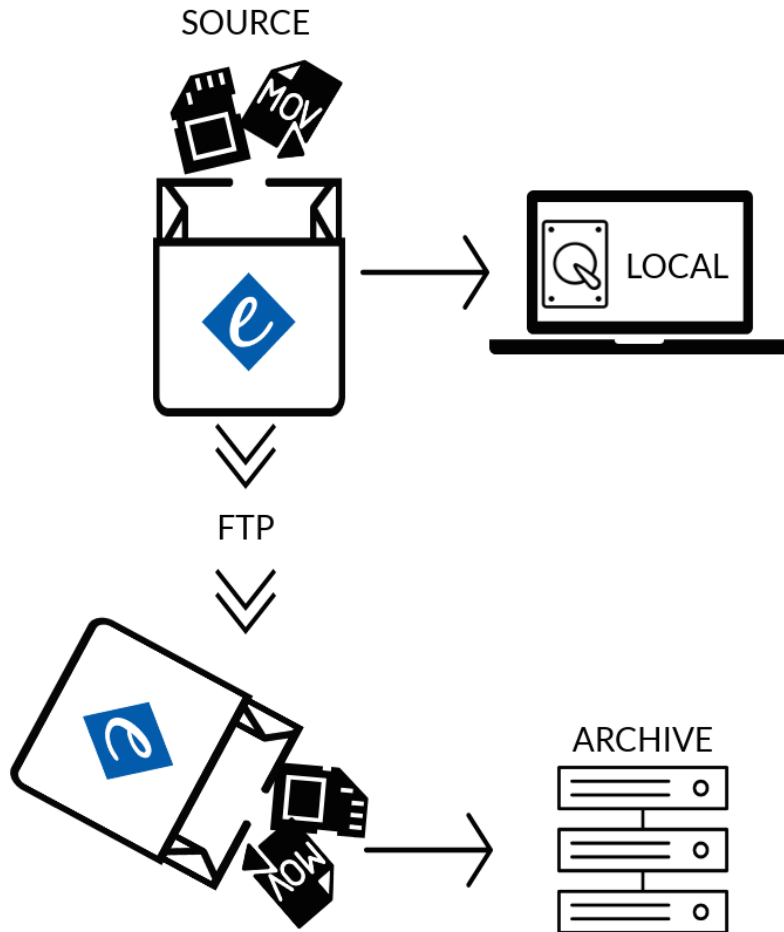


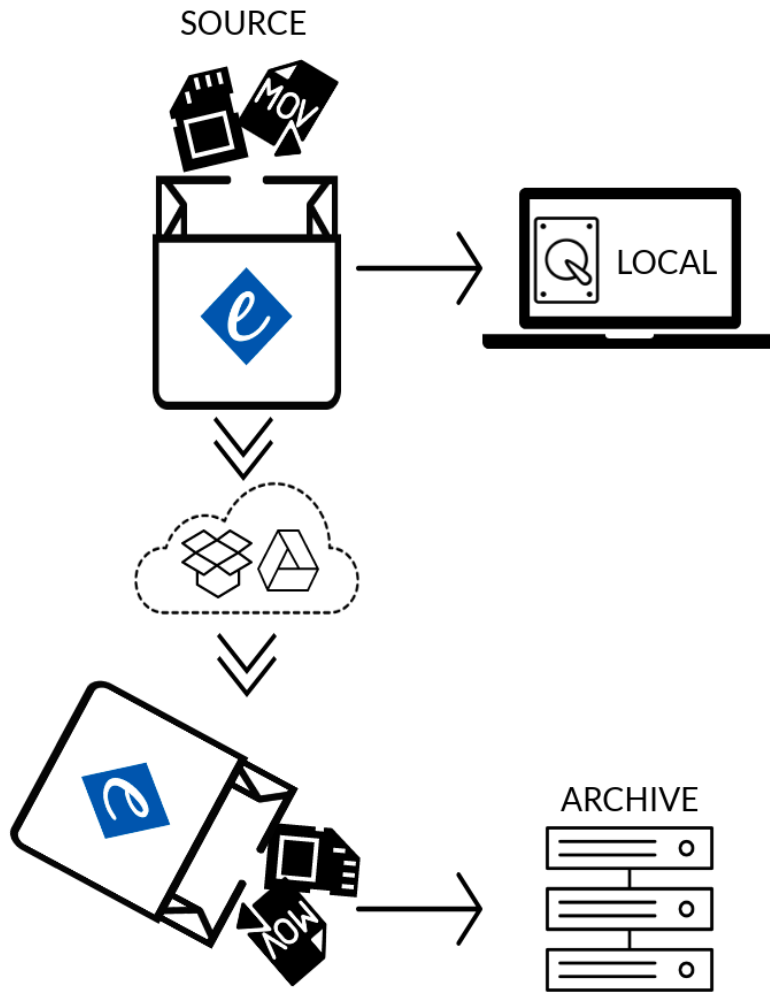
```
FileSystemData.txt
/Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0043.mp4
16777220 18437679 -rwxrwxrwx 1 bertramlyons staff 0 61614695 "Apr 27 11:43:53 2016" "Nov 4 13:07:44 2014" "Nov 5 15:34:15 2014" "Nov 4 13:03:28 2014" 4096 120344
0 /Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0043.mp4
/Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0052.mp4
16777220 18437615 -rwxrwxrwx 1 bertramlyons staff 0 285872037 "Apr 28 12:58:40 2016" "Nov 4 13:18:40 2014" "Nov 5 15:34:14 2014" "Nov 4 13:03:04 2014" 4096 558344
0 /Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0052.mp4
/Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0053.mp4
16777220 18437809 -rwxrwxrwx 1 bertramlyons staff 0 285873113 "Apr 28 13:04:10 2016" "Nov 4 14:06:36 2014" "Nov 5 15:34:33 2014" "Nov 4 13:32:16 2014" 4096 558352
0 /Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0053.mp4
/Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0055.mp4
16777220 18437827 -rwxrwxrwx 1 bertramlyons staff 0 274704174 "Apr 27 11:43:57 2016" "Nov 4 14:05:46 2014" "Nov 5 15:34:40 2014" "Nov 4 13:32:30 2014" 4096 536536
0 /Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0055.mp4
/Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0065.mp4
16777220 18437497 -rwxrwxrwx 1 bertramlyons staff 0 274502808 "Apr 27 11:43:58 2016" "Nov 4 13:17:30 2014" "Nov 5 15:33:59 2014" "Nov 4 13:02:16 2014" 4096 536144
0 /Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0065.mp4
/Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0067.mp4
16777220 18437508 -rwxrwxrwx 1 bertramlyons staff 0 286930190 "Apr 28 13:04:01 2016" "Nov 4 13:19:12 2014" "Nov 5 15:34:07 2014" "Nov 4 13:02:46 2014" 4096 560416
0 /Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0067.mp4
/Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0069.mp4
16777220 18437857 -rwxrwxrwx 1 bertramlyons staff 0 291613269 "Apr 28 13:03:10 2016" "Nov 4 14:06:14 2014" "Nov 5 15:34:46 2014" "Nov 4 13:32:42 2014" 4096 569560
0 /Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0069.mp4
/Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0072.mp4
16777220 18437729 -rwxrwxrwx 1 bertramlyons staff 0 225030931 "Apr 27 11:44:02 2016" "Nov 4 13:59:58 2014" "Nov 5 15:34:21 2014" "Nov 4 13:31:52 2014" 4096 439520
0 /Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0072.mp4
/Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0041.mp4
16777220 18437486 -rwxrwxrwx 1 bertramlyons staff 0 279432618 "Apr 28 13:04:26 2016" "Nov 4 13:17:08 2014" "Nov 5 15:33:53 2014" "Nov 4 13:01:48 2014" 4096 545768
0 /Users/bertramlyons/Desktop/bertramlyons/AVPS/Resources/filesSamples/Ampatch/afc2004004_mv0041.mp4
```

Figure 21. FileSystemData.txt example, for MacOS.

On Windows, Exactly uses a directory list command (dir) and writes the output as a text file (FileSystemData.txt). On MacOS, Exactly uses a "stat" command (stat) and writes the output as a text file (FileSystemData.txt). This was initially viewed as a first attempt at supporting users' requirements to keep original create/modify/access dates associated with files packaged and delivered by Exactly. Currently, Exactly preserves all file metadata, including modified time and ownership during transfer (for local and zip transfers). However, this can be used as an additional mechanism to check metadata integrity during the transfer process.

# Exactly Workflow Maps





# Frequently Asked Questions (FAQs)



## NOTE

This application is in beta. Please help refine it further by reporting all bugs to <https://github.com/WeAreAVP/uk-exactly/issues>

**Q: Does Exactly work with both Mac and PC?**

A: Yes, Exactly works well in both environments.

**Q: How does Exactly transfer files?**

A: Currently, Exactly works with FTP, SFTP, and file synchronization services such as Dropbox and Google Drive. You can also use Exactly to write files to an external hard drive or flash drive, if that is your preferred method of delivering files to a recipient.

**Q: What is BagIt?**

A: [BagIt](#) is a hierarchical file packaging format developed by the Library of Congress, Stanford University, and the California Digital Library. It was designed for ensuring reliable transfer of content.

**Q: Why do I have to choose a local destination if I am using something like FTP?**

A: Because exactly utilizes the BagIt format, it needs to assemble the bag locally in order to transfer or synchronize the file.

**Q: Can I commission AVP to develop additional functionality or extended implementations for Exactly if it doesn't do exactly what I want it to do?**

A: Yes, just contact us at [info@weareavp.com](mailto:info@weareavp.com) and let us know what you would like to do.