SaberCopy Utility

MEGAVOICE
breaking the silence

Using SaberCopy to Program MegaVoice Players

Introduction

SaberCopy is a free software program provided through the generosity of Global Recordings Network (GRN).

SaberCopy makes it easy for you to load audio messages to any of the currently available line of MegaVoice players (and practically any USB mass storage device). Since many MegaVoice players include a microSD card reader, SaberCopy is also a simple way to prepare microSD cards with audio for distribution with those players.

With SaberCopy, you can…

- Copy the contents of an audio message on disk to multiple players concurrently
- Copy the contents of an audio player to multiple microSD cards or USB thumb drives concurrently
- Duplicate the contents of one player to others
- Load a player by aggregating a new audio message "on the fly" from existing folders
- Compare player(s) contents to an audio folder on disk
- Compare one player's contents against other players or devices.
- Compare two audio folders on disk
- Quickly load a batch of players using *Fast Copy Mode* with minimal user intervention
- Append audio to player(s) without overwriting their current contents
- Aggregate files from multiple folders (sources) on disk into a new folder (disk-to-disk)
- Replicate microSD cards faster and cheaper than a hardware card duplicator
- And much more…

SaberCopy is supported in the following environments: Windows (8.x, 10 and 11). SaberCopy should work on XP and 7 but it is not recommended, as Microsoft no longer supports either platform.

For details on how SaberCopy can be implemented on Mac OSX, please see here.

This guide focuses on the specifics of using SaberCopy with MegaVoice players and typical needs of MegaVoice customers. It is intended as a supplement GRN's own user guide – *not as a replacement*.

**All the examples and screen images shown in this document were taken from a Windows 10 system.*

Download the installation package

The current supported version of SaberCopy is **4.9.0.7**.

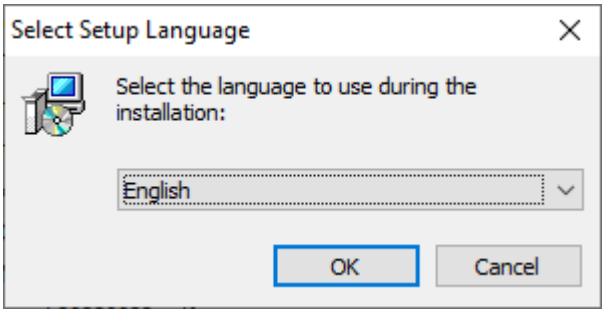
Click here to download that version of SaberCopy.

Save the file to your PC. It is recommended to use the default "Downloads" folder.

Install SaberCopy

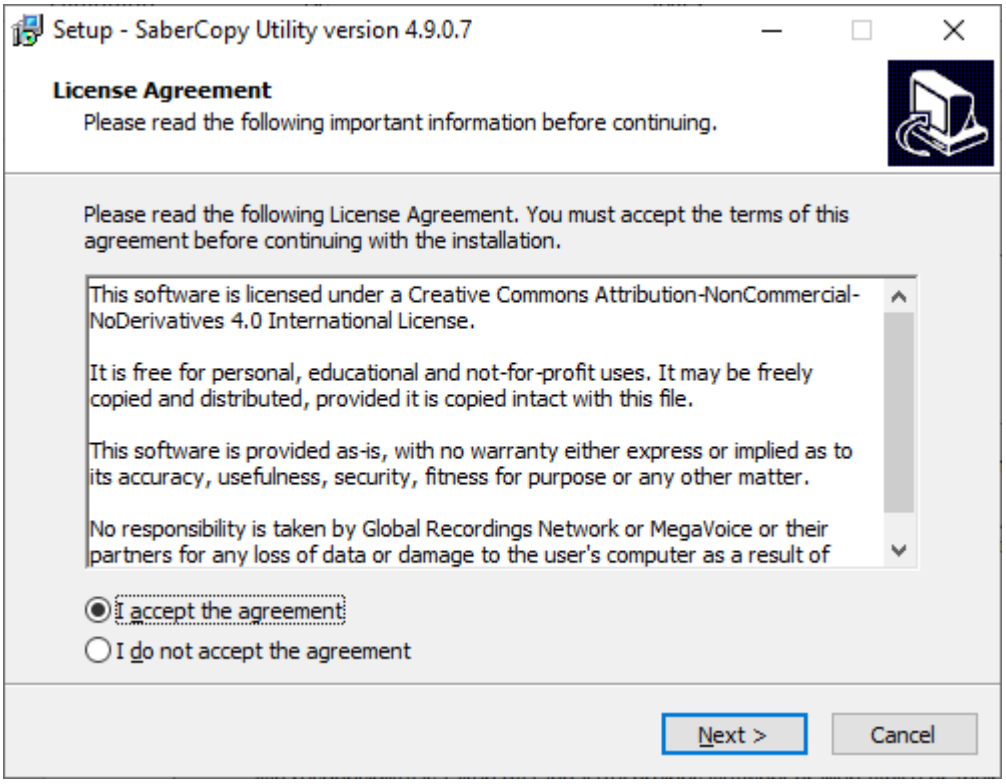
When the download completes, navigate to the location where the installation program was saved and double-click on it.

Versions 4.8.x and later include language options. This also applies to the installation process. Choose the language you wish to use and click “OK”. If this is a first-time installation this will also set that language as the default for SaberCopy but can be changed at any time. See Language option for more details.

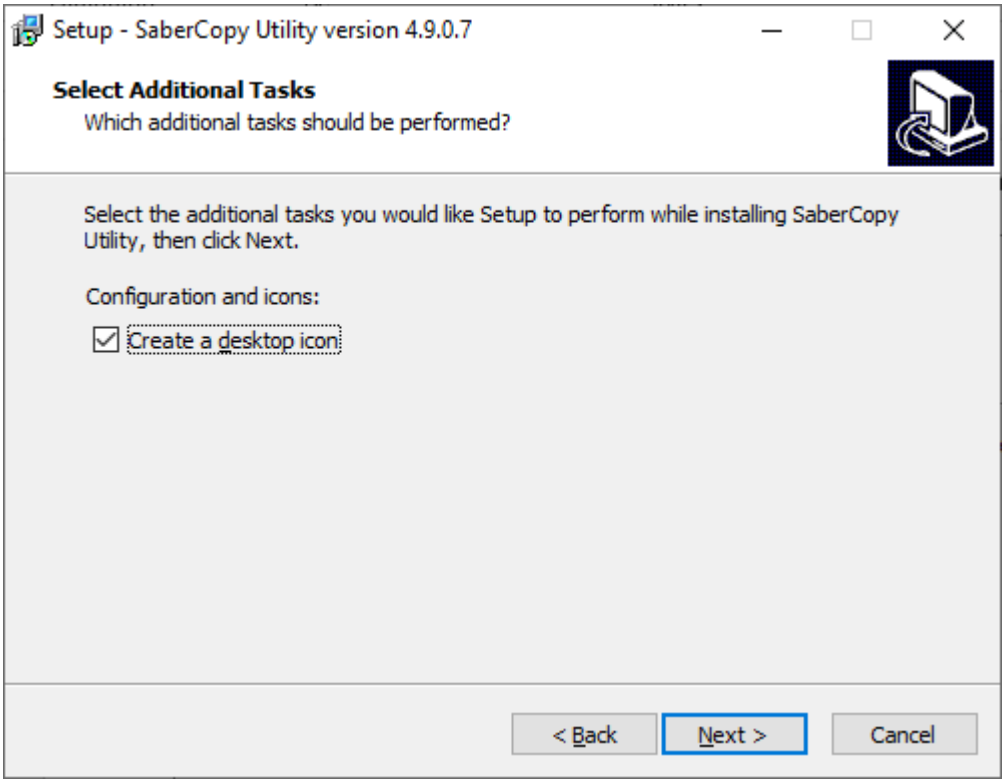


Next, you will get the initial screen below. This is the license agreement. Click on “I accept the agreement” and then click on “Next”. If you don’t agree to the license, you cannot install SaberCopy.

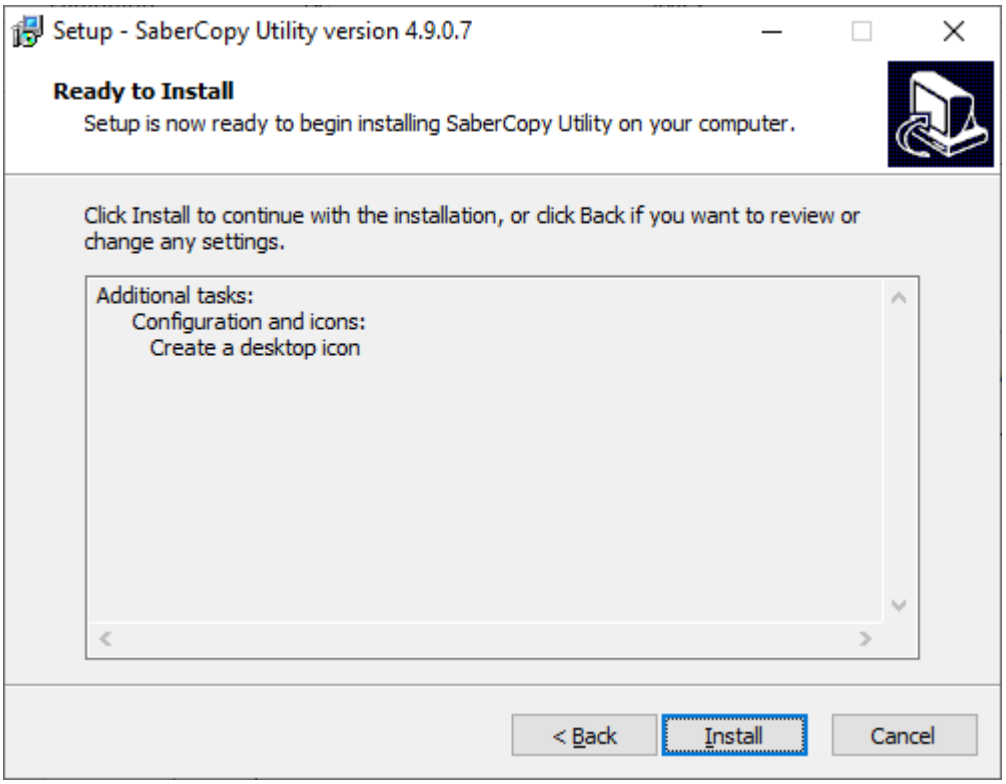
If you agreed to the license click on “Next”…



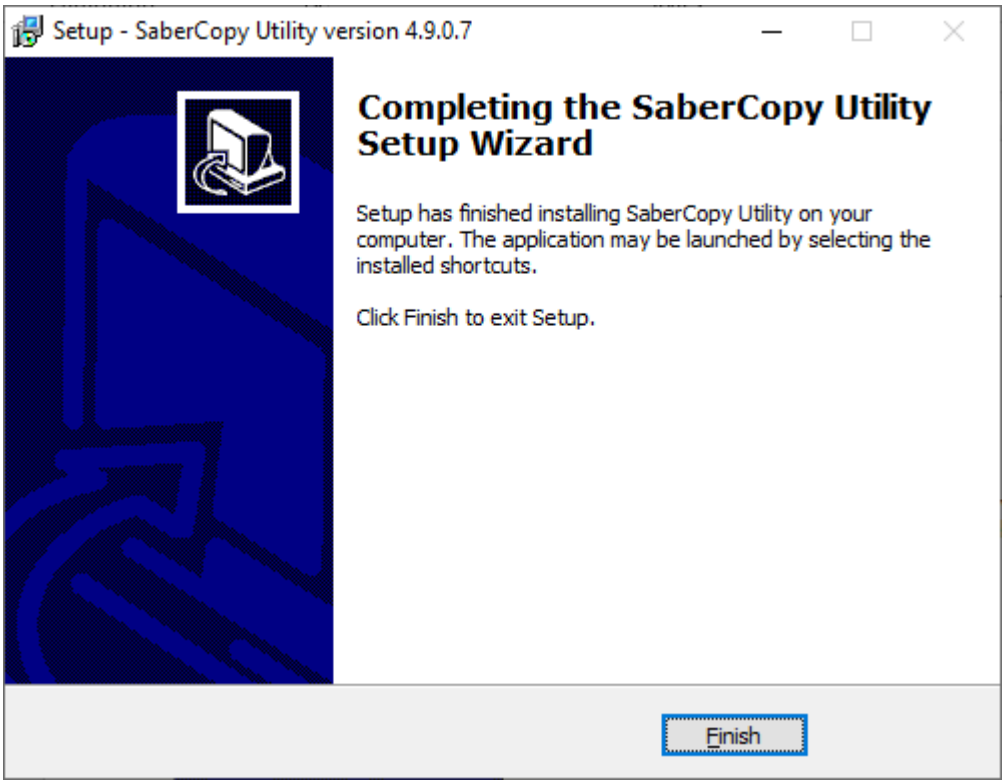
Select the options you want and click “Next” (it is recommended to take the defaults)…



Click on “Install”…



The installation is now complete. Click on “Finish”.

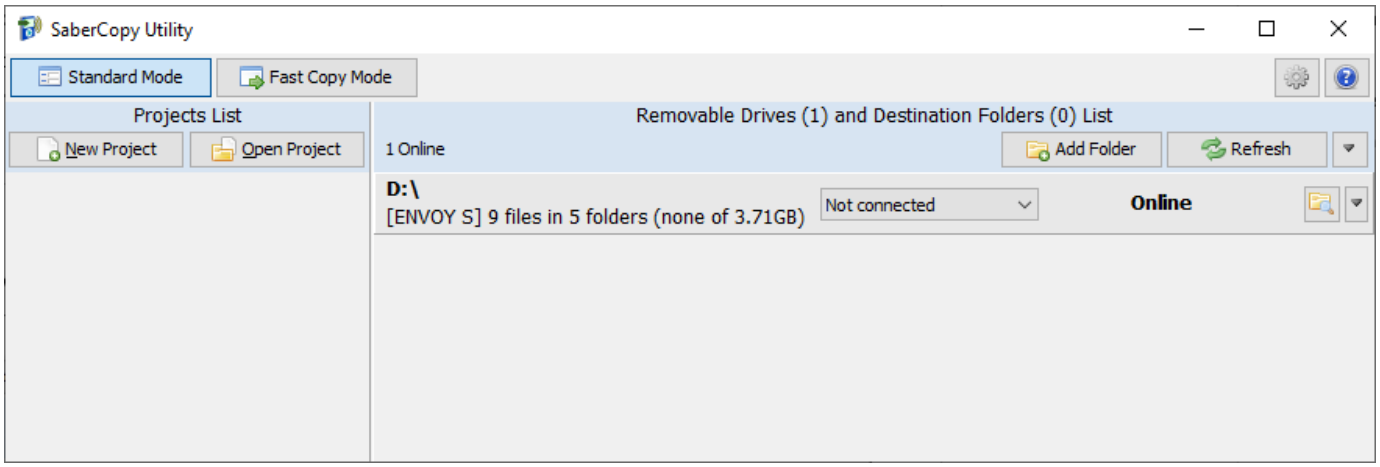


If you took the installation defaults, there should be an icon on your desktop like the one below. Double-click on it to start the application.

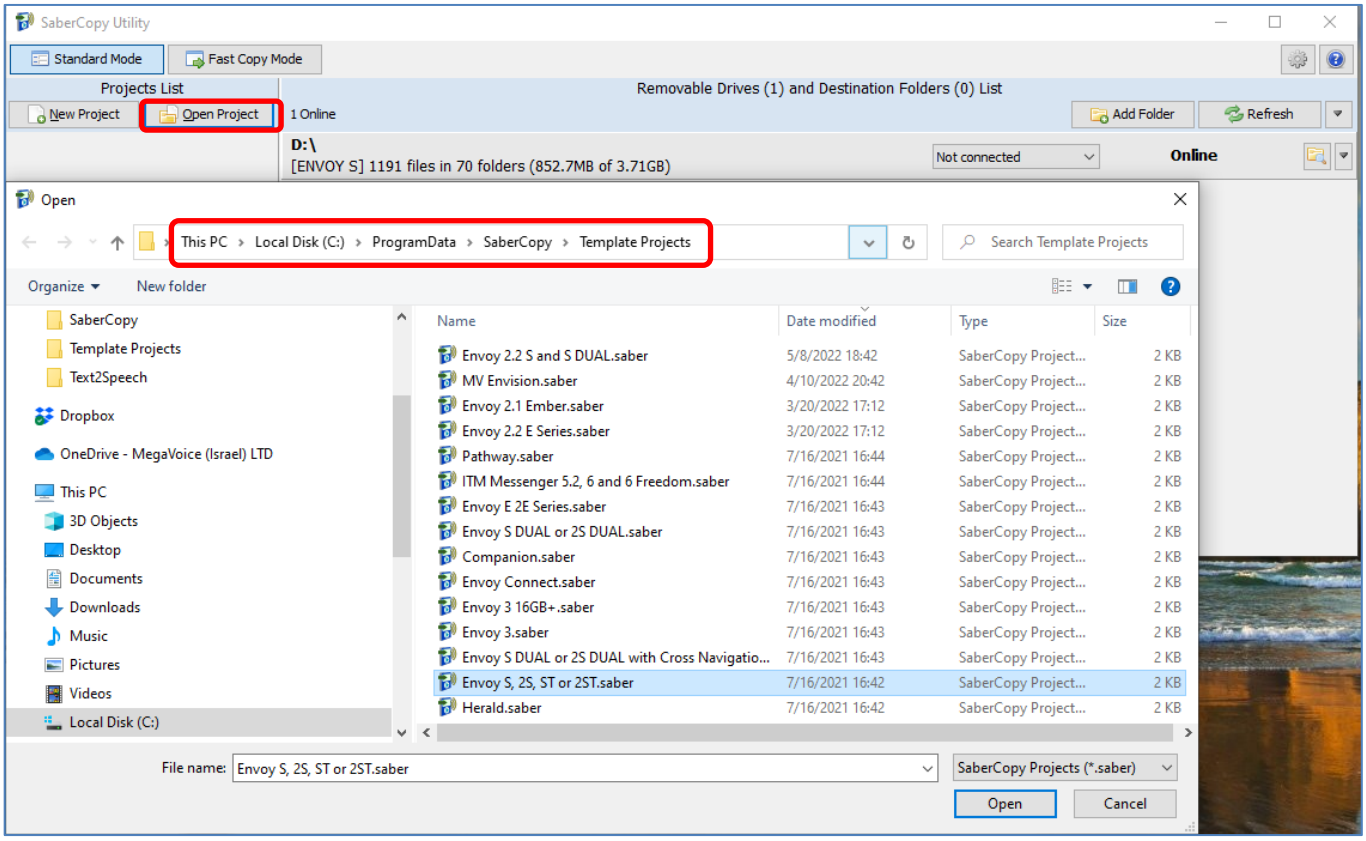
Quick Start!

- This section will briefly describe the steps necessary to perform a typical audio load using SaberCopy.
- We strongly urge using template projects since all the recommended settings are already configured and all you need to do is specify the files to be loaded. See Template Projects for more details.

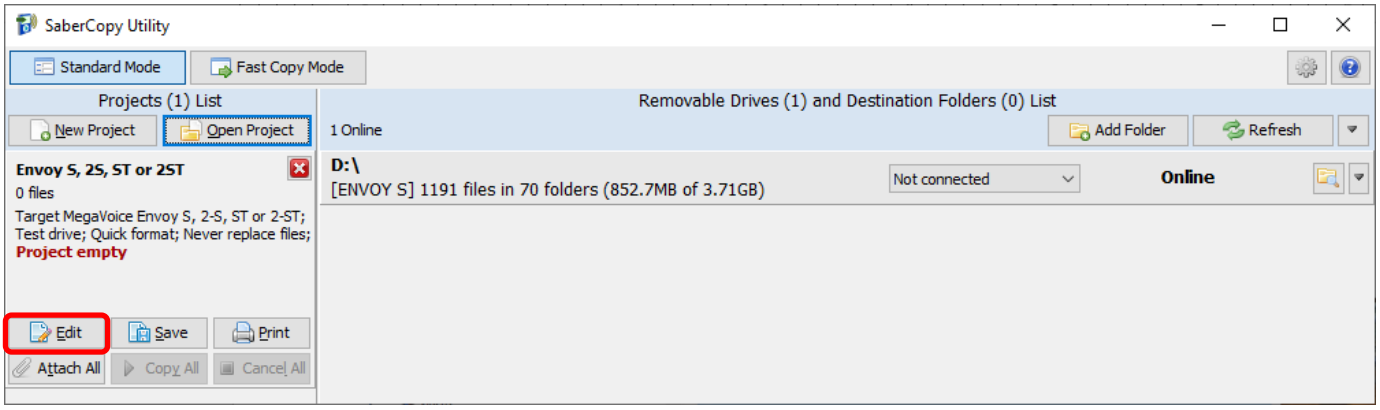
1. Open SaberCopy and connect your player(s) with the proper SLS (if required) USB cable. For this example, we are using an older Envoy S player.



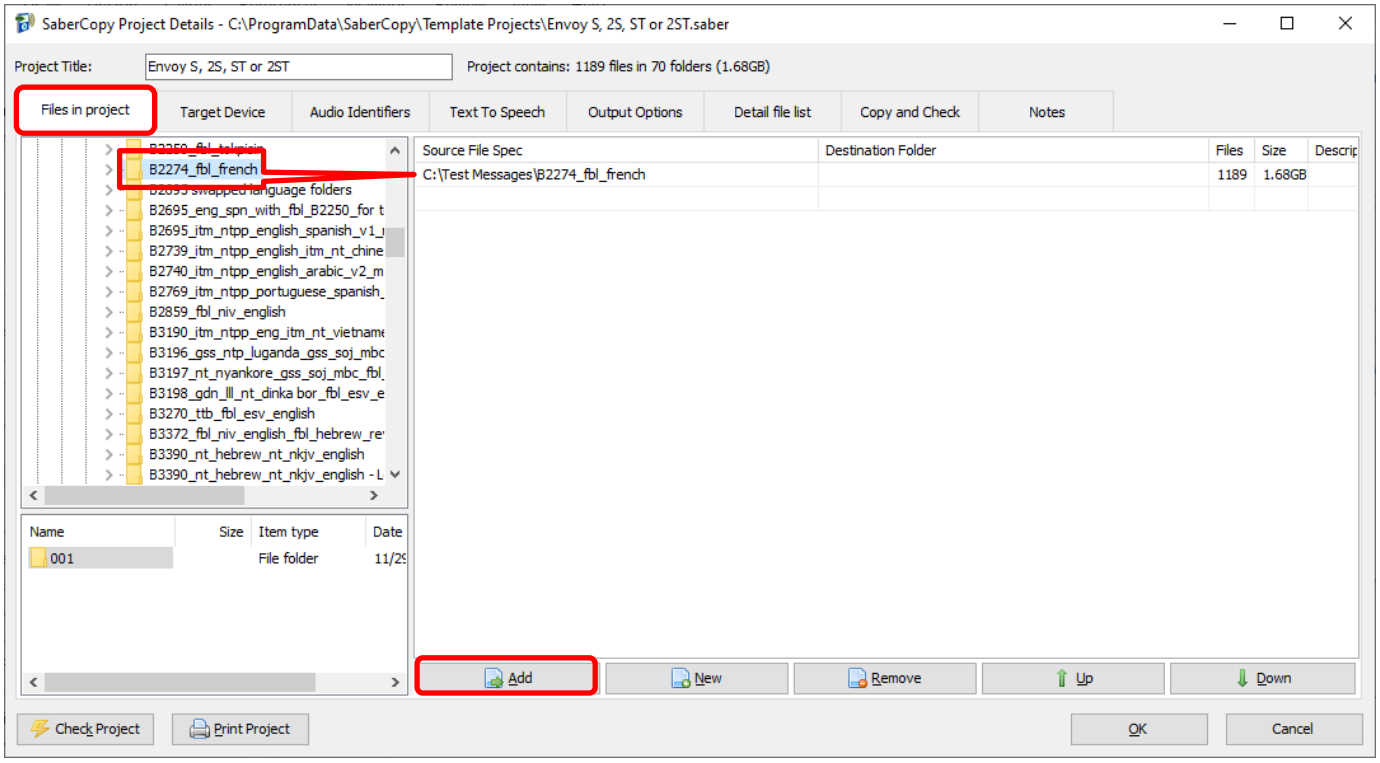
2. Click on "Open Project", navigate to the SaberCopy template project folder (C:\ProgramData\SaberCopy\Template Projects), and choose the project that most matches your player(s).



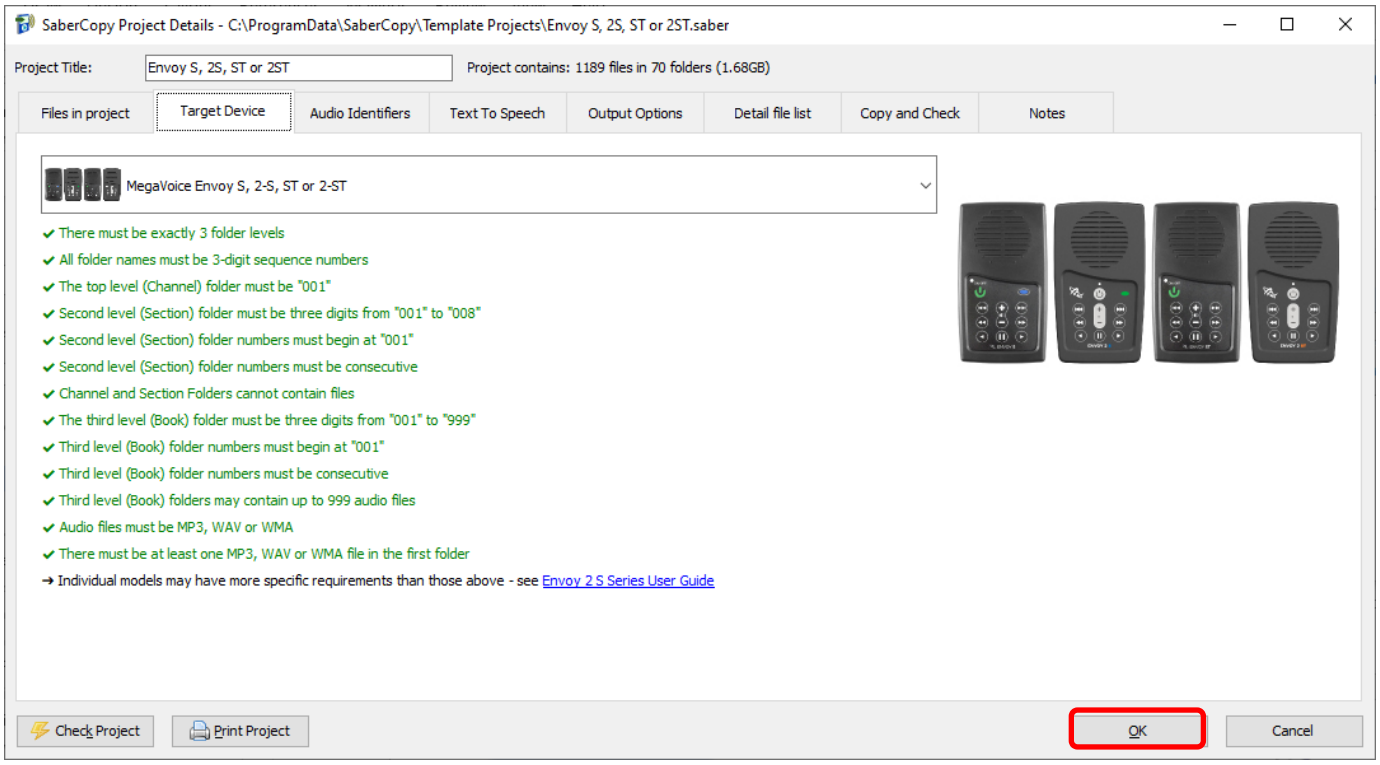
3. Click on “Edit” to open the project dialog and specify the audio files you wish to load.



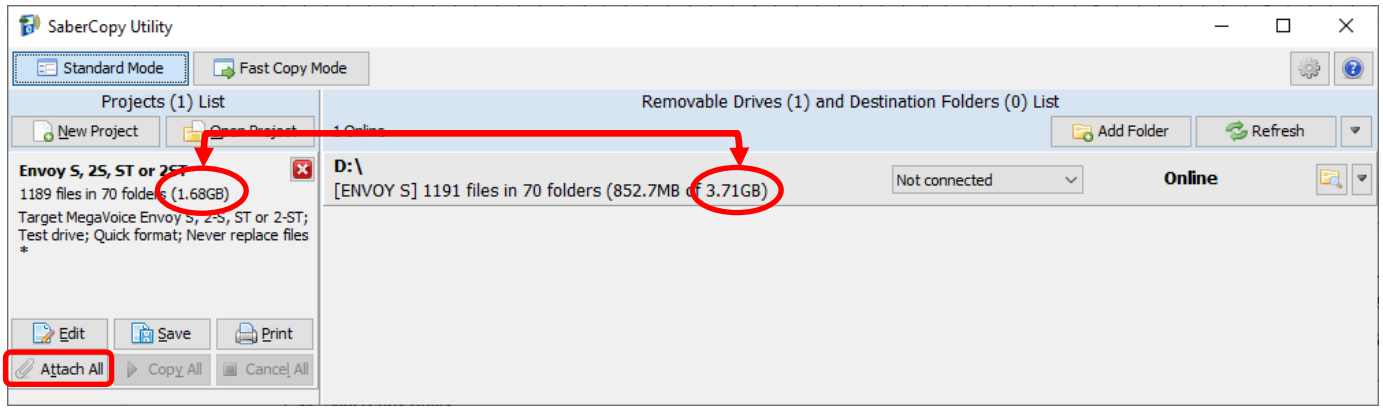
4. The project dialog will open, positioned to the “Files in Project” tab. Navigate to the folder *containing* your audio and drag it to the right - OR - highlight it and click “Add”. As noted earlier, all the other settings should be correct, but feel free to review them to be sure. For example, you may want to specify a special drive volume name on the “Copy and Check” tab.



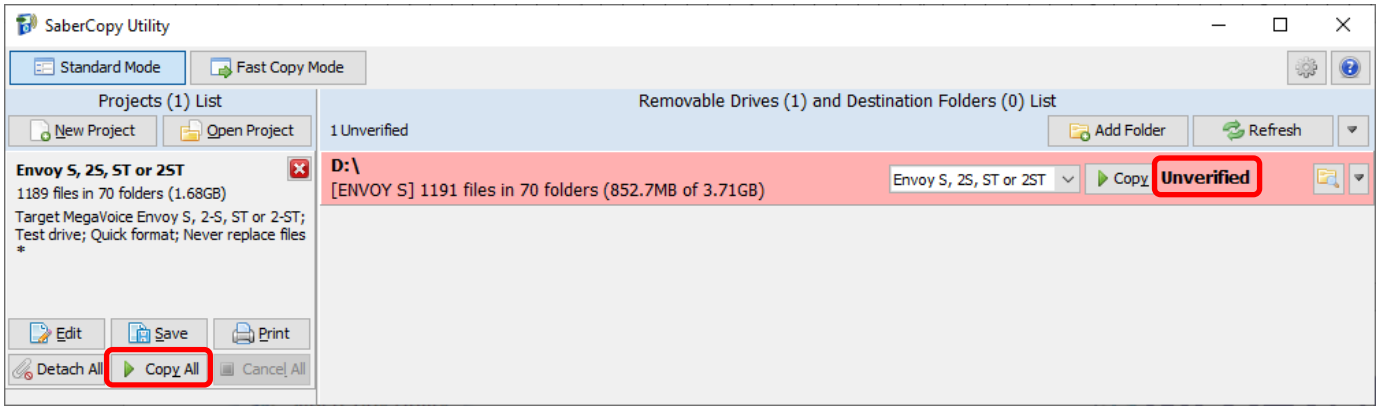
5. Click on the “Target Device” tab. Notice that SaberCopy has checked your audio folder against the rules defined for the Envoy S/2-S/ST/2-ST player. All rules have passed (colored in green with a green checkmark). Rules that failed would have been colored in red with an “X”. These should be addressed before continuing. See 18: Device rules validation for more details.
   Click “OK” to save your changes and exit.



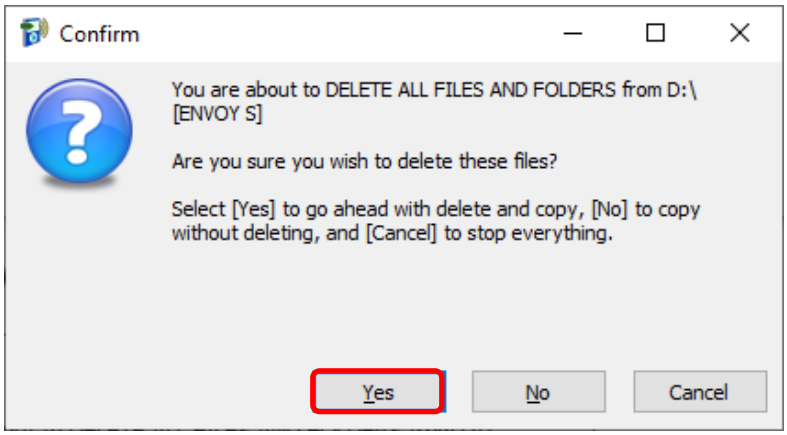
6. Take a moment and make sure *your audio* will fit on the target player. Then click “Attach All” in the project window. But don’t worry, if the message is too large for your player, SaberCopy will not allow you to perform the copy. “Attach All” will fail when clicked, and the player line will turn purple with the “Oversize” warning.



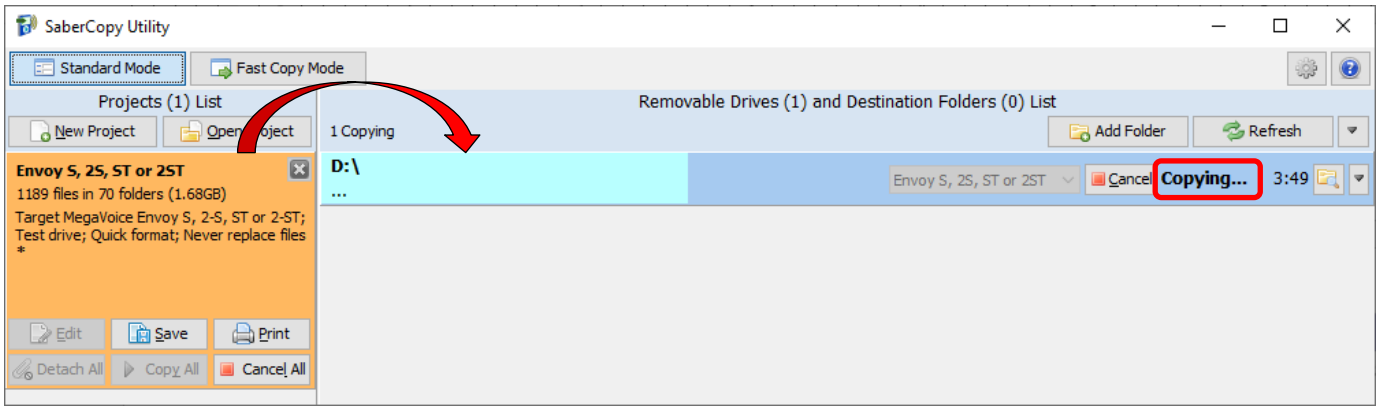
7. The “Unverified” message received simply means that the “Don’t verify when project first attached” option on the “Copy and Check” tab was checked. Now click “Copy All” in the project window.



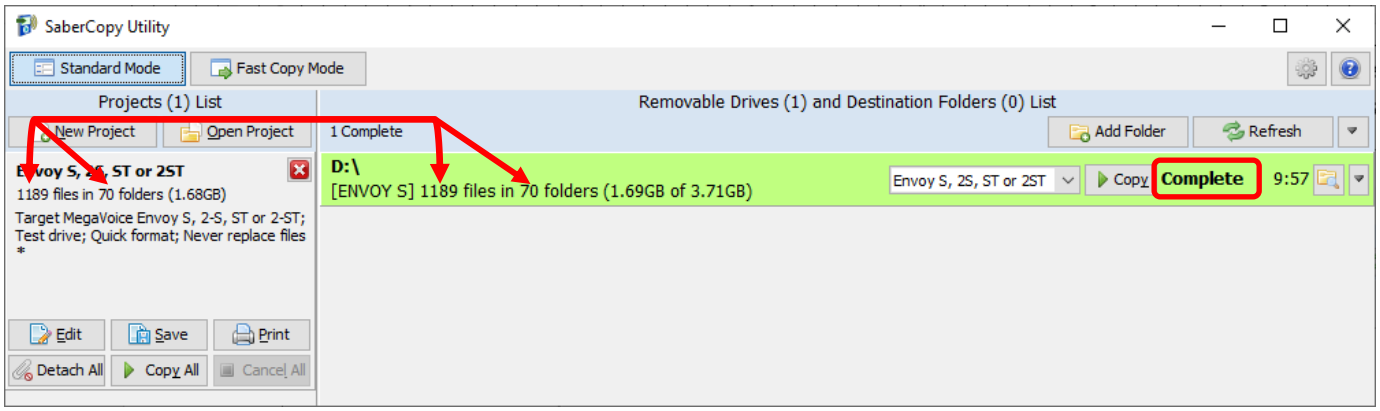
8. All of the template projects are set to perform a “Quick Format” on the target player and remove any current contents. Reply “Yes” to the *delete all files and folders* warning.



9. SaberCopy will begin the loading process…



10. Success! (the device line turns **green** and the "Complete" message is displayed)



**Note: the slight difference in overall message size as reported for the folder on the hard drive vs. the player is due to the difference in file storage between the two devices – hard drive (NTFS) vs player (FAT32).*

11. In the vast majority of cases, the process described above is always successful. If for some reason the load was not successful (the player line turns red) try the following:

    a. Review all the settings on the different screens. If something looks amiss, please make the change and try again.

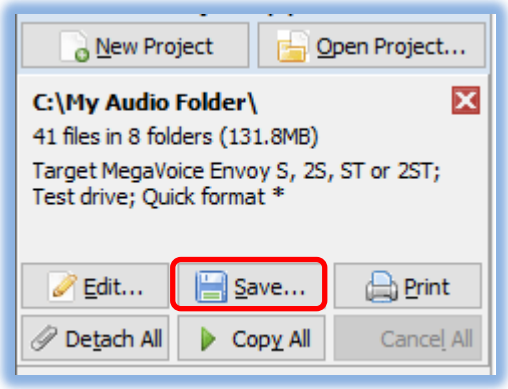
    b. If the completion message was "Unmatched", review section 9: File verification.

    c. If you are still not sure what the problem is, click here to contact MegaVoice for assistance.

12. If the load was successful, but the player beeps and turns off, or enters Pause Mode instead of playing, or does not work or navigate correctly, please review the rules on the "Target Device" tab as well as the "Detail File List" tab for any folders or files tagged in red.

    You could also open the user guide (using the link in the rules) and review the folder structure and file rules and/or troubleshooting sections.

13. **Before you close SaberCopy!!!** If you need to repeat the above steps at a later date to load other players, using the same configuration, you can save the project for easy re-use. SaberCopy will "remember" all the settings in the project file.

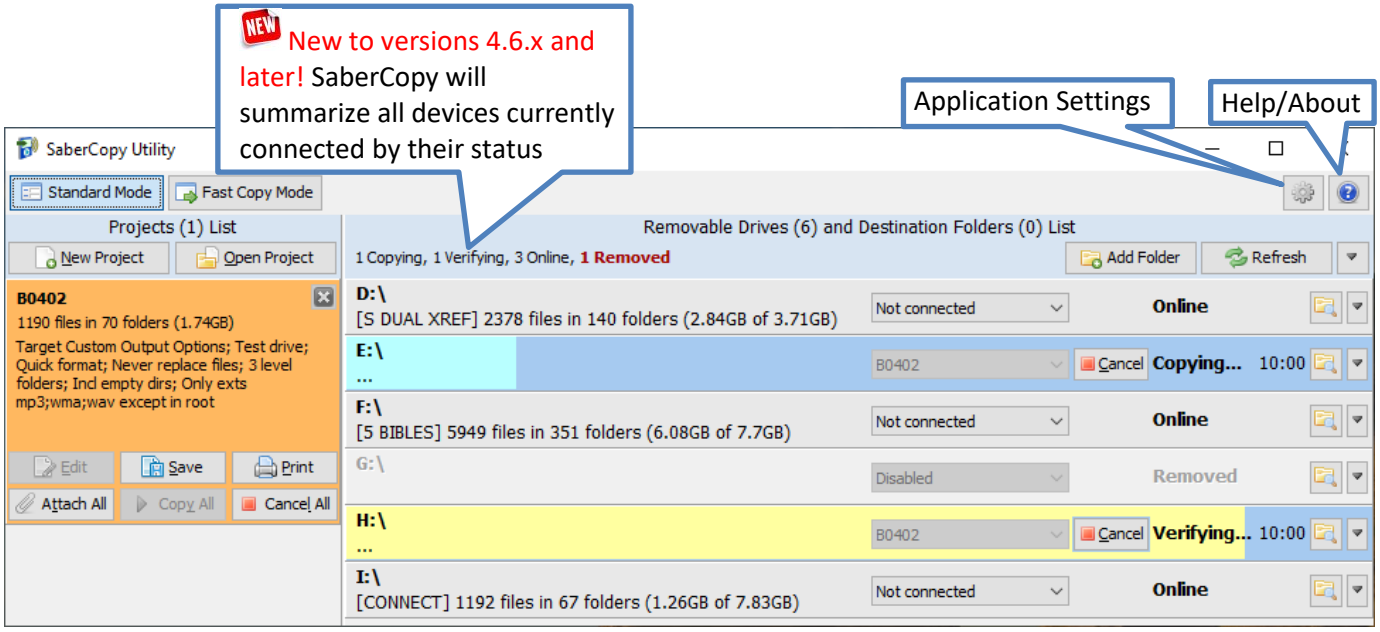
    

    Simply click on the "Save" button in the project window. Give the file a recognizable name (but leave the file type as ".saber") and click "Save" again. Because the template projects are stored in a system folder, you must save your copy to a different folder on your computer ("My Documents" is typically used for this). To open the project later, click on the "Open Project" button, navigate to the folder and select it.

The Main screen

This is the main screen for SaberCopy as it appears each time you start the application.

If there are players or USB drives connected to the computer when SaberCopy starts, they will be recognized and shown in the area on the right under “Removable Drives and Destination Folders List”.



SaberCopy allows you to work in the framework of “projects”. Projects provide you a way to define details regarding the loading of specific audio message(s) to specific player(s), save them and use them again without having to remember and reconfigure specific settings.

One of the nice features provided by SaberCopy is that it can compare a project against connected players. This feature is optional and is configurable within the project. If so configured, the compare can occur when a player is first attached to a project, but more importantly as the final step *after* the copy process.

You can save projects for future use (if this is helpful to you) or you can simply discard them when you close the application. You may also copy one project from another, using them as templates for new ones.

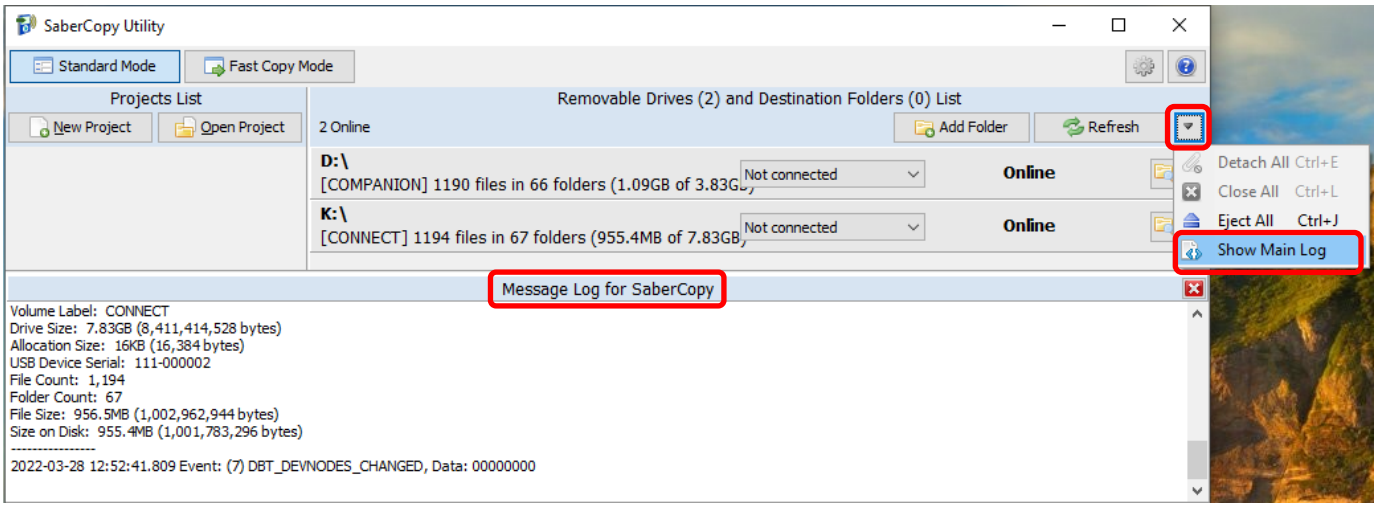
This guide will touch on *most, but not all,* of the features available in SaberCopy. For details on items not covered here, please see GRN’s SaberCopy User Guide.

The Main program log

New to versions 4.8.x and later! There is now an easy way to access the main program log for SaberCopy.

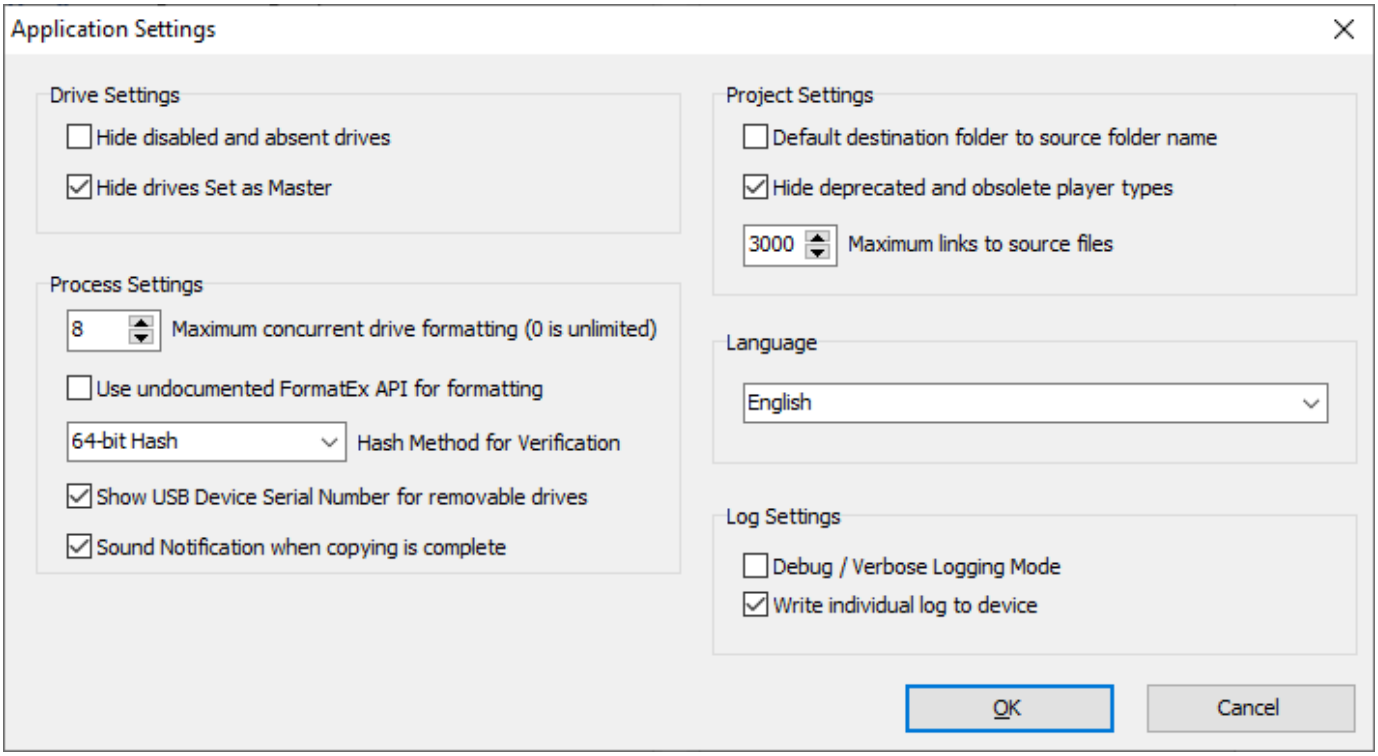
The drop list menu button (▾) to the right of the "Refresh" button will open a menu. A new item will appear that will display the main program log. It opens a window at the bottom of the Main Screen in the same way that an individual player log will display.

MegaVoice technical support may request you use this option in special situations, copy and save the content to a file, then send for diagnosis.



Application Settings screen

From the Main screen, if you click on the icon at top right, the applications settings screen will be presented.



Hide disabled and absent drives

If you check this box, any drives connected to the computer that are flagged disabled by SaberCopy (see 12: Teaching SaberCopy to ignore devices) or absent (devices that have a microSD card reader and no media is loaded) will be hidden from view (but not physically removed).

Hide drives Set as Master

If you check this box, any time you select a folder via the “Add Folder” button, and then choose “Set as Master” to create a project, the original folder line will automatically be hidden once the project is generated. Typically, the folder lines in this case are no longer needed once the project is opened.

Maximum concurrent drive formatting

This setting determines the number of concurrent format operations SaberCopy will execute on batches of many players when Quick or Full Format is requested for initialization. Depending on the size of your batch and your computer configuration, some systems may bog down with too many concurrent format operations. It is recommended to leave this set to two or three, but you are free to experiment with your system to see what works best.

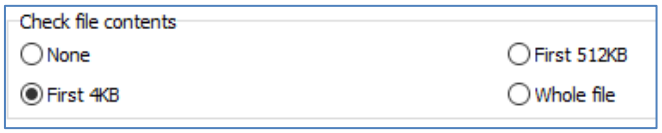
Use undocumented FormatEx API

When checked, a non-standard, undocumented method of formatting a device will be performed. This comes into play when either "Quick Format" or "Full Format" is the initialization option on the "Copy and Check" tab.
Please *do not* use this option unless specifically directed to do so by MegaVoice technical support. The standard Windows Format is best in most cases.

Hash method for verification

New to versions 4.6.x and later! This setting determines the method used whenever "Check file contents" is requested on the "Copy and Check" tab. The four choices are:

- 32-bit Hash
- 64-bit Hash
- 128-bit Hash
- 128-bit MD5



Once changed, it takes effect immediately. In testing, 64-bit Hash seems to be the fastest, but your mileage may vary!

Show USB Device Serial Number for removable drives

New to versions 4.8.x and later! When checked, SaberCopy will retrieve the USB Serial Number assigned to the device and display it in the device tool tip when hovering over the device on the Main Screen. See here.

If you are using SaberCopy with mapped folders, make sure to set this option **off (unchecked)**. When used with mapped folders the time to add and attach the folders is significantly increased.

Sound Notification when copying is complete

New to versions 4.8.x and later! If checked, a sound bite is played when each player completes. A different sound bite is played when the last player in the batch completes to signal that all copying for a project has completed. If the option is unchecked, SaberCopy will work silently.

Default destination folder to Source folder name

When checked, SaberCopy will automatically populate the "Destination Folder" field on the "Files in project" tab with the same name as the parent folder selected. For MegaVoice players, this is usually not advisable, as it would add a folder level to the resulting structure, which would cause a problem.
When loading MegaVoice players, it is recommended to uncheck this option - which is the default setting.
If checked, it will add an unnecessary folder level to the resulting structure which will violate most MV player rules.

Hide deprecated and obsolete player types

SaberCopy still has older players in its device list on the Target Device tab (such as the blue MegaVoice StoryTeller), but they are tagged as "deprecated". Typically, you would want to hide these players as it may make the target device list unnecessarily long. If you wish to show all possible players in the device list, uncheck this option.

NEW New to versions 4.8.x and later! When deprecated players are displayed in the device list, the text "(deprecated)" is added to the end of each device name that is tagged as such.

Maximum links to source files

This option controls how many "links" are generated for the files of the project on the "Detail File List" tab. The link allows you to "open" the file in question directly from the screen. The more links that are specified, the more time it takes to render the "Detail File List" display. If you do not typically need to open files in the project from this screen, it is recommended to set this to a minimum of 1.
Zero means unlimited and the maximum number configurable is 9999.

Language

NEW New to versions 4.8.x and later! Besides the default language of English, SaberCopy can display operational text throughout the application in French, Spanish or Simplified Chinese. Typically, the text affected appears on button captions, tab captions, checkbox or radio button captions, tool tips, dialog boxes and the like.
We hope to address other text, such as player rules, in future release(s). This setting will persist until changed by the user.

Debug / Verbose Logging Mode

When checked, SaberCopy will open a window beneath the Drives List with additional debugging information (that is written to the main program log). This option should only be used under the direction of MegaVoice technical support for special cases.

Write individual log to device

When checked, SaberCopy will write a log file (plain text file) to the root of each device that is processed. The file will be named "SaberCopy – " + name-of-your-project + ".log". The file will contain all messages pertaining to the initialization, copying and verification of all the files copied to your device along with any errors that may have occurred. See here for example.

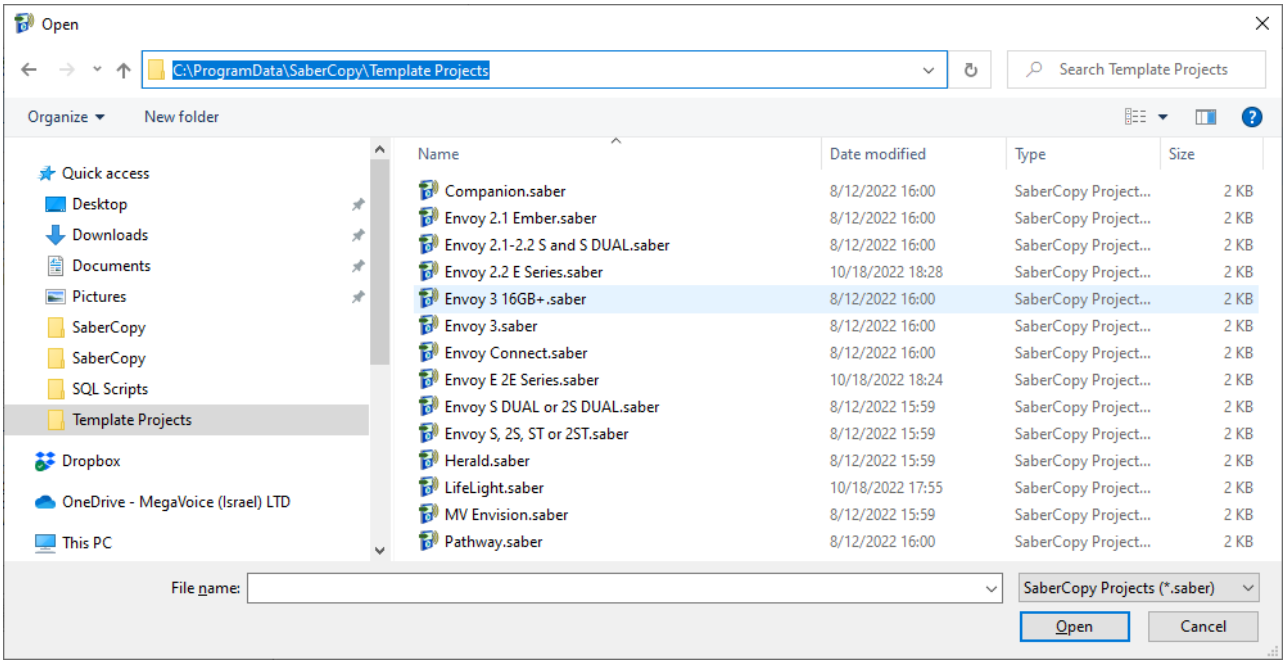
MegaVoice recommends using this feature as it will assist us in problem diagnosis when support is requested. It only takes mere seconds to write this log file to the target device.

All players that MegaVoice prepares for shipment are loaded with this option set on because it can help when a support request is opened for a shipped device.

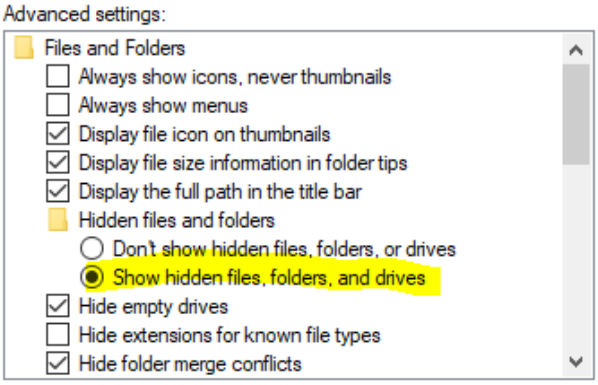
If any changes were made to the Application Settings screen, click "OK" to save them.

Template Projects

New in v4.6.x and later! The SaberCopy setup will also install a full set of template projects – one for each MegaVoice player. These projects are installed in folder **C:\ProgramData\SaberCopy\Template Projects**.



To have access to the templates folder (since it is "hidden" by default), your computer must have the "Show hidden files, folders, and drives" option set in the folder options for Windows File Explorer. Click here for more details.

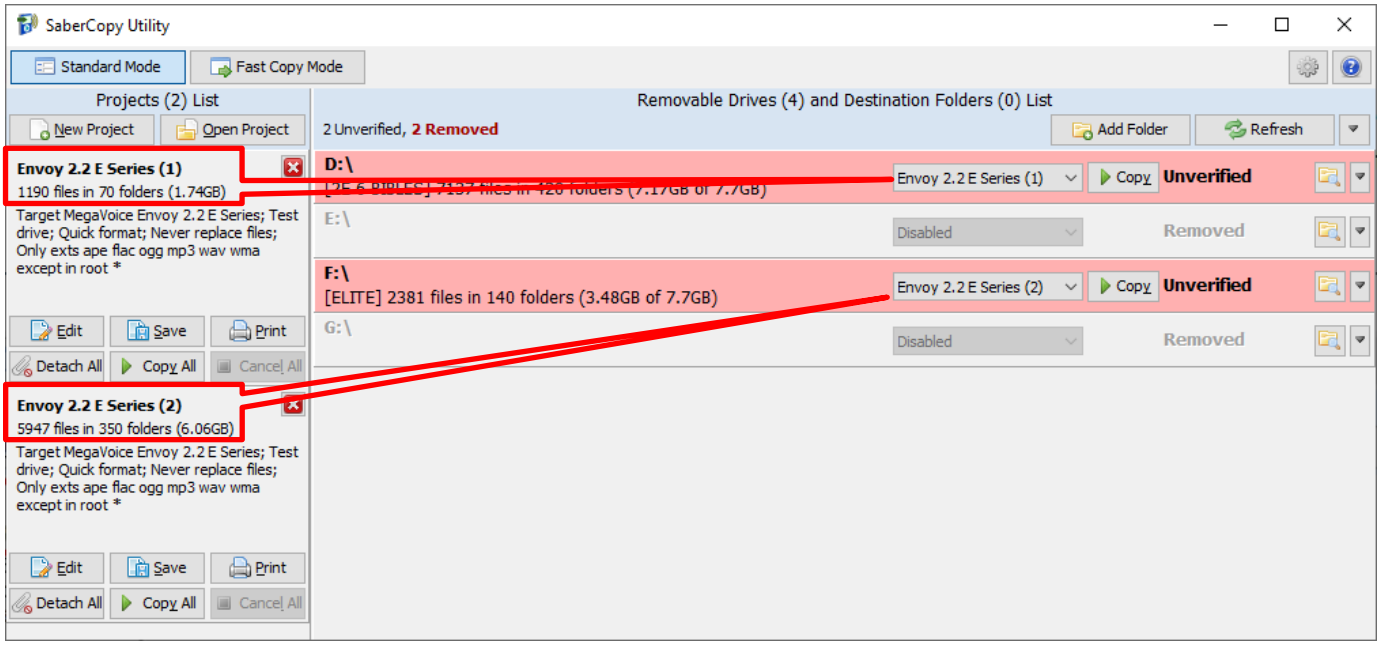


Each project is pre-configured with the recommended settings for the device defined. All you really need to do is to provide the data content that will be loaded to the player on the "Files in Project" tab. However, feel free to change other settings as desired.

A double-click on any of them will launch SaberCopy (if it is not already open) and load that project.

Since these are templates, typically you would discard the project when finished and not save it. However, if you do want to save the project with your modifications, you may do so but **not** to the installed folder as it is a system read-only folder. It is recommended to save your own custom projects to the "My Documents" folder but practically any folder is acceptable.

New in v4.9.x and later! Whenever you open a Template Project (or New Project), SaberCopy will automatically append a sequence number to the project name to make it unique (SaberCopy will not allow the same project [name] to be opened more than once). This way, you can open the same Template project twice to load two players of the same type (concurrently) but with different content for both from the individual projects.



Examples and Features

1: Loading Envoy S/2 S Players

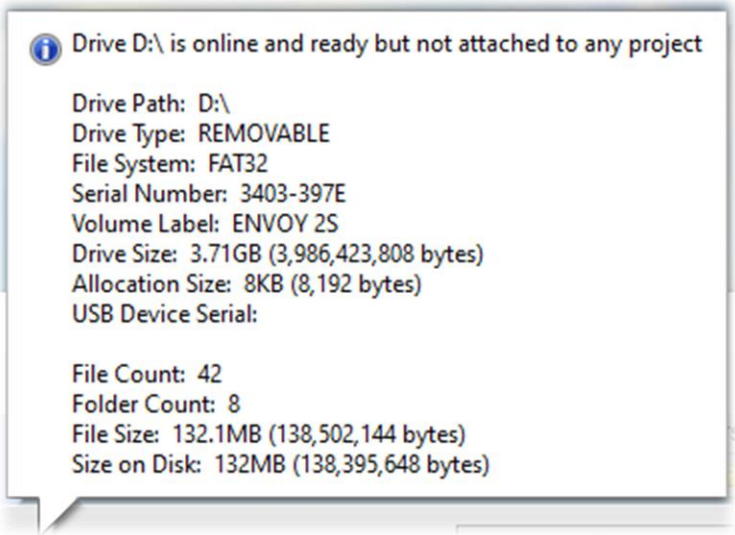
Let's get started!

In this example, we will program MegaVoice Envoy 2 S and Envoy 2 ST players with a small audio message.

1. Connect the players to the computer using the proper SLS cable. In most cases, SaberCopy detects players automatically when they are connected and disconnected. In some instances, it does not but all you have to do is to click the "Refresh" button (circled in green) for them to be recognized.

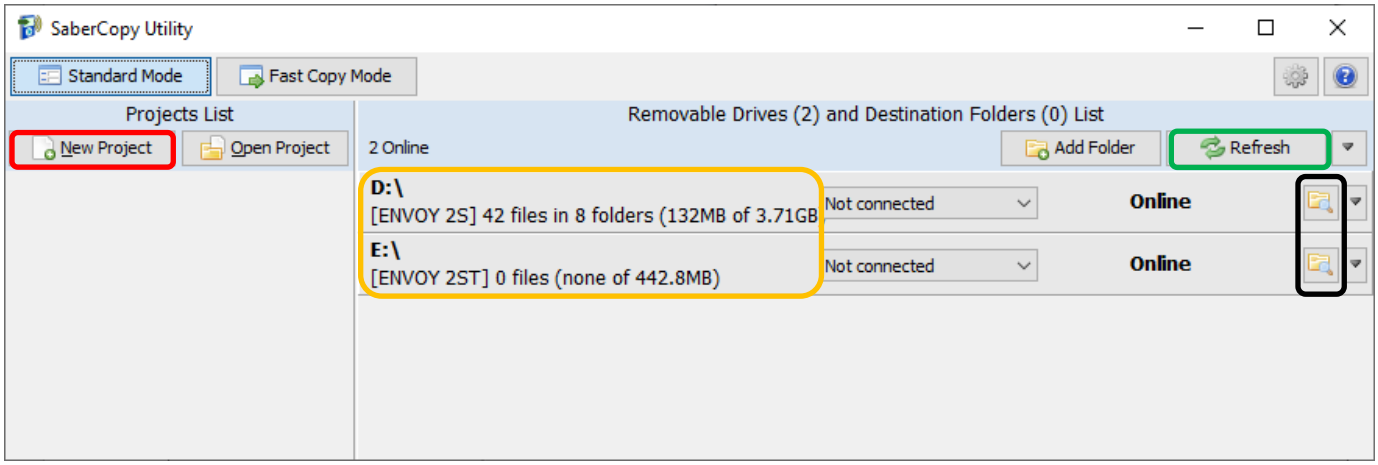
2. There are 2 MegaVoice players already connected and SaberCopy has identified them as volumes **D:** and **F:** providing a summary of current content for each (circled in orange).

   SaberCopy will also provide you with a lot of technical information about each connected device that you cannot get from most applications. Any time you move the mouse over a player in the list, you will see a tool tip like that to the right:



3. One of the nice features SaberCopy provides is that you can always review the contents of a connected player by clicking on the "Open Explorer" icon at the very end of each player line (**circled in black**).

4. To provide the information for the load process we will need to create a new project. Click on the "New Project" button (circled in red).



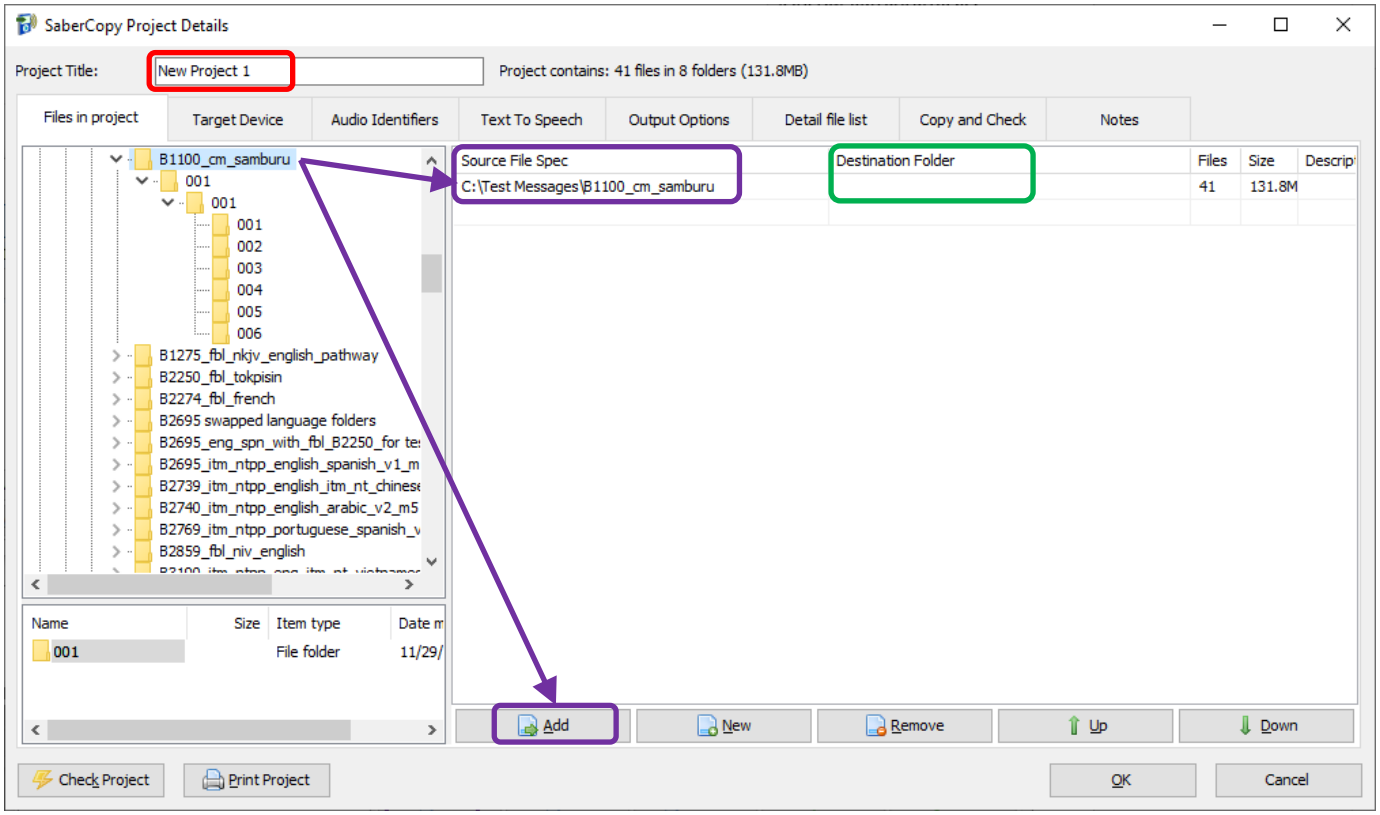
5. The screen image below shows the Project dialog. It consists of seven tabs, each containing various settings for the project. The first tab, “Files in Project”, is mandatory and is always the first to be displayed.

6. In this example, we want to use the message folder “B1100_cm_samburu” in our “Test Messages” folder.

7. If you intend to save this project so that you can easily re-use it later, add a project title (circled in red). If not, leave the suggested name by SaberCopy (“New Project 1”).

   SaberCopy will use the Project Title as the default name for the project file when saving it. It is highly recommended to use the same name for both the external project file name and project title, just make sure the title is meaningful.

8. On the “Files in Project” tab, we must specify the source for the copy operation. The easiest way to do this is to drag the desired folder onto the list on the right and drop it. SaberCopy populates the Source File Spec column for us (circled in purple) and the Destination Folder column (circled in green – but this depends on a special configuration option).
   - Alternatively, you can highlight your audio message folder on the left and then click on the “Add” button (circled in purple) at the very bottom of the screen.



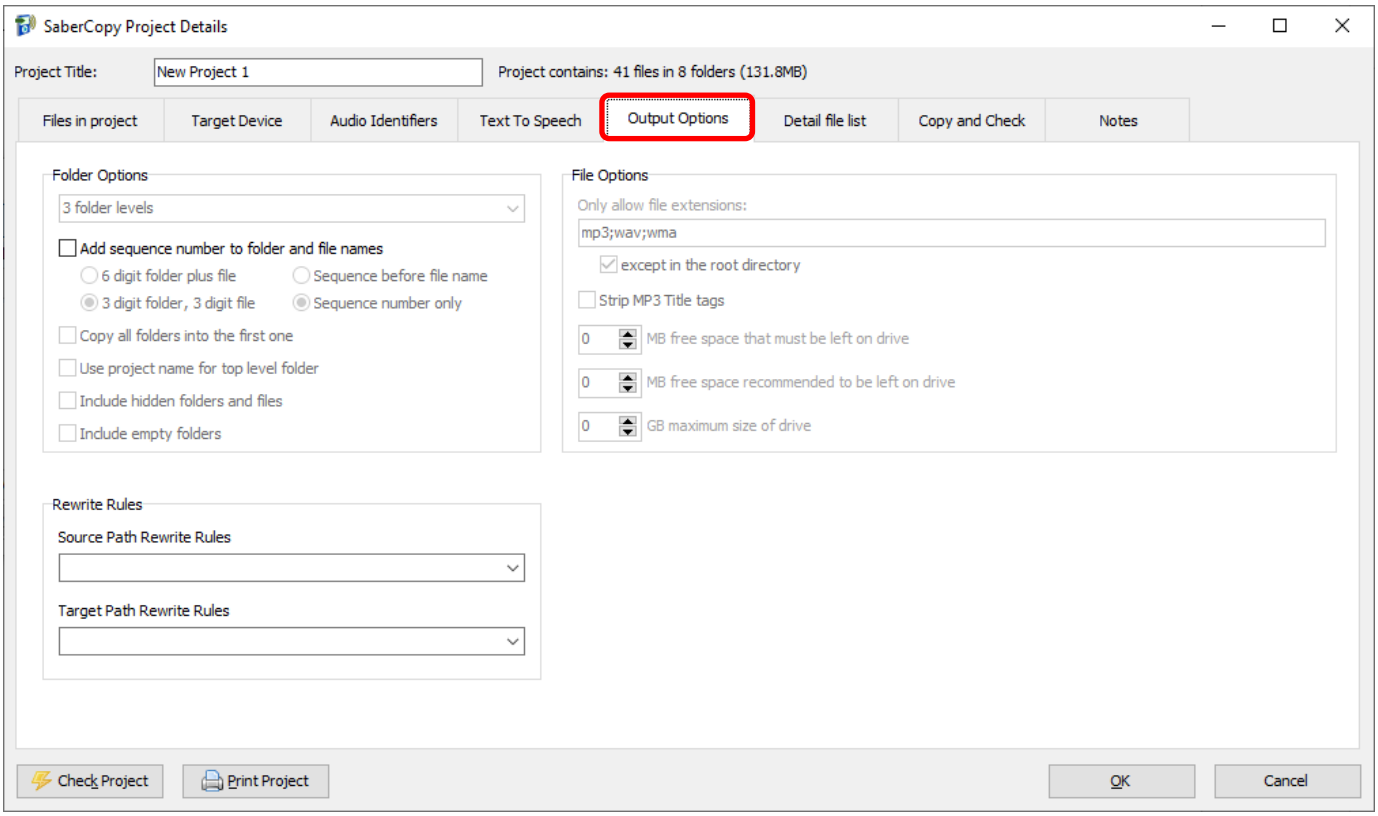
9. Because we want to duplicate the folders and files in the source folder to the players, we need to make sure the “Destination Folder” field is blank (exactly as in the image below). This tells SaberCopy to duplicate the contents of the chosen folder in “Source File spec” to each target player. See [Default destination folder to Source folder name] on how to let SaberCopy do that for you automatically.

Source File Spec	Destination Folder
C:\Test Messages\B1100_cm_samburu	

10. For our two players, make sure that “Target Device” is set to “MegaVoice Envoy S, 2S, ST or 2ST” on the “Target Device” tab.
11. Next, click on the “Output Options” tab (circled in red). You will get a screen similar to that below.

On most of the project tabs, SaberCopy will suggest values from the *last* project opened as defaults. It is always a good idea to verify the settings on each of the tabs to make sure they are what you want any time you begin a new project.

12. The “Folder Options” and “File Options” sections of the screen are addressed in more detail in [2: Loading a Companion Player].



13. Now click on the “Copy and Check” tab. See screen image below.

14. Notice the project name was changed to something meaningful - “B1100”.

15. In the top left, there are initialization options. For this example, we want “Quick Format” which will clear all current contents.

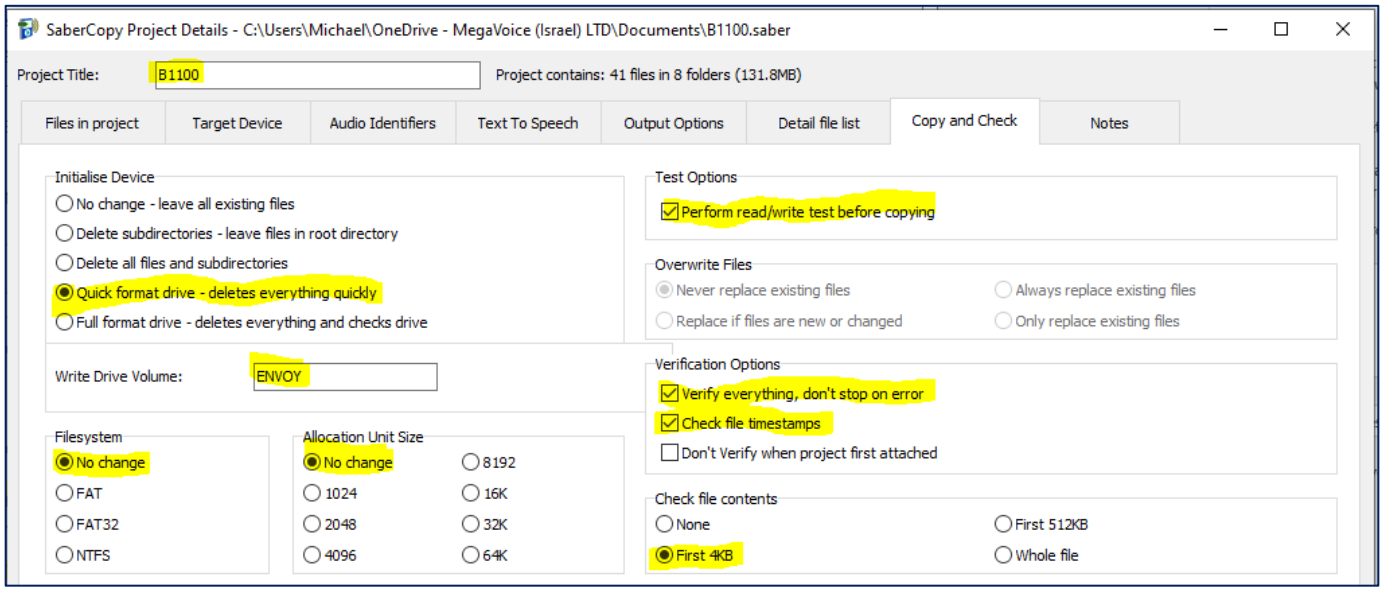
    When either of the format options is chosen, you may also specify the “File System” and “Allocation Unit Size” in the bottom left. In the majority of cases, these settings should be left set to “No change” for because the player should already be configured properly. You can, however, change it to one of the available choices, but we strongly recommend consulting MegaVoice technical support first.

16. Under “Test Options”, we want to execute the “Perform read/write test before copying” and we want the Volume name set to “ENVOY”.

17. Under “Verification Options” we want to perform some basic verification once the copy completes so we have checked “Verify everything, don’t stop on error”, “Check file timestamps” and to compare the first 4KB of each file on each player against the same in the source.

    Note that there are various sampling sizes available under “Check file contents” (None, First 4KB, First 512KB and Whole file). Keep in mind that the larger the sampling size, the longer the verification process takes. A minimum of 4K is recommended. See Hash method for verification for details on the file comparison methods available.

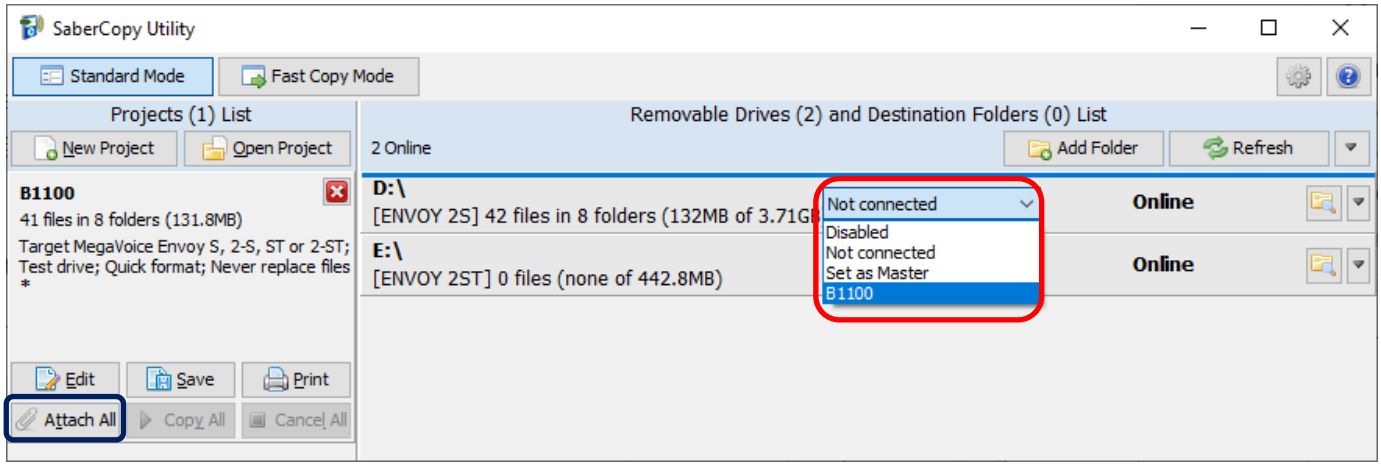
18. When finished, click the OK button to close the Project Details dialog.



19. At this point, the main screen should look like the example below.

20. Now we need to set the "source" of the copy for each player. When all the players connected are being loaded from the same source, the easiest way is to click on the "Attach All" button in the project (circled in blue). SaberCopy will assign all of them (no matter how many) to the project.

21. Alternatively, within the line for each player, we could click on the drop-down list and change the setting for each individually to the project "B1100" (circled in red).

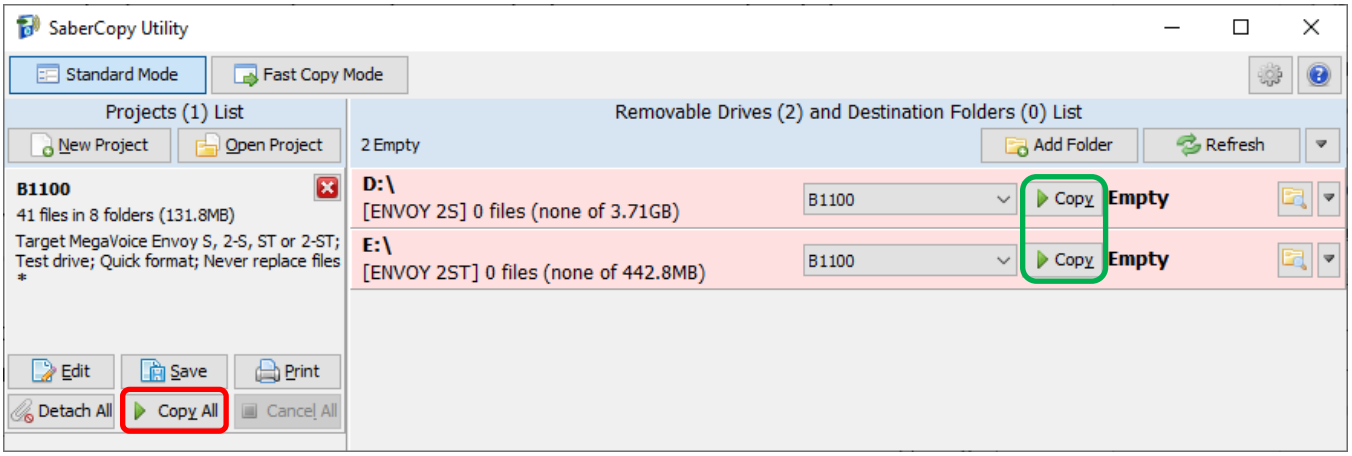


22. Notice that the rows containing the players turned pink. This is because SaberCopy will perform a compare *before and after* loading a player from a project (*unless* you check the option "Don't verify when project first attached" in the project definition). These particular players are blank.

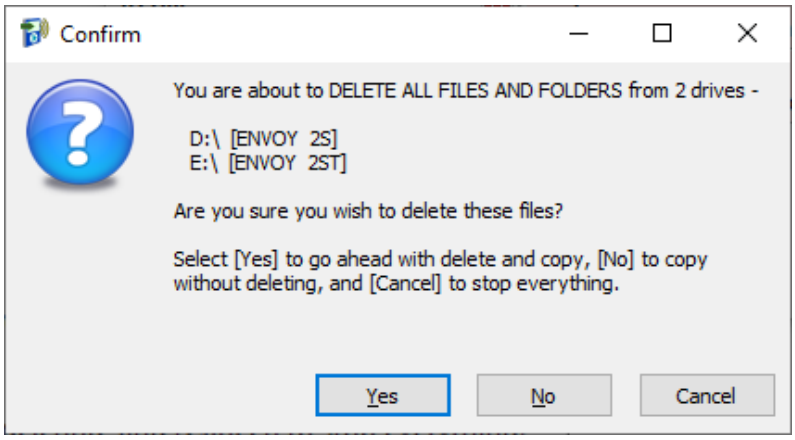
23. To begin the copy process, all we need to do now is click on the "Copy All" button (circled in red).

The "Copy All" button in the project will not be enabled until *at least one* of the players in the list is attached to it as the source for the copy process.

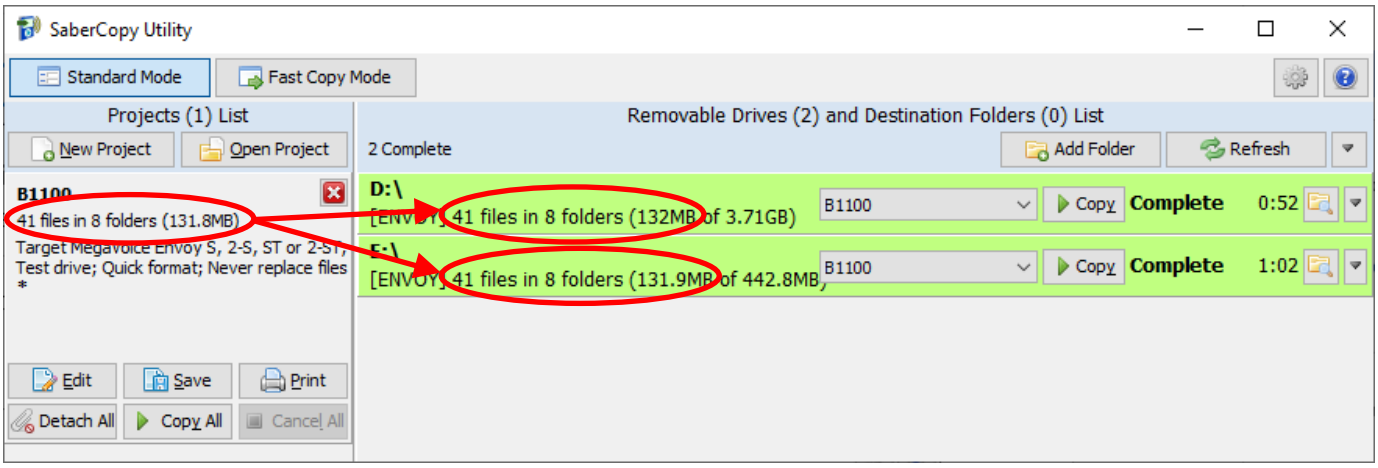
24. Note that you could also click on the "Copy" button appearing in each player line (circled in green) but using "Copy All" is much more convenient especially when loading multiple players.



25. When you use “Copy All”, and you specified an initialization setting that will erase any of the current contents, you will get a single pop-up confirmation dialog listing all the assigned players warning that the current content will be deleted. If this is acceptable, click “Yes” to continue; otherwise, you can click “No” (don’t delete anything but continue the copy – this not recommended), or “Cancel” (halt the process). When using the individual “Copy” button per player, a pop-up dialog is displayed for each player separately (another reason to use “Copy All”!).



26. Once the actual copy completes, if requested in the project, SaberCopy performs a compare of the project against the selected players. If they match, the line for that player will turn **green** and the final message will be “Complete”. If they do *not* match (for some reason), the line for the player will be red and the final message will probably be “Unmatched”. For details on researching the cause of “Unmatched”, see 9: File verification.



**Note: the slight difference in overall message size as reported for the folder on the hard drive vs. the players is due to the difference in file storage between the two devices – hard drive (NTFS) vs player (FAT32). The difference between the 2 players is likely due to differences in the memory chips of each player.*

27. Disconnect the players and test each to see that the audio plays as expected.

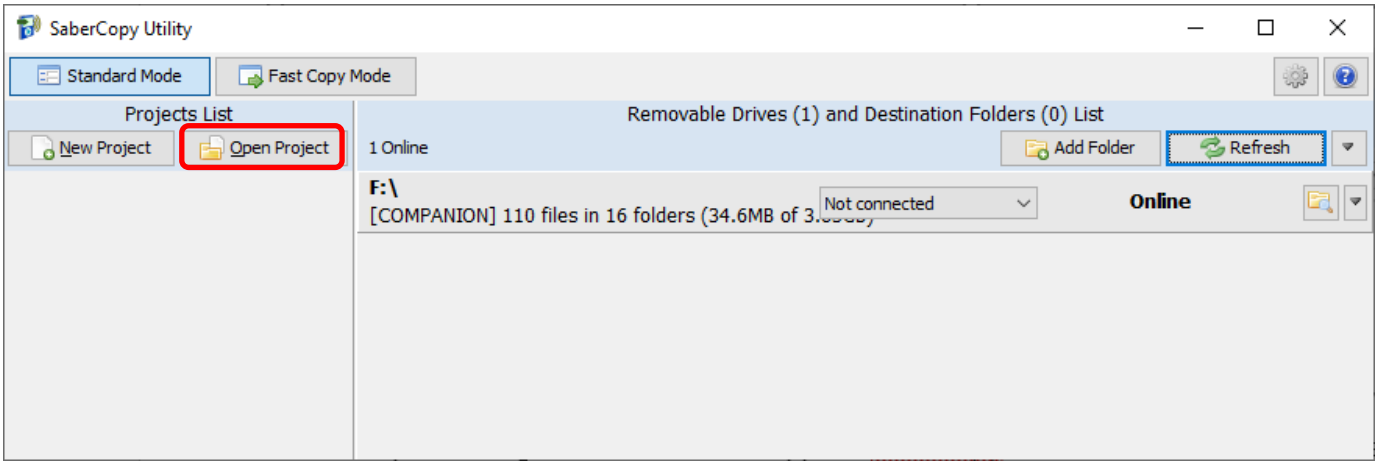
2: Loading a Companion Player

In this example, we will program a single MegaVoice Companion player. We will use the features provided by SaberCopy to construct a temporary audio message comprised of folders from two other audio messages.

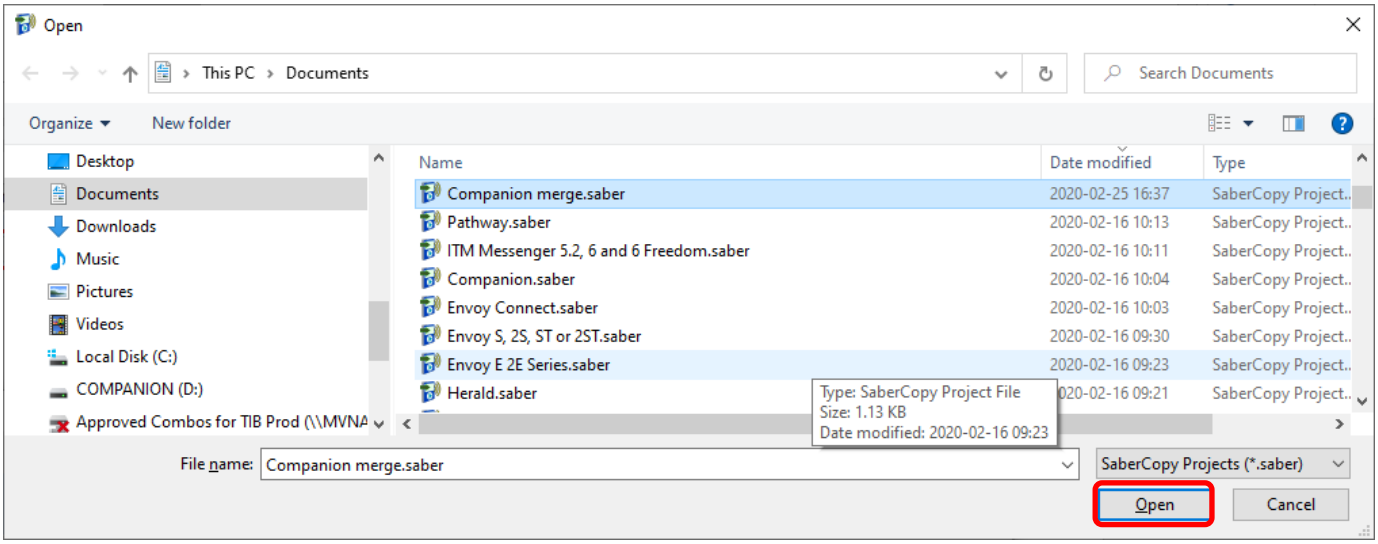
1. We have one Companion connected. SaberCopy has identified the player as **D:**.

2. In this example, we will use a project that we defined earlier and saved for future use.

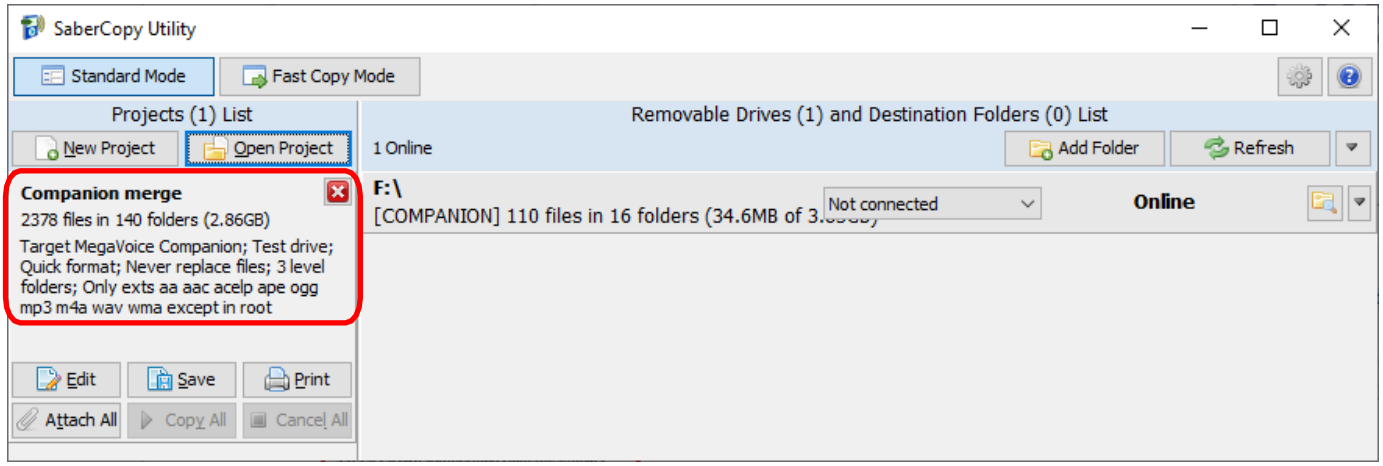
3. To load the project, we click on the "Open Project" button (circled in red).



4. An "Open" dialog like that below will appear. SaberCopy "remembers" the folder where you previously opened or saved projects. For this example, we will choose the project "Companion merge". It has all the settings used last time. Projects are saved with a file extension of ".saber" for easy identification. Double-click on the project or highlight it and click "Open".



5. When the project loads, it shows in the "Projects List" (circled in red). Let's look at the project settings by clicking on the "Edit" button for the project.

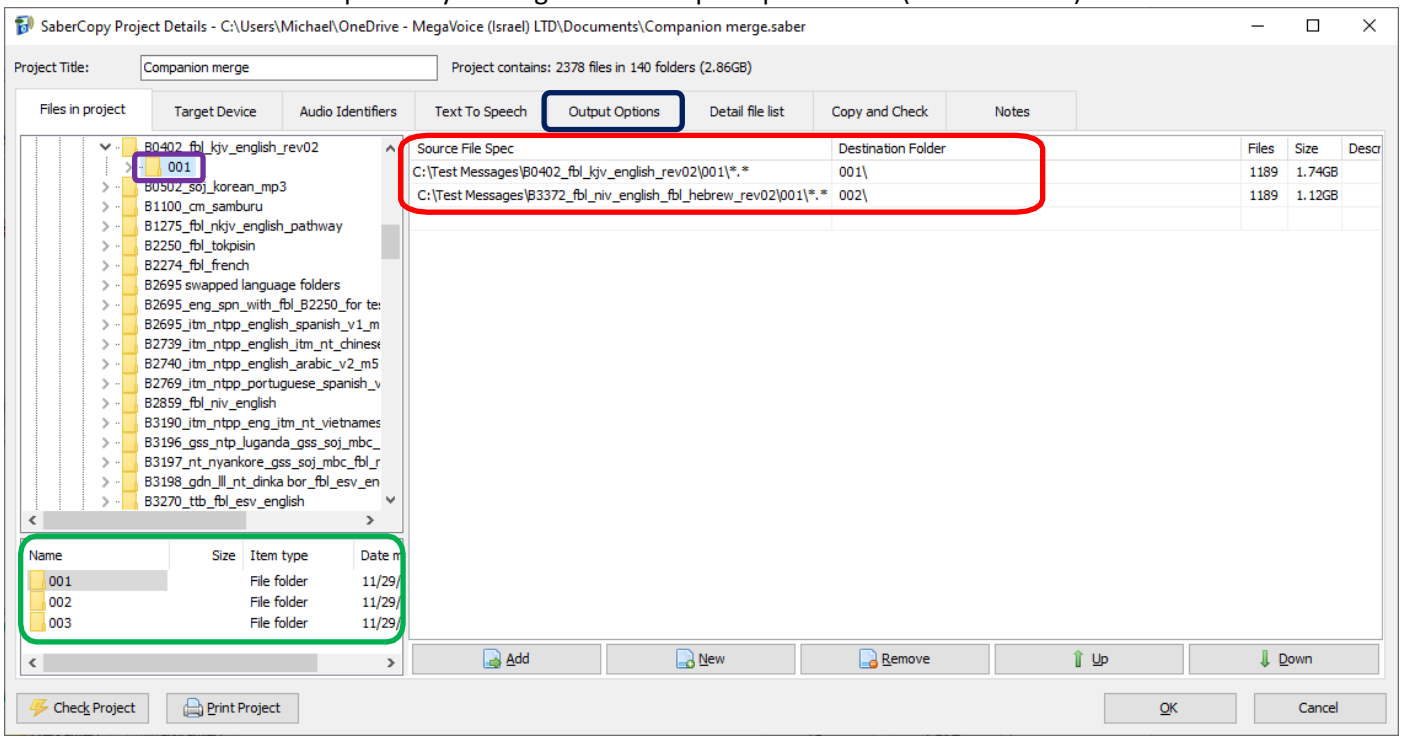


6. In the screen image below, we have the Project Details dialog open to the "Files in Project" tab. Here we are specifying two different Channel folders we want to merge to the Companion. Note that the first (001) comes from one audio message, and the second (002) comes from a different audio message. SaberCopy is allowing us to *aggregate* them into a new message that frees us from having to save a separate message to disk. We are also able to determine the names of the destination folders (circled in red). Effectively, we are renaming folder 001 in the second source message to 002 in our target message.

7. Note that you can always view contents included in any potential source folder from the list shown in the bottom left of the window (circled in green) when you highlight that folder in the top left (circled in purple).

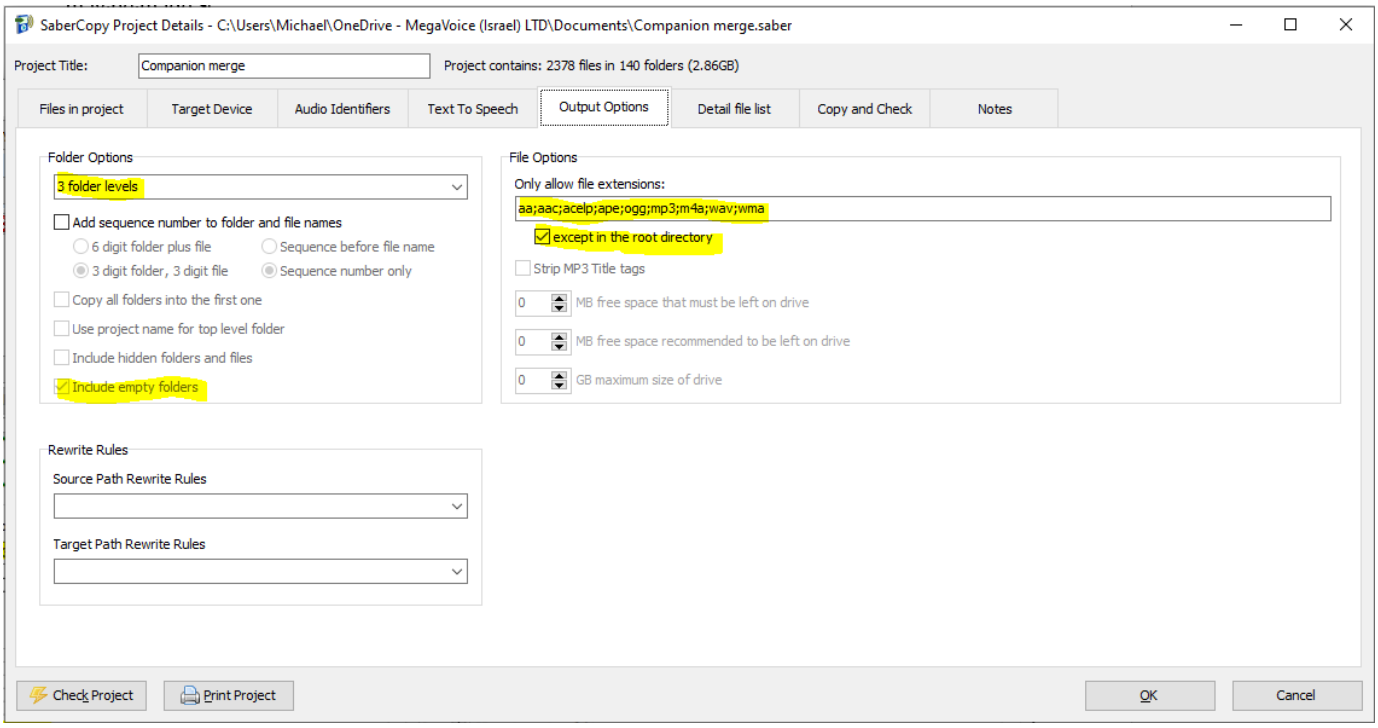
8. On the "Target Device" tab, "MegaVoice Companion" is already selected.

9. Now let's review the other options by clicking on the "Output Options" tab (circled in blue).

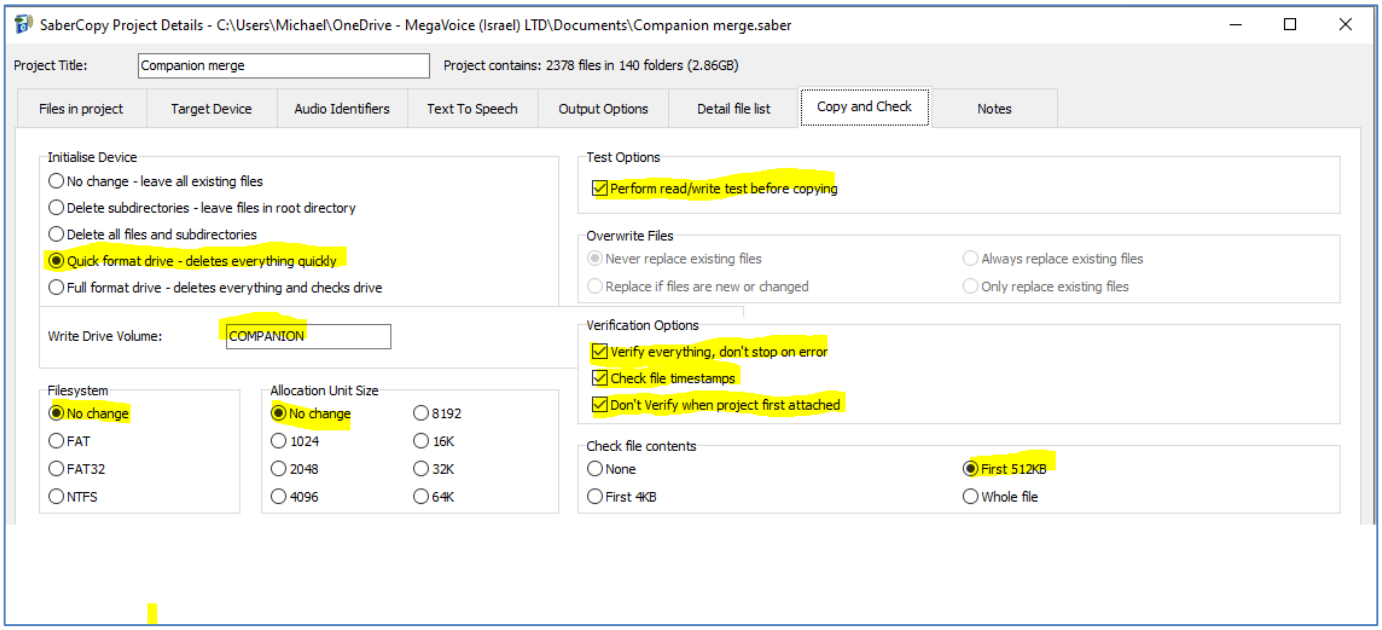


10. Let's review the special settings offered from the Output Options tab inour example below.
    - When Companion is selected, it automatically sets appropriate values in the **Custom Output Options** section on the bottom of the screen, displays and checks specific rules for the device.
      - Folder Options: Automatically set to 3 folder levels. This means it will allow up to and including 3 folder levels from the source folder. If there are more than 3, SaberCopy will compress them down to only 3 folder levels.
        Note: The maximum number of "levels" that Companion players will support is 4, where 3 of those are the folder levels.
      - Include empty folders: Automatically checked. The Companion firmware knows to skip empty folders during playback.
      - Only allow file extensions: Automatically set to all the file types currently supported for the defined device and prevents others by applying this filter.
      - Except in the root directory: Automatically checked. Some projects may include configuration files in the root folder that should be also included when copied to a device.
      - If you wish to modify any of these settings, first select the desired Target Device and then change the setting to "Custom Output Options". The bottom portion of the screen is enabled, and changes may be made.

      Be advised! When you change the target device, the rules also change; therefore, the rules for Companion can no longer be checked since each device has its own rules (or none).



11. Now let's review the special settings offered from the Copy and Check tab below.
    - Under **Initialize Device**…
        - Quick format drive: SaberCopy will perform a "quick format" of the device.
        - There are additional options besides formatting.
        - When either quick or full format is selected, the option to specify the **File System** and **Allocation Unit Size** become available. These two should always be left as "No change" unless MegaVoice technical support has requested otherwise.
        - Write Drive Volume: This is optional. We will name our player "COMPANION".
    - Under **Test Options**…
        - Perform read/write test before copying: SaberCopy will check the read/write capability of each player before attempting to load the audio and warn of a problem.
    - Under **Verification Options**…
        - Verify everything, don't stop on error: SaberCopy will check the entire contents and not stop on the first error if there happens to be any.
        - Check file timestamps: SaberCopy will compare the timestamps on each file against the source. If the comparison shows that they are not within 2 seconds of each other, errors will be flagged in the log.
        - Don't verify when project first attached: SaberCopy will compare the files in each player against those defined in the project as soon as a player is attached to a project. When loading a new message, there is no point to pre-verification. In most cases, this option should be checked. For an example of when you would want pre-verification, see 13: Comparing the contents of 2 players.
    - Under **Check file contents**…
        - SaberCopy can perform a checksum comparison against a portion or all of each file. The larger the file sampling requested to compare, the longer the process takes.

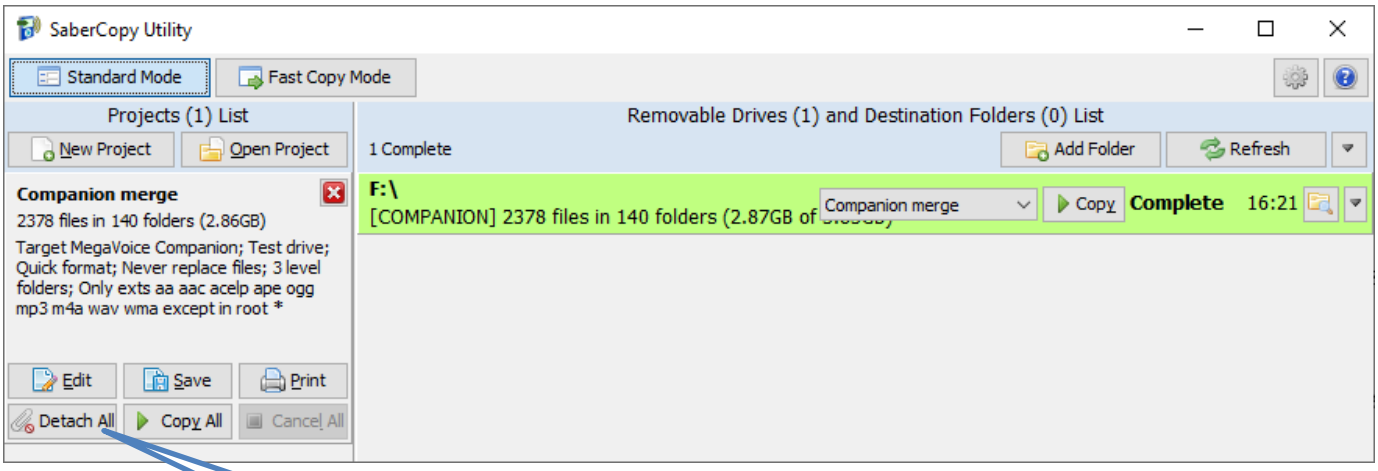


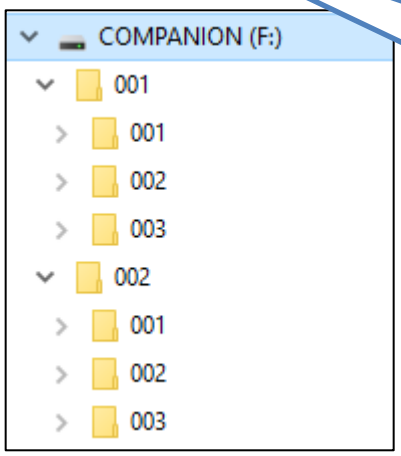
12. After closing the Project Details dialog, we need to attach the player to our project by clicking “Attach All” in the project window.

13. Then we’ll click on the “Copy All” button to begin the load process.

14. Because we set the option to perform a Quick Format, we get the file deletion warning dialog, and we’ll click “Yes” to continue.

15. The copy of 2.8GB and 512K file verify took just over 16 minutes. We see that the copy succeeded (status message is “Complete” and player line is **green**). Now let’s review what we ended up with:
    - The player was tested for read/write before the copy process and passed.
    - The volume drive name was set to “COMPANION”.
    - The folders from the two different audio messages were aggregated together and the Channel folders on the player were named 001 and 002 as we specified.
    - SaberCopy verified that the folder and file counts on the player match that specified in the project.
    - A checksum comparison of the first 512K of each file was executed and the target matches the source.
    - After disconnecting and testing the player, navigation and file playback is in the order we wanted.





Notice that once players are all attached to the project, the “Attach All” button becomes “Detach All”.

“Detach All” only applies to players currently attached to this project.

When “Detach All” is clicked, it will set all currently attached players to “Not Connected”.

3: Loading microSD cards

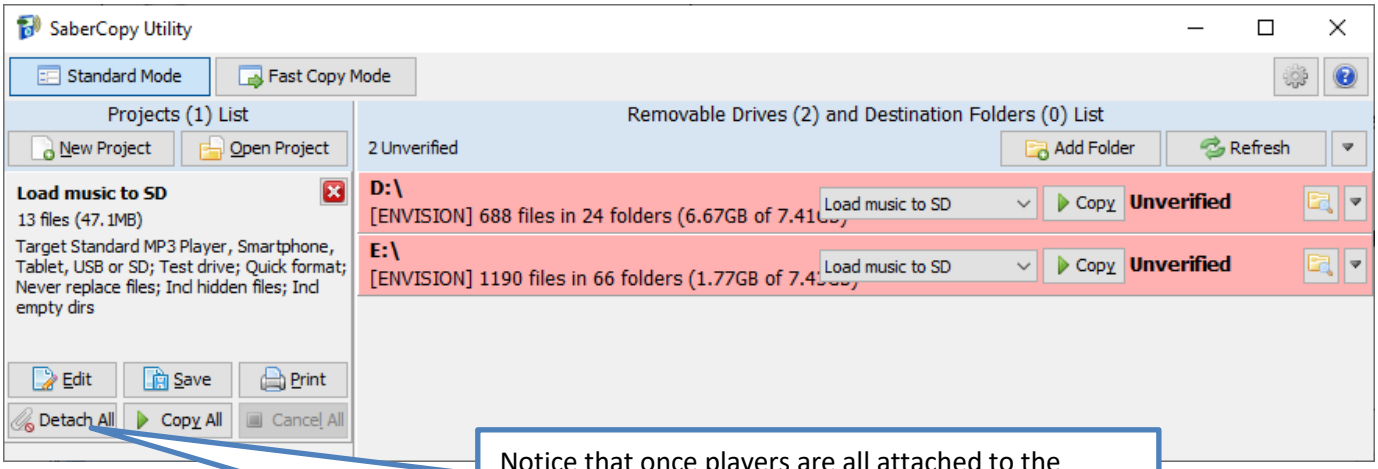
In this example, we will format and load 2 microSD cards with some MP3 music files.

1. The 2 microSD cards are connected to the computer using microSD card adapters (pictured below). SaberCopy recognizes them as volumes **D:** and **E:**.

2. We have already opened a project saved earlier named “Load music to SD” by clicking on the “Open Project” button.

3. The two microSD cards have been assigned to the project by clicking the “Attach All” button in the project area.

4. Since no pre-compare was specified in the project, SaberCopy shows them as “Unverified”.



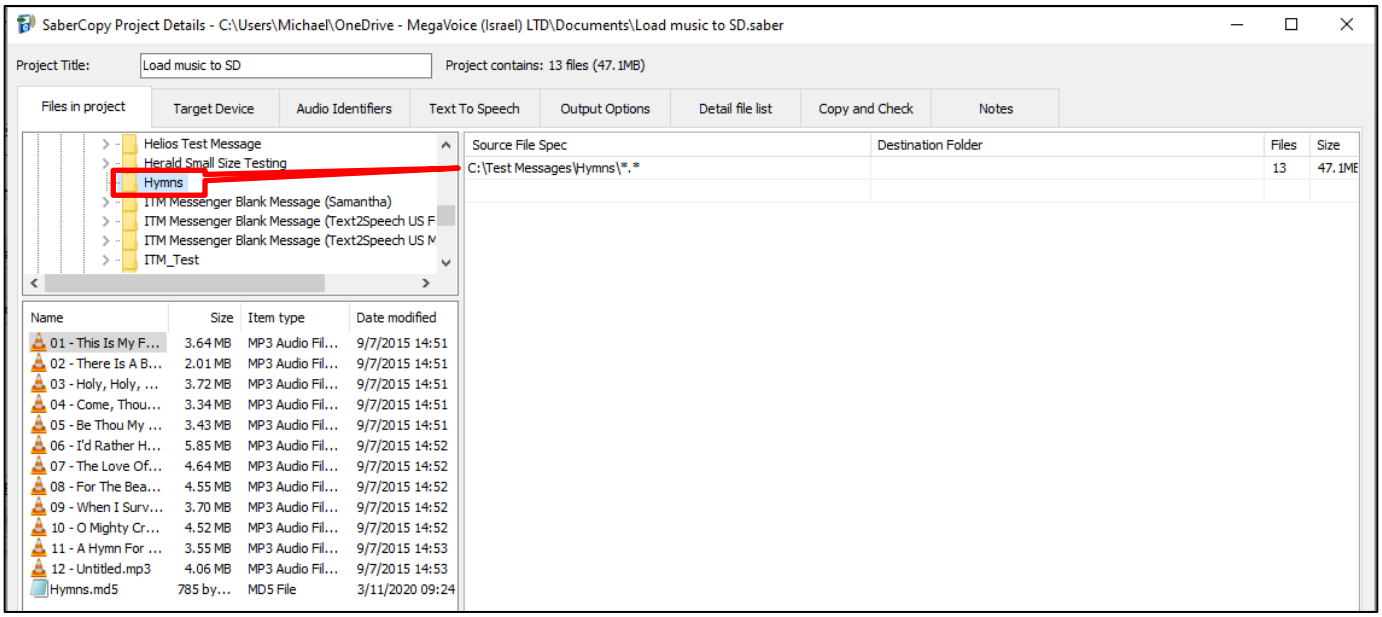
Notice that once players are all attached to the project, the “Attach All” button becomes “Detach All”.

“Detach All” only applies to players currently attached to this project.

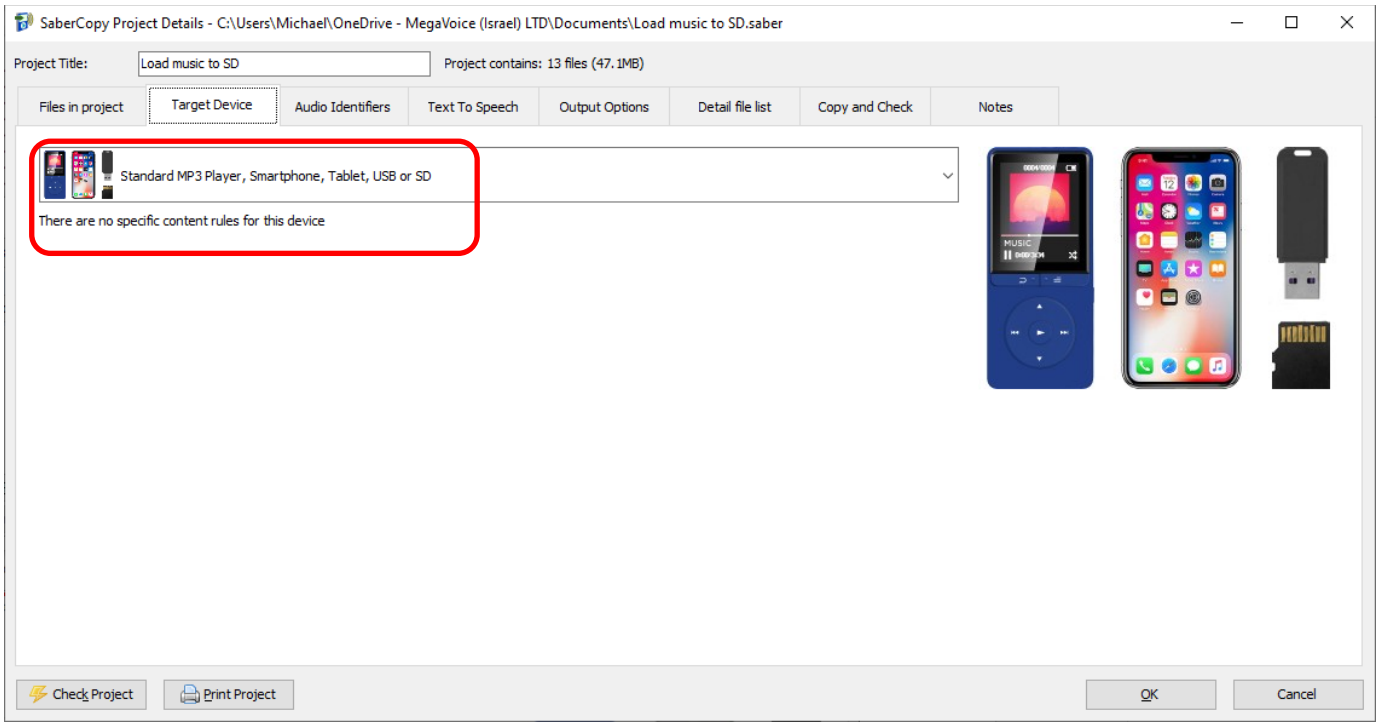
If clicked, it will set all currently attached players to “Not Connected”.

5. Let's open the project details by clicking on the "Edit" button and review the settings below.

6. Files in Project tab: The project currently contains MP3 music files from the "Hymns" folder. These were added by just dragging the source folder to the panel on the right side of the screen. This causes SaberCopy to duplicate the files exactly to the cards.

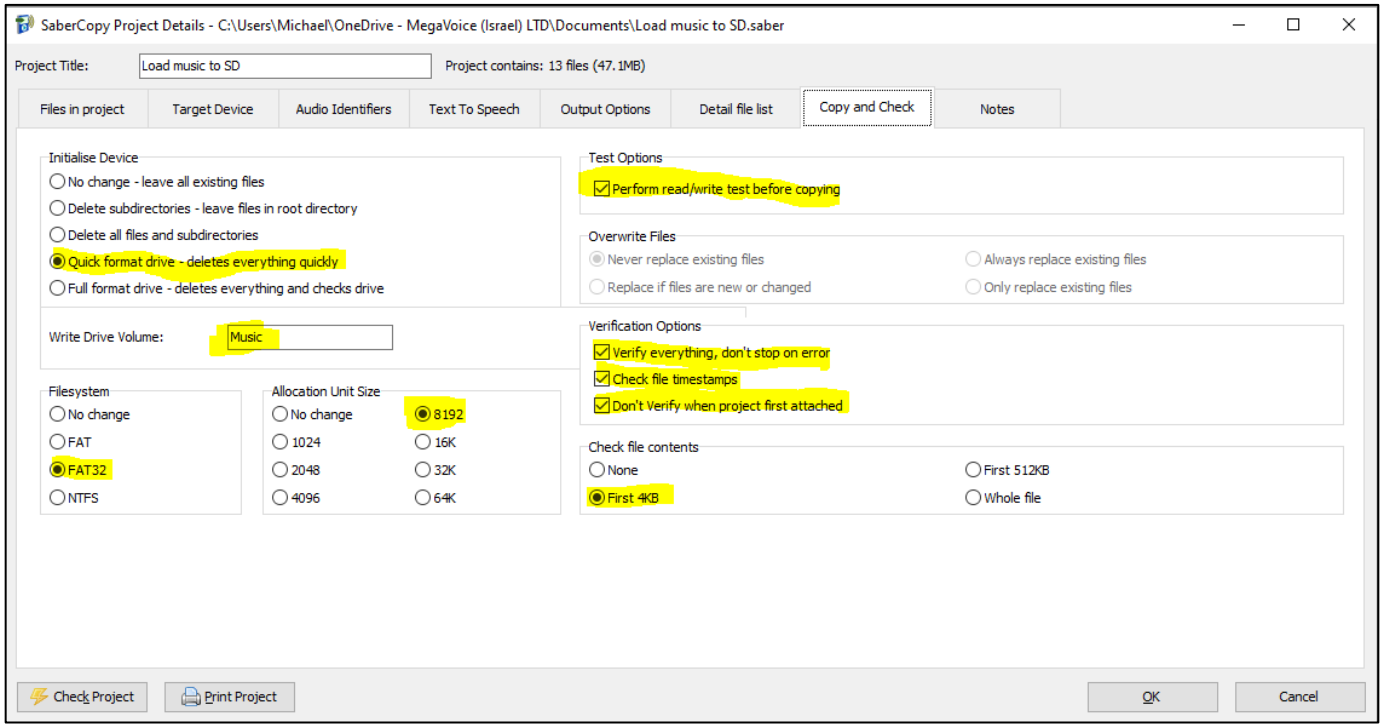


7. Target Device tab: Target Device: is set to "Standard MP3 Player, Smartphone, Tablet, USB, SD". Note that there are no device rules defined so SaberCopy won't check for anything specific.



If the intent is to create microSD content for use on a player that *does have* specific content rules for microSD input as well as onboard, it would be best to set "Target Device" to that player so that those rules are enforced. As seen in the screen image above, the "Standard MP3 Player, Smartphone, Tablet, USB or SD" setting has no content rules.

8. Copy and Check tab:
   - Initialize Device: Set to Quick format drive. It is always advisable to format a microSD card before use.
     - Note: If we wanted to use this project to append songs to a card that already had music files on it, we would change this setting to "No change – leave all existing files".
   - Write Drive Volume: We want to name the cards "Music"
   - Filesystem: We want the cards to be formatted as FAT32 for use in any MegaVoice player that has a microSD card reader.
   - Allocation Unit Size: We want it set to 8K (8192).
   - Perform read/write test before copying: Always good to do. This option is checked.
   - Verify everything, don't stop on error: This option is checked. SaberCopy will only check the folders and files that were copied. Existing items on the source will not be checked.
   - Check file timestamps: SaberCopy will compare the timestamps on each file against the source. If the comparison shows that they are not within 2 seconds of each other, errors will be flagged in the log.
   - Don't Verify when project first attached: The option is checked because there is no need to compare against the current contents (before copy) of the cards since they will be formatted.
   - Check file contents: We want SaberCopy to compare the first 4K of each file copied against the source.

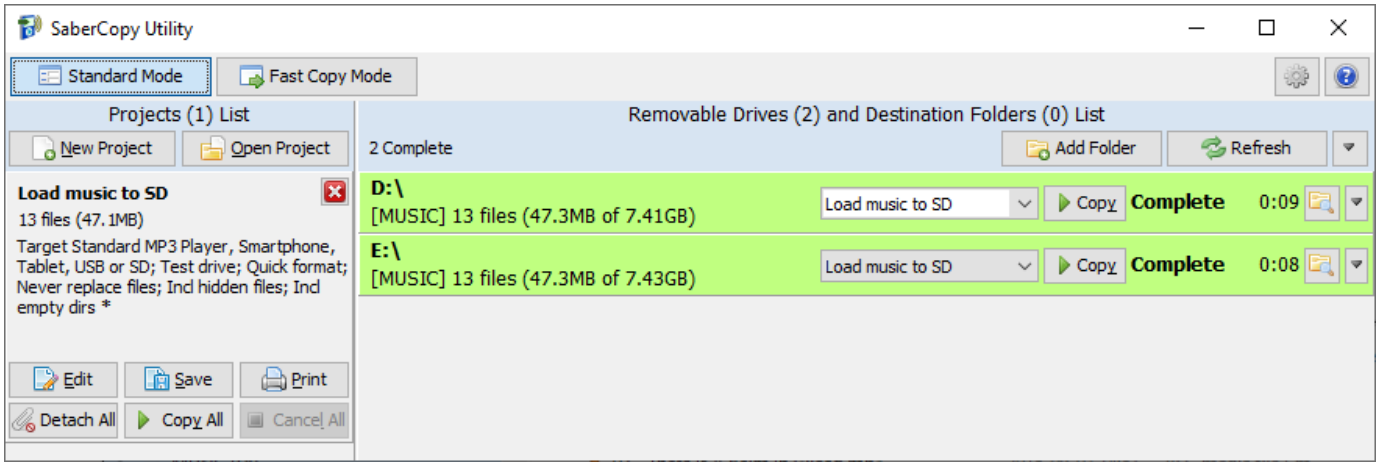


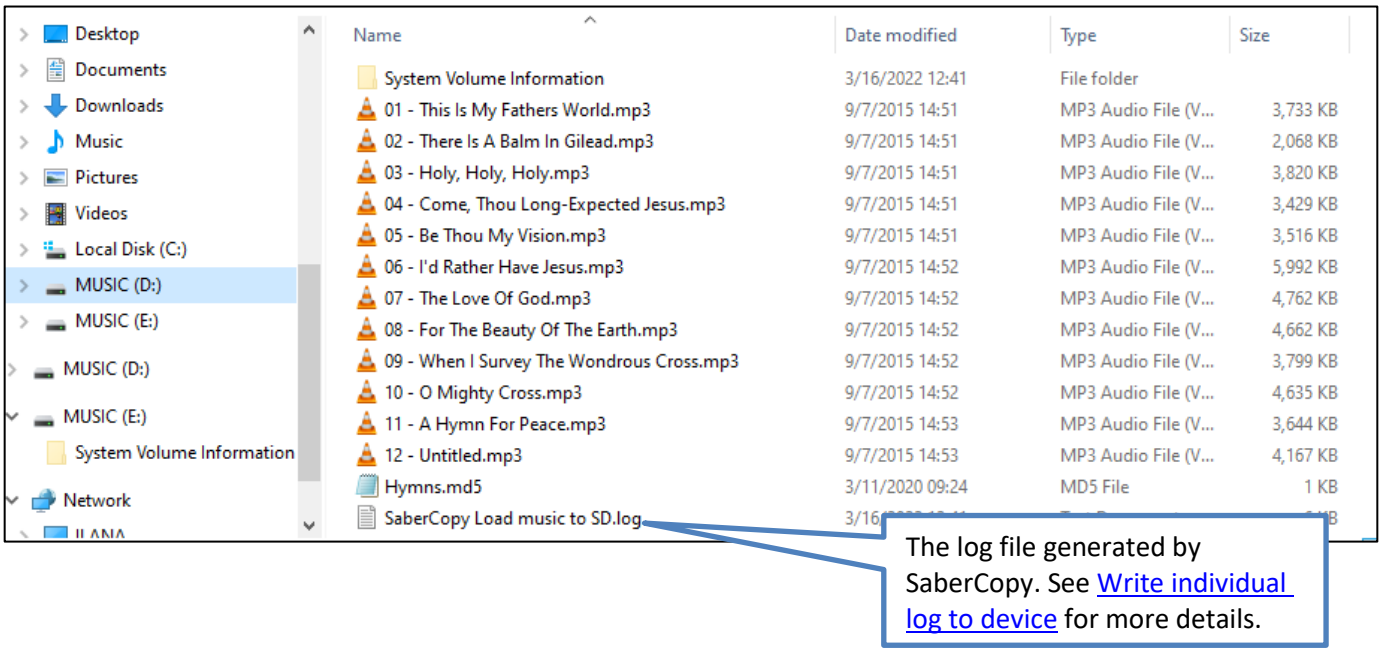
9. Now we just need to click on the “Copy All” button. The process is very fast, since there are only 12 files.

Write speed to microSD cards depends on the quality and type of card and this can vary from manufacturer to manufacturer. Another factor affecting write speed is the “allocation unit size” set when the card is formatted. The larger the allocation unit size, the faster data can be written but at the sacrifice of some space.

10. Now let’s review what we ended up with:

- The label for each microSD card was changed to “Music” (from “ENVISION”).
- All the MP3 music files in the source folder were duplicated to the root of the microSD card.
- The content of each microSD card matches the content specified in the project (because the status message is “Complete”, and the drive lines are **green**).
- The files were copied in alphabetic order according to the name.
- Testing shows the cards successfully play the audio in the order they were copied!



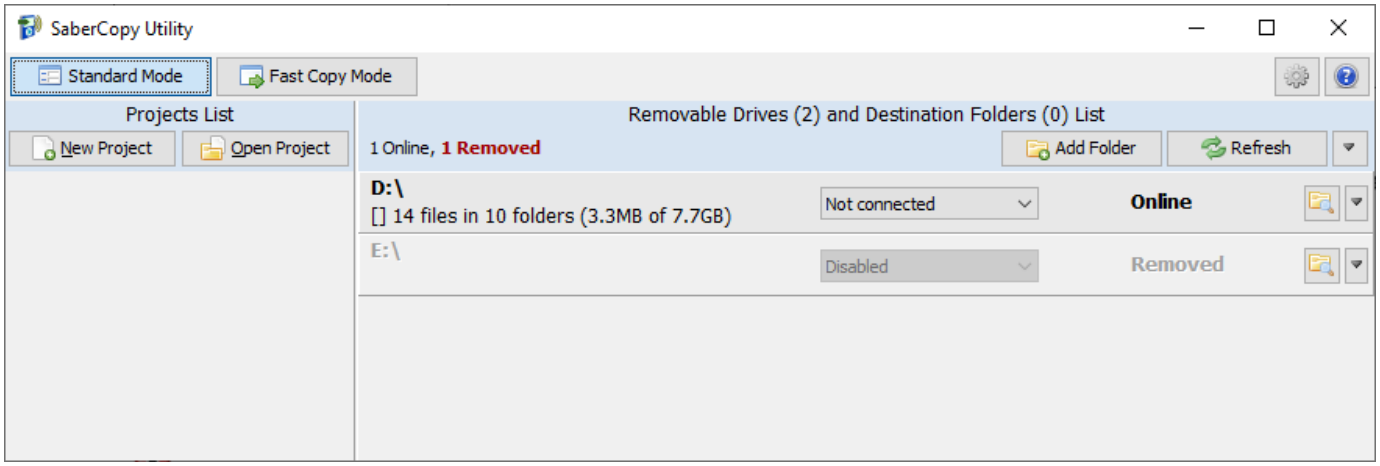


The log file generated by SaberCopy. See Write individual log to device for more details.

4: Loading an Envoy E/2E and microSD card together

In this example, we will load the Envoy E or 2 E (Elite), and a microSD card, loaded in its card reader, at the very same time. To this end, we will use 2 different projects during the load – one for the player's onboard memory and the other for the microSD card. This will illustrate SaberCopy's ability to load multiple devices concurrently with different audio.

1. When the Envoy 2 E is connected, SaberCopy recognizes the player as volume **D:** and the microSD card reader as **E:**. In the example below, we see the current status of the player's onboard memory (status is "Online") and that there is no card present in the card reader (status is "Removed" and therefore the device is set to "Disabled").



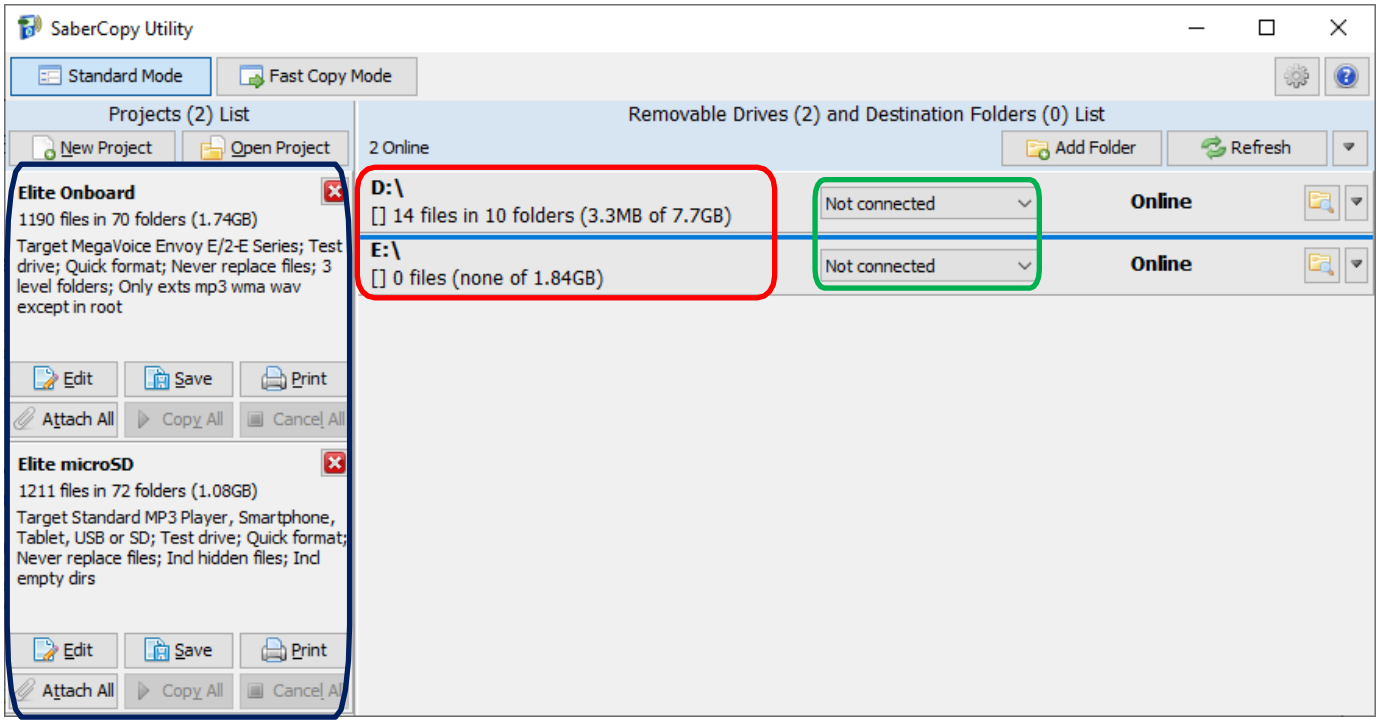
SaberCopy will not *automatically* recognize the microSD card if it was inserted into the player's card reader *after* the player was connected. For SaberCopy to recognize the card at this point, simply click the "Refresh" button. The status changes to "Online" but you still must change the setting for that device line to "Not connected" for access.
In this instance, it is simpler to insert the card in the card reader before connecting the player to the computer.

The microSD card readers in most of our players do not have a high write capacity. Testing comparing concurrent loads of the same content to a card in the microSD reader of a player vs. a card in a card adaptor connected to a hub show a much better throughput for the card connected to the hub. While you can use a player's card reader for loading, it is recommended to use a card adaptor connected to a computer or a hub.

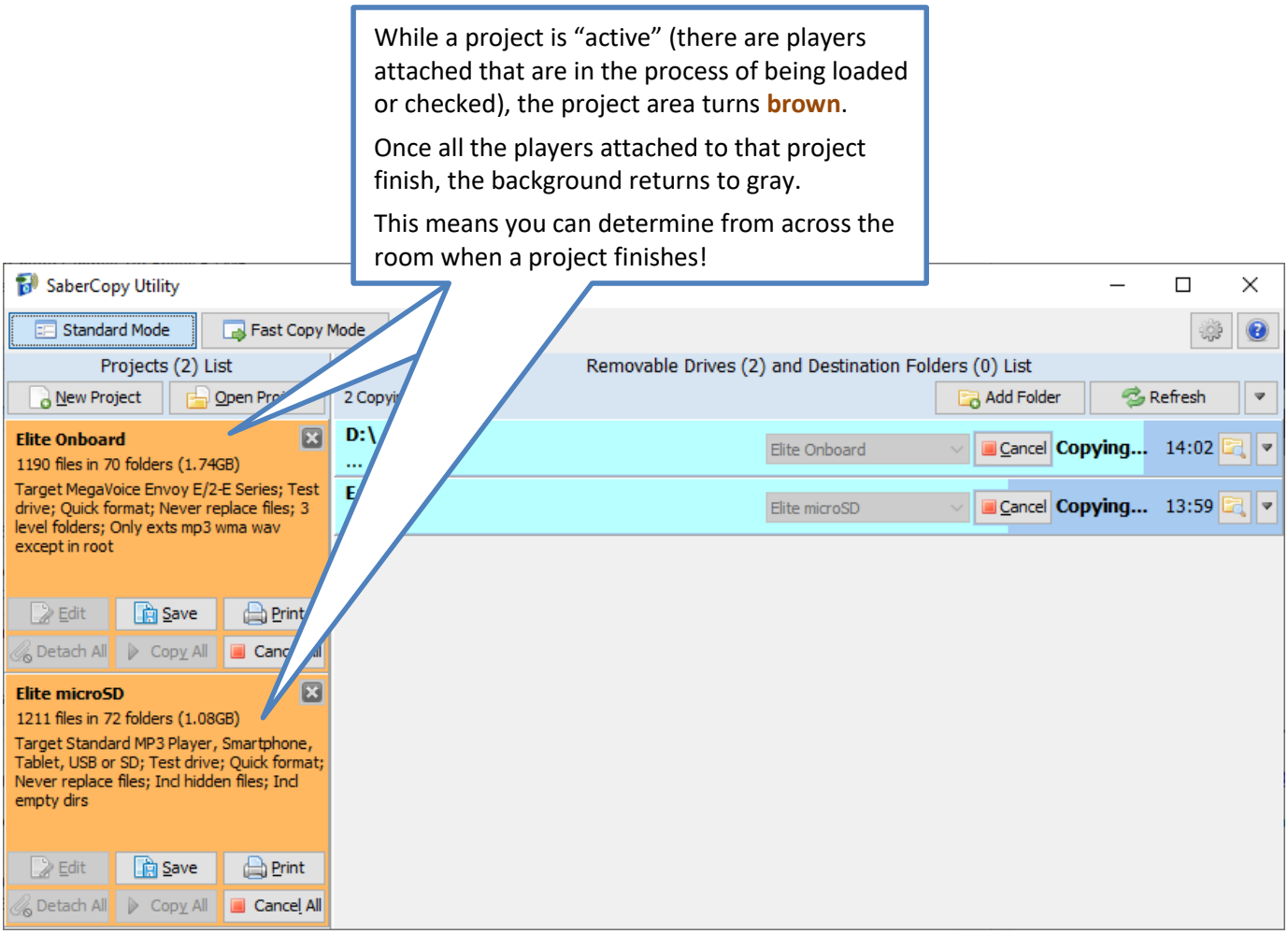
2. In the example below, after refreshing the drives list, we have our Envoy 2 Elite with a microSD card loaded in the card reader. SaberCopy shows us the current content summary for each (circled in red).

3. We have also opened two projects prepared earlier (circled in blue) – one to load the onboard memory of the Elite and the other to load the microSD card.

4. Using the drop list control for each (circled in green), we need to assign the Elite (**D:**) to the "Elite Onboard" project and the microSD card (**E:**) to the project "Elite microSD".



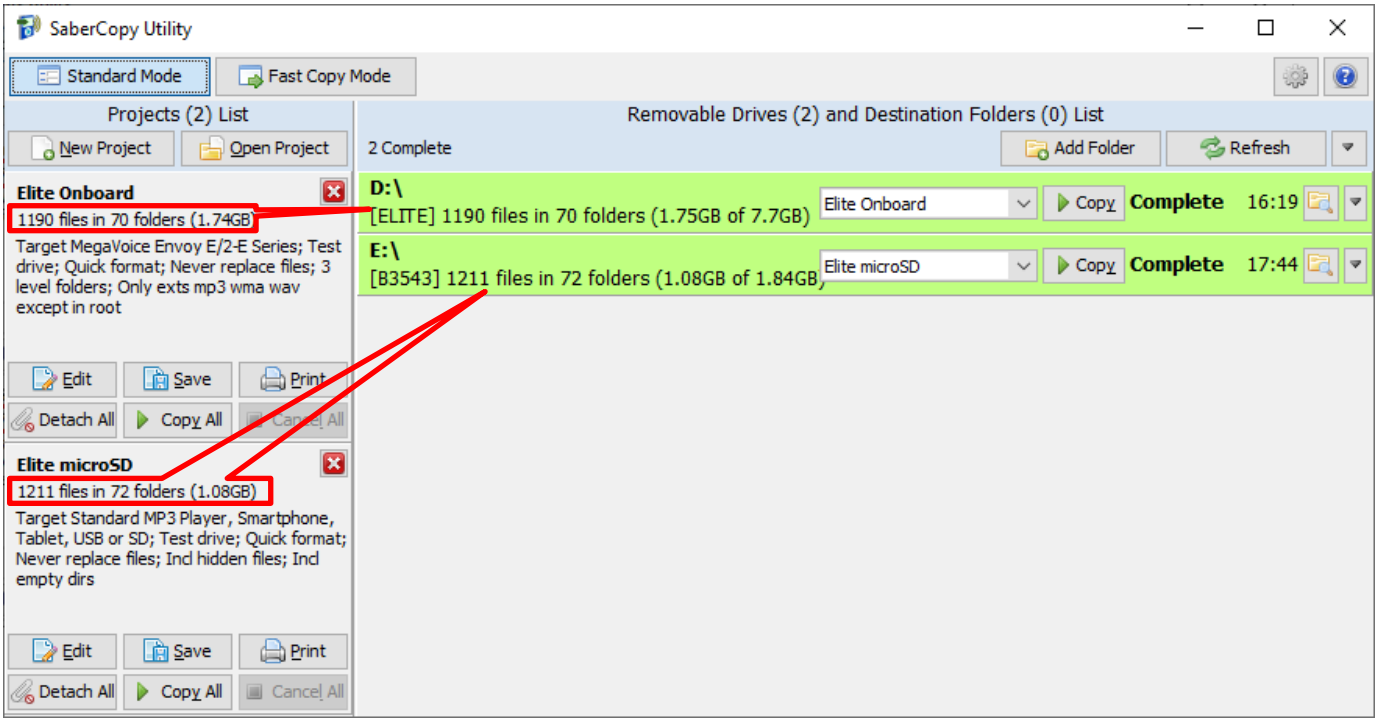
5. To begin the copy process, we must initiate each project *separately* since there are actually two copy operations that will take place. We could either click on the "Copy All" button for *each* project or click on the "Copy" button found in *each* device line.



Performing two different project loads concurrently may not necessarily be quicker than doing them separately, but it is certainly more convenient. This means we could conceivably load 2 (or more) groups of players at the same time, where each group is being loaded with different content (project), leave it running and come back later to find that they are all done! This is a nice option to have available.

6. The copy is successful for both, and each matches their assigned projects (per the settings specified on the “Copy and Check” tab for each project)!

7. This illustrates that SaberCopy can load multiple devices from different sources – all at the same time. You don’t have to do them one at a time.



MegaVoice has successfully tested loading eight different players each with different audio – all at the same time. In this case, it was <u>much</u> faster than loading them serially.

The challenge was identifying which player was loaded with which audio message. We did this by placing a sticker with the name of the project to each player as the project was attached to it.

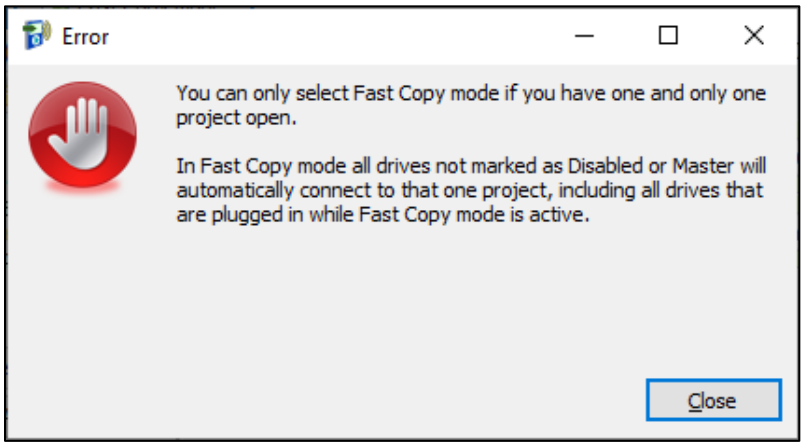
5: Fast Copy Mode for quickest loading

In this example, we will load players using **Fast Copy Mode**. Fast Copy Mode is a feature offered by SaberCopy that allows for semi-automated loading of players with minimal user intervention.

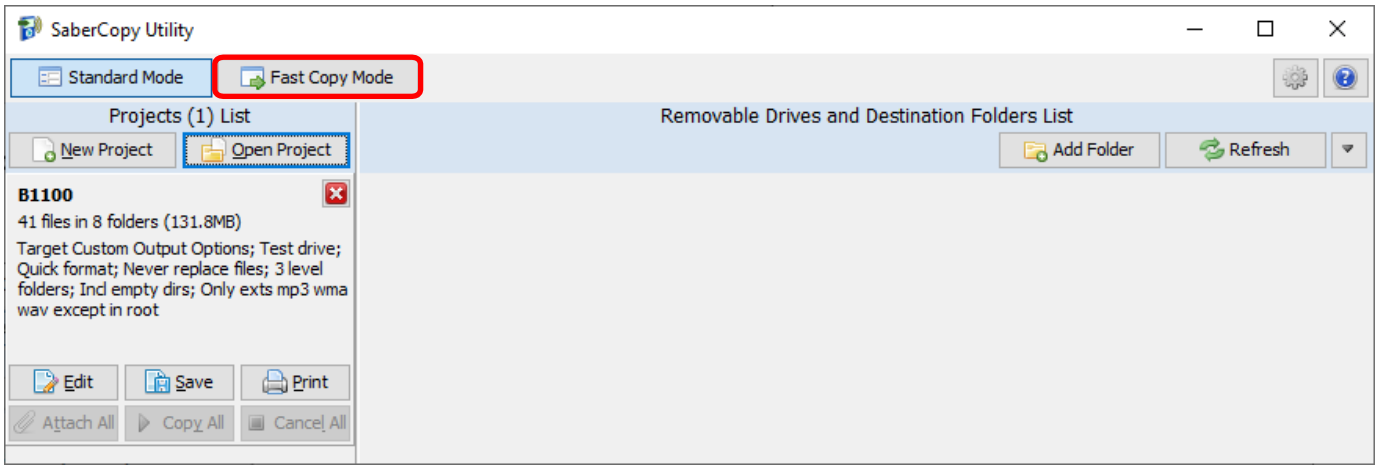
Be careful! Once you activate Fast Copy Mode, no additional warnings are issued before a player is cleared and loaded with the specified audio. Any player, or USB device for that matter, you connect while SaberCopy is open and Fast Copy Mode is active will automatically be loaded – no questions asked!

1. When SaberCopy starts, it defaults to "Standard Mode", which is the setting used in most examples.

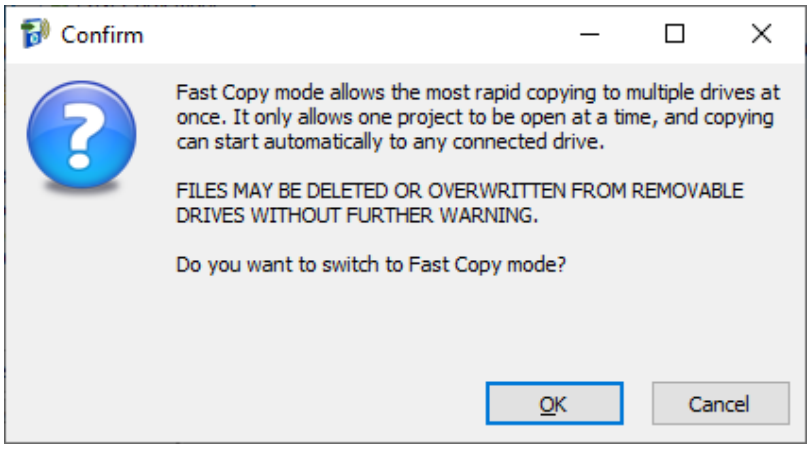
2. After starting SaberCopy, open the project you want to use for your fast copy session. Fast Copy Mode requires that one and only one project may be open. SaberCopy warns if this is not the case.



3. Once the project is open (and re-configured if necessary), you can turn Fast Copy Mode on by clicking on the "Fast Copy Mode" button (circled in red).

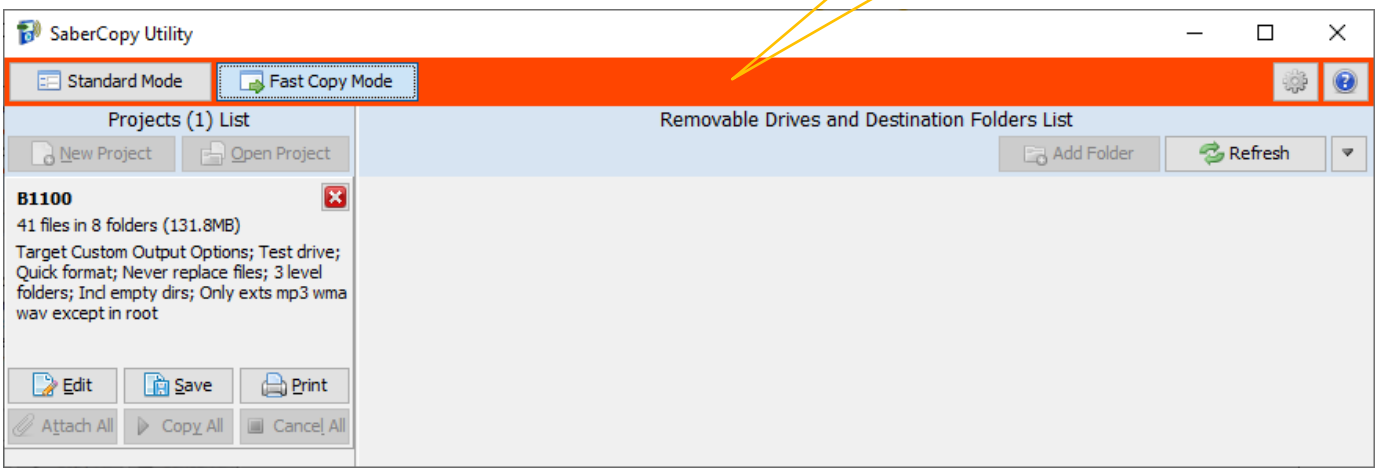


4. You will receive a pop-up warning like that below:



5. Click on "Yes" to transition to Fast Copy Mode.

6. Notice that the button ribbon at the top of the screen changes to a reddish-orange background color to alert you that the application is currently in Fast Copy Mode.



7. From this point on, once you connect players or USB devices, the moment SaberCopy recognizes each device it will begin to load it with no further intervention.

8. Once players have completed, you can disconnect them and connect others in their place. SaberCopy will automatically begin to load the new players as soon as they are recognized by the computer.

9. SaberCopy will remain in Fast Copy Mode until…

- The SaberCopy window loses focus, i.e. you switch to a different application or screen.
- You click on the “Standard Mode” button to turn it off.
- You connect a device that is significantly different from the first (see explanation #2 below).
- You close SaberCopy. When SaberCopy restarts, it always defaults to “Standard Mode”.

1) Fast Copy Mode is an ideal solution when you don’t have many USB ports available (or no hub) and need to quickly load a group of players with the same audio. It requires minimal intervention from you to achieve the quickest copies.

2) SaberCopy offers a safeguard to prevent unintended access to a device that is connected to the computer while Fast Copy Mode is active which could result in loss of data. The **first** device connected determines the point of reference for *all* devices connected during the session. If a subsequent device is connected that is less than half the capacity of the first, **or** more than twice the capacity of the first, **or** in any case, greater than 128GB, SaberCopy will ignore that device and automatically turn Fast Copy Mode off.

You may also want to configure SaberCopy to always ignore certain devices you keep connected to your computer. See 12: Teaching SaberCopy to ignore devices for details.

6: Duplicating players, microSD cards, etc.

In this example, we will duplicate the contents of one Envoy S player to two other players. In the same way, we could leverage SaberCopy to duplicate the contents of a player to microSD cards, a microSD card to players or even one microSD (master) to others.

This is a great solution when you want to load players but don't have the audio source needed available on your computer but do have a player that can be duplicated. This is easy to accomplish, and it does not require you to copy the audio first from the player to the computer and then from the computer to other players!

1. Connect the player that will serve as the source first so it will appear first in the list to make it easier to keep track of.

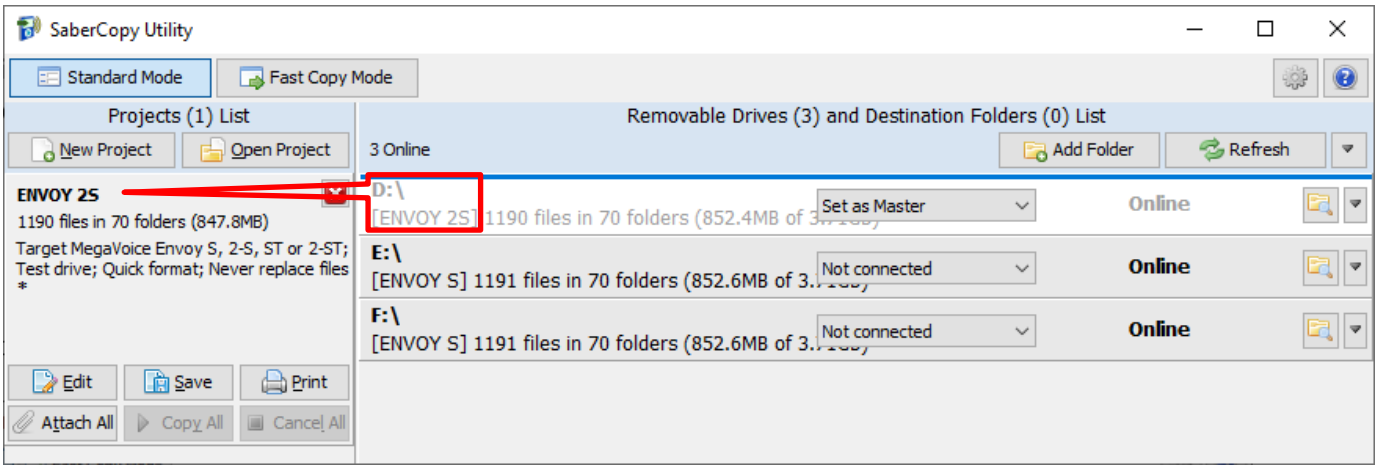
2. In the drop-down list for the source player, change it to "Set as Master". Once you do that, SaberCopy will turn the line white and create a project definition for you using the volume label of that player as the name (under "Projects List"). See Hide drives Set as Master for details on how to hide this folder once it is "Set as Master".

3. Edit the project definition and make appropriate changes (things like target device, initialization, verification options, etc.). You may save it if you wish for re-use later, or you can simply discard it when you are done.

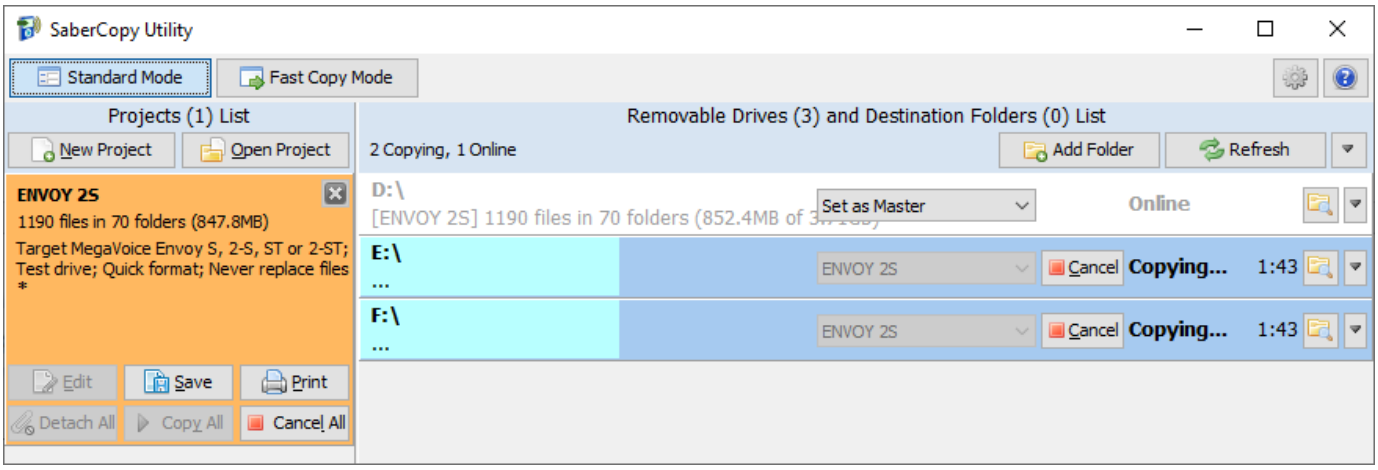
4. Connect the other player(s) that you wish to make duplicates from the source.

5. Click on the "Attach All" button to attach the players to the project.

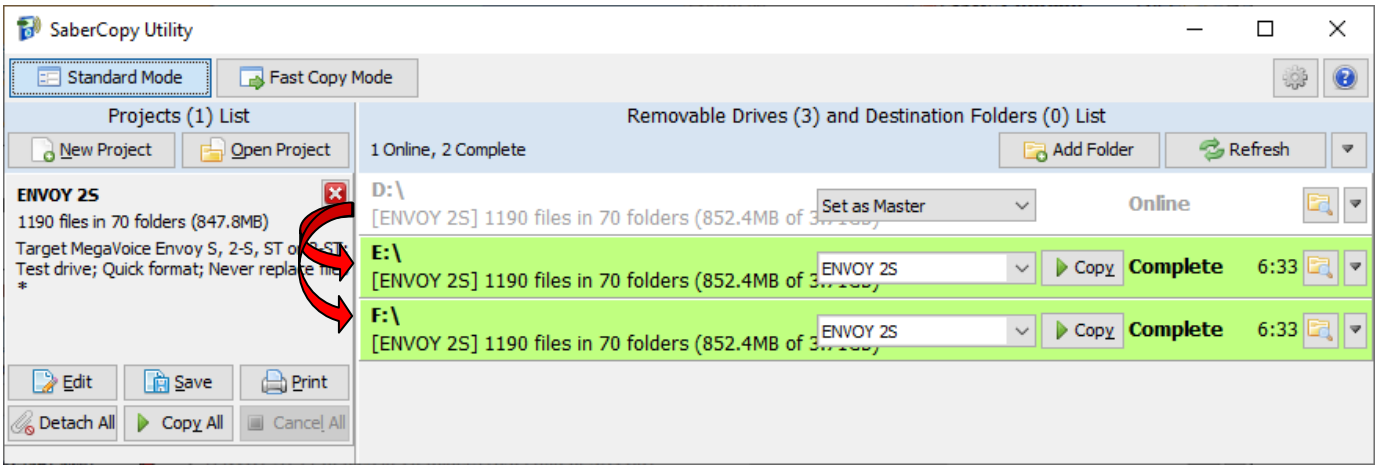
6. Then click on "Copy All" to begin the load.



7. Reply “Yes” to the file deletion warning if initialization was requested. The load process begins…



8. Once completed, you have two additional players that are identical in content to the original!



SaberCopy is the “poor man’s” card duplicator! Hardware duplicators can be very expensive (see here). All you need to leverage SaberCopy for card duplication is the following:

1. SaberCopy (free)
2. A (powered) USB hub with as many ports as the number of cards you wish to duplicate in a batch
3. Enough microSD card adaptors for the number of cards you wish to duplicate at a time (very inexpensive)
4. The microSD cards

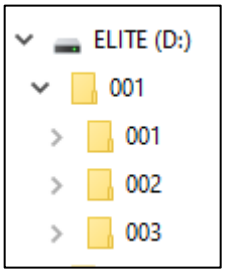
SaberCopy can either duplicate from a master card, as shown in this example in the form of a master player or copy from disk to the cards (as demonstrated here). SaberCopy can also verify the copy afterwards. The procedure is very fast as most microSD cards have high read/write rates.

7: Appending audio to a player

In this example, we will append audio to the *existing* contents of an Envoy E/2E player. The Envoy E/2E supports up to eight Channel folders in the onboard memory. This player already has one Channel folder and we want to add a second.

Appending data to an existing structure is not a problem. For an explanation regarding inserting data, see the comment at the end of this example.

1. First, we connect our Envoy Elite player that contains the following folder structure:

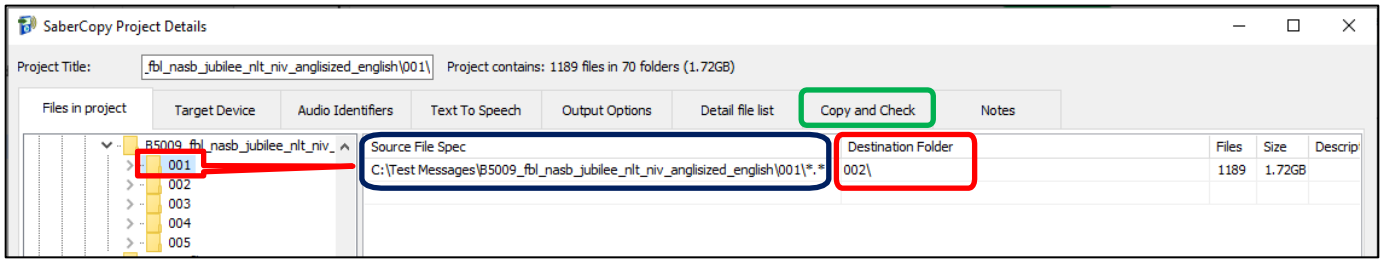


2. Next, we click on the "Add Folder" button below (circled in red) and navigate to the Channel folder we want to add (not the parent folder – circled in orange) in a different audio message that we want to add to the player as Channel folder 002.

3. Then we change the setting of the folder to "Set as Master" (circled in blue). When we do that, SaberCopy automatically creates a project for us naming it with the path of the folder.
   See Hide drives Set as Master for details on how to hide this folder once it is "Set as Master".
   We need to make some changes in the project definition to end up with the desired results. Click on the "Edit" button (circled in green).

4. In the “Files in Project” tab below, we see that the value for “Source File Spec” (circled in blue) is correct (the 001 Channel folder), but we need to change the destination folder to be “002” (circled in red) so that it will not overlay the 001 folder already present on the player.

5. Next, we click on the “Copy and Check” tab (circled in green) to make some important changes there as well.

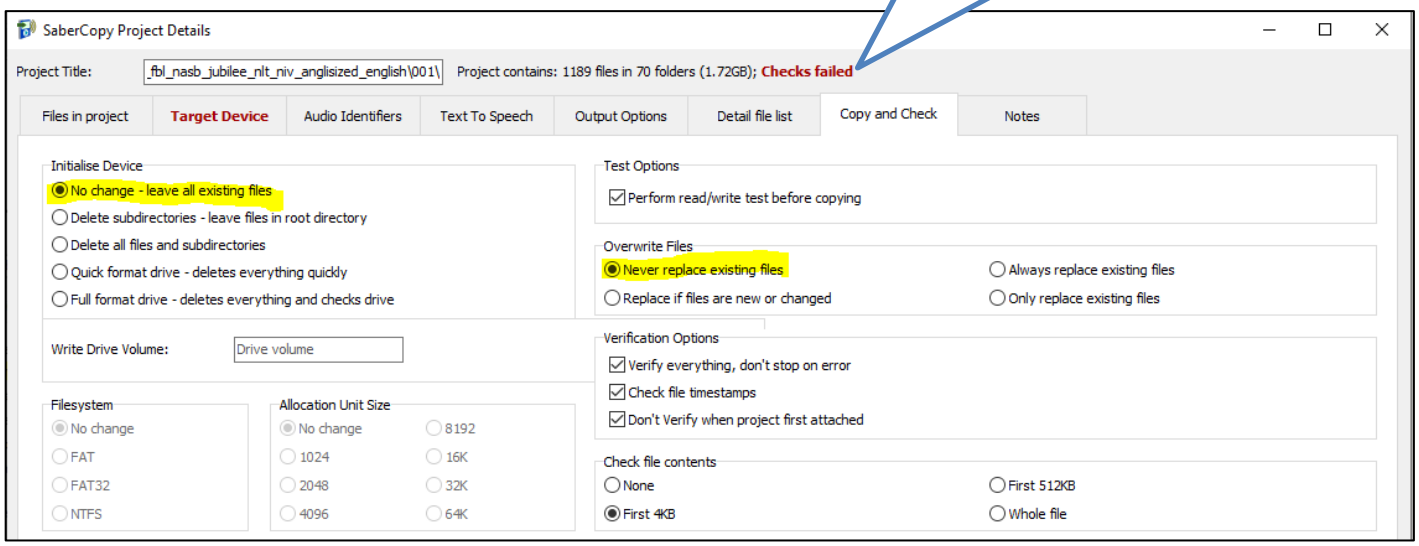


6. Here we need to set “Initialize Device” to “No change – leave all existing files” and “Overwrite Files” to “Never replace existing files” so that the current audio on the player will not be overwritten.

7. We’ll also set the following: read/write test, verification, checking the file timestamps and contents once the copy completes and “Don’t verify when project first attached” since there is no point to compare before the addition of the second Channel folder.

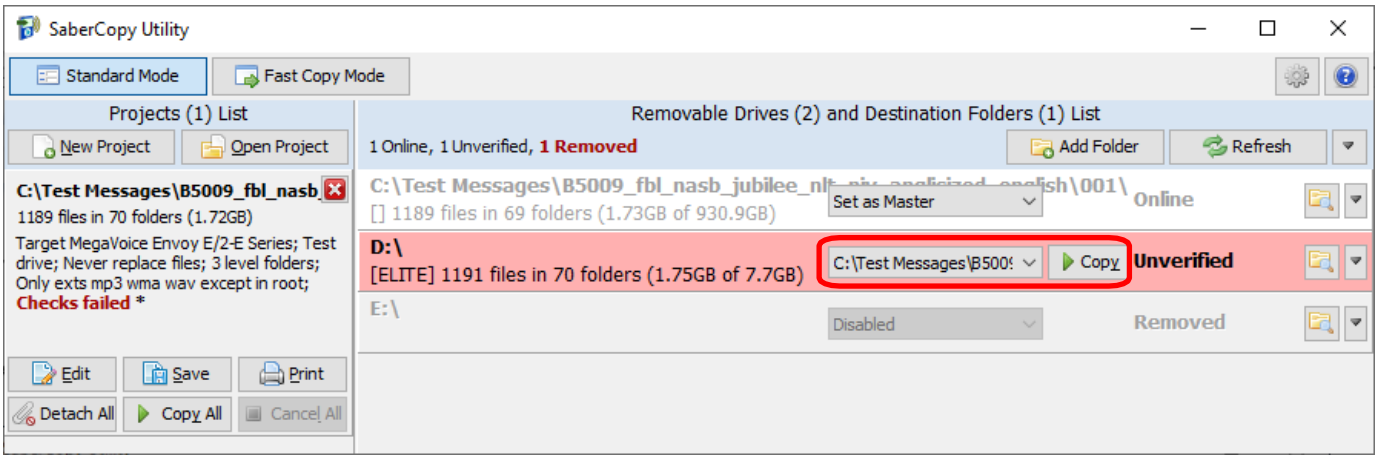
8. Click on “OK” to save the changes and close the project dialog.

Note that **Checks failed** is flagged. This is because the target device was set to Envoy E and the requirement for Channel folder 001 was not satisfied. In this case, we can ignore that violation since we know there already exists a 001 Channel folder on the device. Player rules are only checked against files specified in “Files in project”.



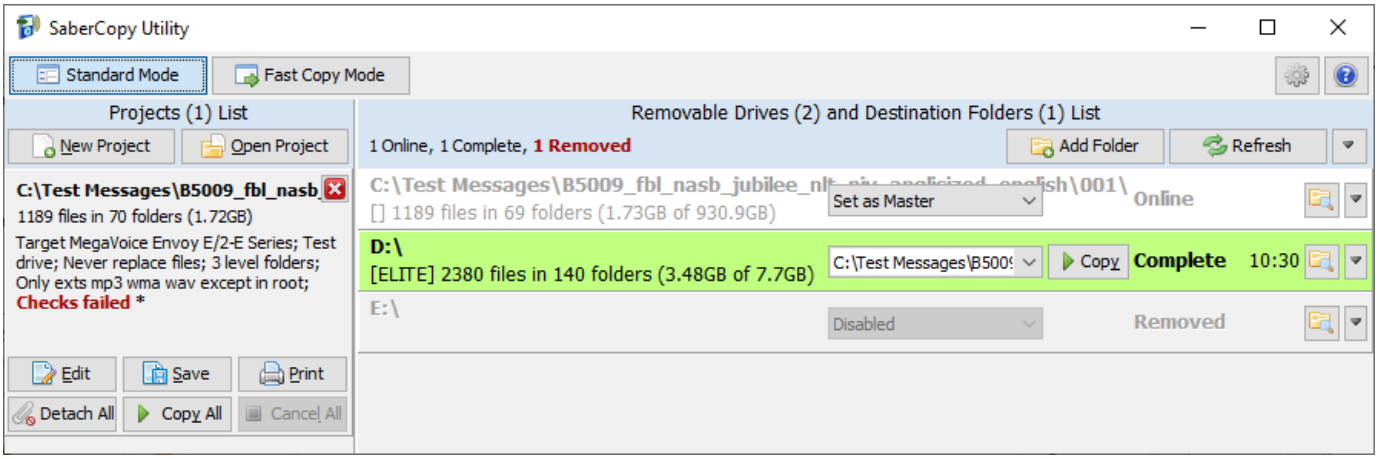
9. Now we assign the project as the source for the player in the drop-down list for the player (circled in red). In this case, we could just as easily use the "Attach All" button. Either way works the same.

10. Click on the "Copy" button (also circled in red) and the process begins.



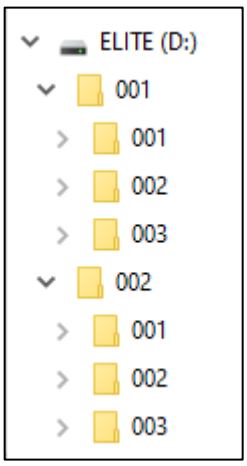
11. Since "No change – leave all existing files" was specified, SaberCopy performs the read/write test and immediately begins the copy phase.

12. Once complete, SaberCopy compares and reports "Complete" because it is smart enough to compare *only* the second Channel folder just added against the folder defined in the project.



SaberCopy's compare feature verifies that all the files in the project that were copied match the files on the target. If "No change" is specified under "Initialize Device", it ignores any other files that were previously on the target player.

13. Looking more closely, we did indeed end up with the desired results! We created a hybrid message by adding a second Channel folder to the player, without having to erase what was already there, and without having to create a temporary folder with the required the 2 Channel folders and load from it.



14. After disconnecting the player and testing it, we see that the player navigates correctly between the two Channel folders and all the other levels as well.

In theory, SaberCopy is able to merge (insert) files or folders into existing folders on the target. The problem is that MegaVoice players will not play them in the desired order. The added files will play **after** pre-existing content, which is not the expected playback order on MV players.

For example, if folder A currently contains files 010, 020 and 030, and you wish to add (insert) files 015 and 025, the MV player will play them in this order: 010, 020, 030, 015, and 025!

As is demonstrated in the above example, SaberCopy can successfully append new files or folders to the end of an existing structure. If the need is to add specific files and/or folders to existing audio on a player requiring insertion within the existing structure, the individual sources for the new structure can be merged by SaberCopy but it still requires deleting the current content on the player first.

For MegaVoice players, this is the only way to guarantee correct navigation and playback order.

For details on aggregating multiple sources into one, see 8: Disk-to-disk copy.

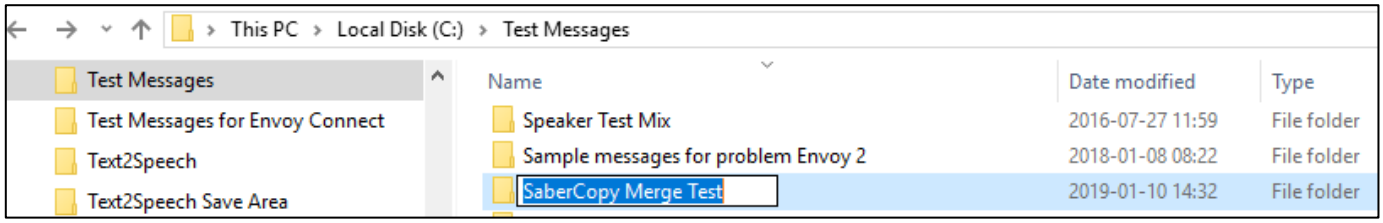
8: Disk-to-disk copy

In this example, we will create a new audio message on disk by merging folders from existing audio messages and multiple sources. This new audio message could be used as a source to populate microSD cards for the new Envoy Elite player. The Elite will support from one to eight Channel folders (4-level message) on microSD.

One of the recent enhancements to SaberCopy is the ability to perform disk-to-disk copies. While it is true that we could do this manually, SaberCopy can…

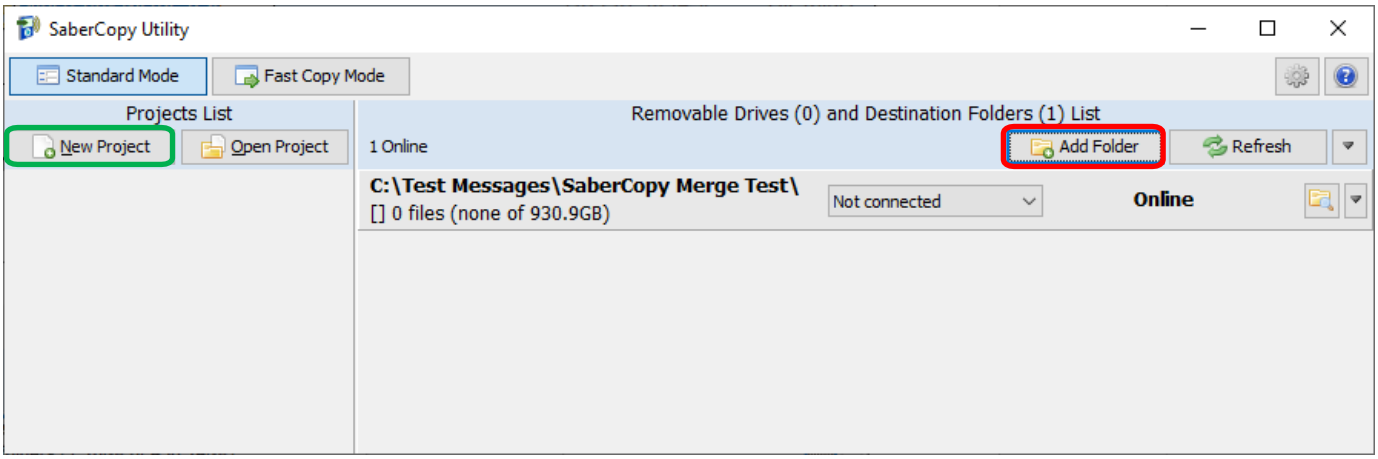
- Do it faster!
- Guarantee that the folders and files are copied in the correct order (very important for navigation and playback)
- Compare the source and target when done to verify they match
- Repeat the process exactly (as long we save the project)

1. First, we create the new folder on the hard disk in our messages folder. We'll call it "SaberCopy Merge Test".



2. Next, we open the new folder in SaberCopy by clicking the "Add Folder" button (circled in red).

3. Then, we create a new project to define the source folders and the project properties. Click on the "New Project" button (circled in green).

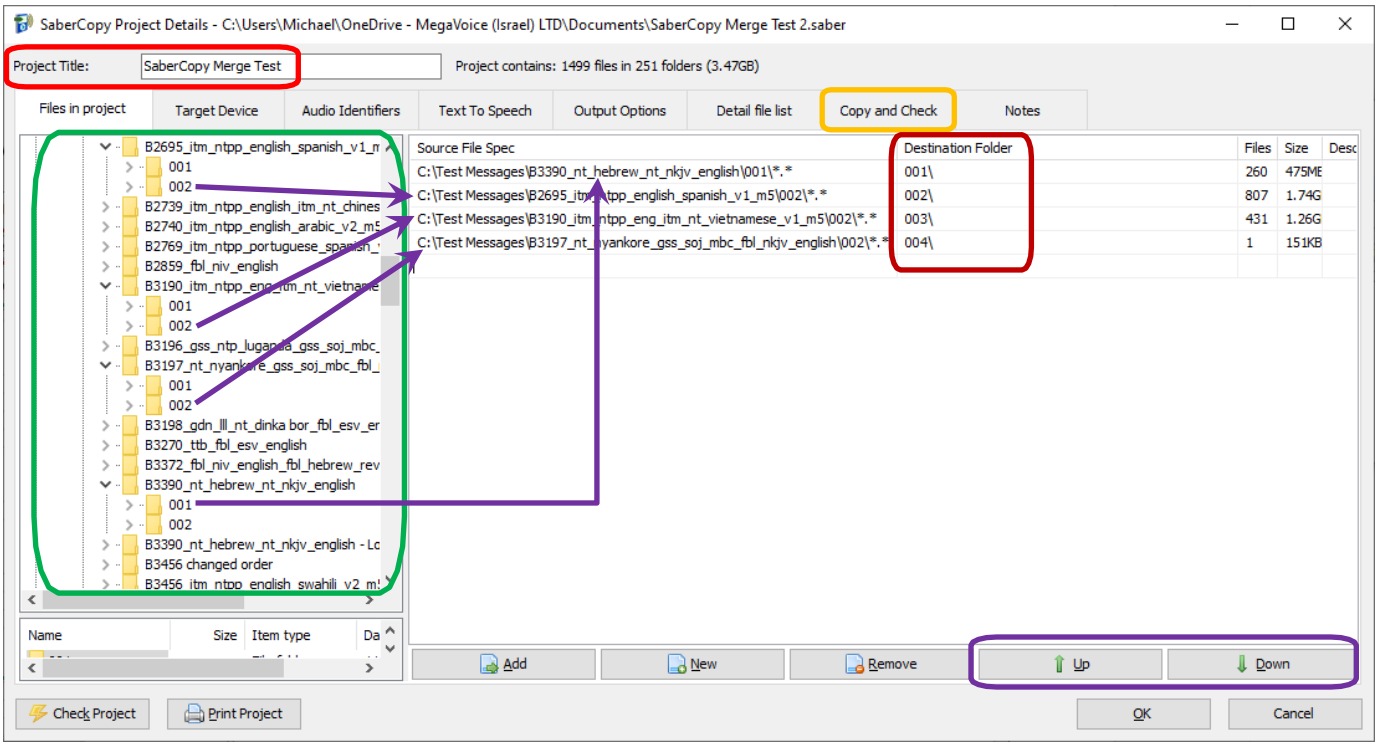


4. Because we want to save this project for re-use, we'll give it a meaningful name (circled in red). When we save the project, the file name will default to the project name, which is best practice.
5. The new audio message we want to create will be comprised of a Channel-level folder from four different existing audio message folders.
6. In the file explorer pane (circled in green), simply navigate to the desired folder, drag it to the right and drop it. By default, SaberCopy duplicates the source folder names in the "Destination Folder" field but we will need to change those since three of them are the same ("002").
7. If, after adding the 4 source folders, they are not in the desired *playback* order (from top to bottom); we can rearrange the order by highlighting a line and clicking on the "Up" or "Down" buttons at the bottom of the screen (circled in purple).

SaberCopy copies folders and files in the order they appear in the Source File Spec, <u>from top to bottom</u> – *not* necessarily the alphabetical order of the Destination Folder names.

8. Once the folders are in the proper order, we change the Destination Folder field for each, from top to bottom, to 001, 002, 003 and 004 respectively (circled in dark red).

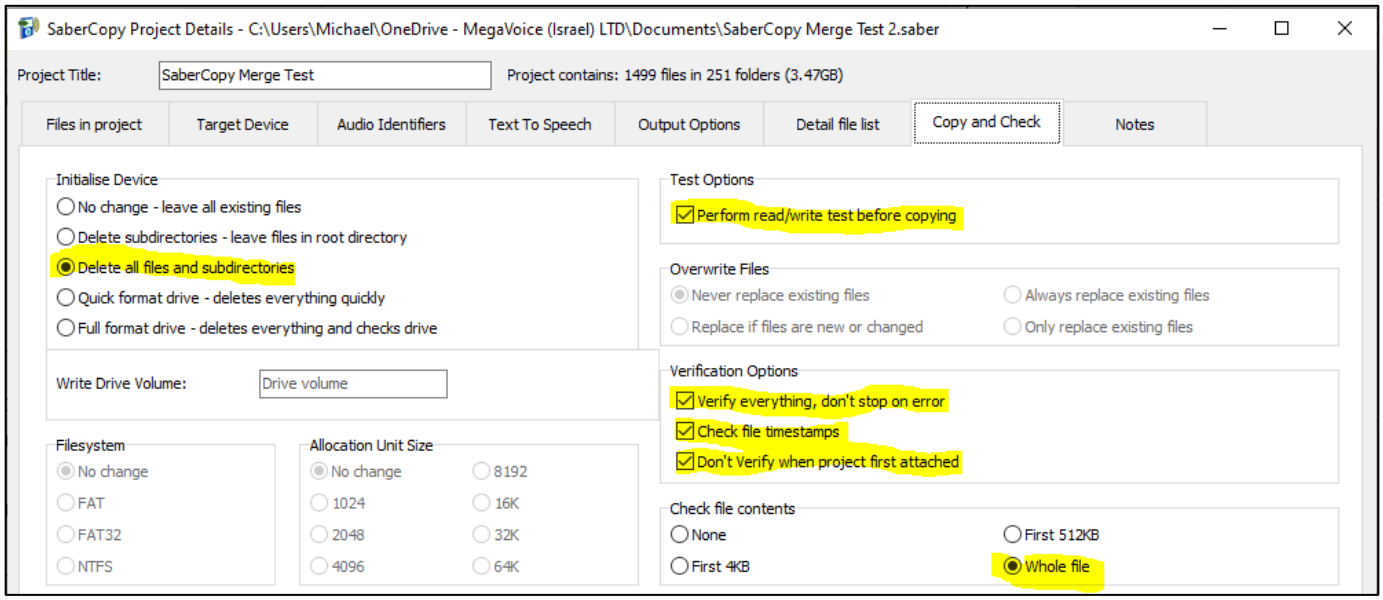
9. Now we need to verify the remaining options. Click on the "Copy and Check" tab (circled in orange).



10. SaberCopy may not default to what we need, so let's review the "Copy and Check" tab.
    - Initialize Device: should be set to "Delete all files and subdirectories" to ensure the target folder is empty. We know it is empty now, but if we want to reuse this project in the future, it would be wise to clear the contents.
    - Perform read/write test before copying: is probably not necessary but it won't hurt and it is fast.
    - Verification Options: all three should be checked.
    - Check file contents: can be set also to verify the copy (always a good idea to do this).

11. Nothing else should be necessary. Click "OK" to close the project details dialog.

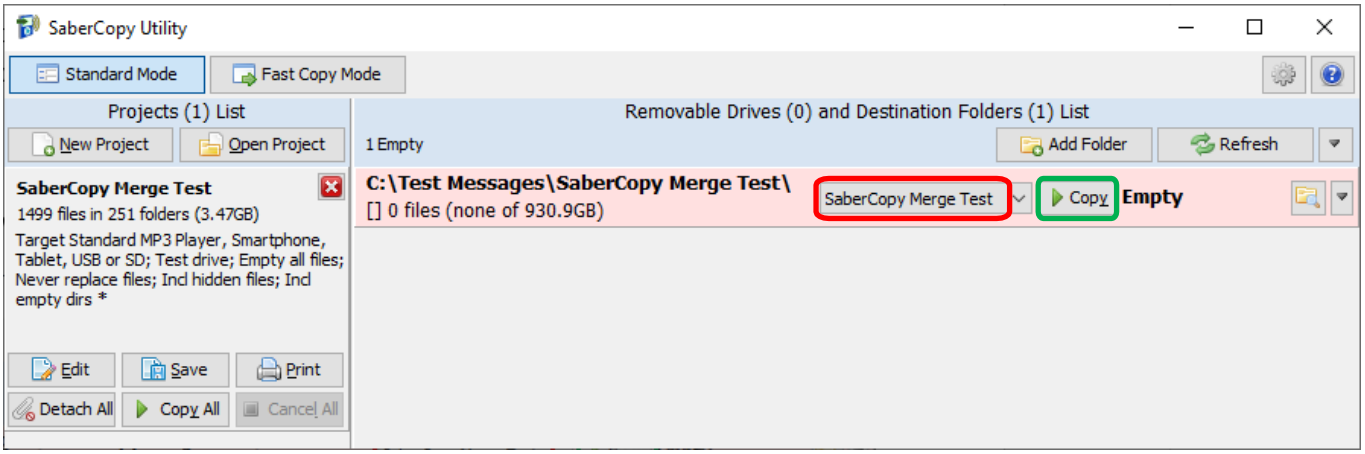
12. Go ahead and "Save" the project so that it won't be lost.



13. Now, we assign the folder we opened to the project in the drop-down list (circled in red) or click "Attach All". Note that SaberCopy reports that the folder's status is "Empty".

14. Click on the "Copy" button (circled in green) to begin the copy process.

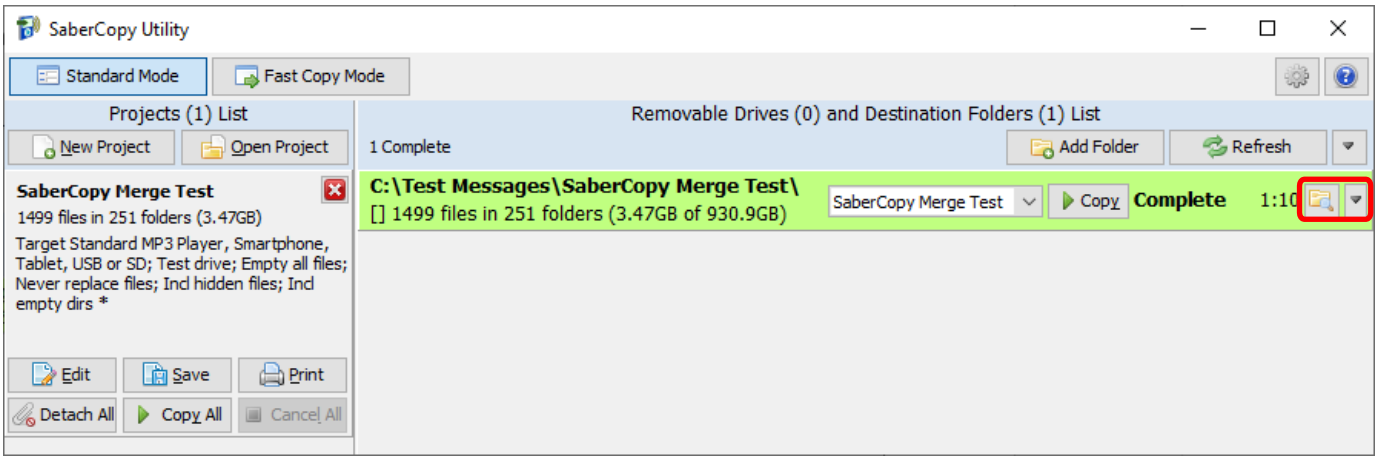
15. Because this is a disk-to-disk copy, it will be faster than typically loading a player.



16. When finished, SaberCopy performs the compare, and the line turns **green** to verify the target matches the source.

17. We can review the contents of our new message by clicking on the File Explorer button (circled in red).

18. This new message can now be used as a source for loading other players, like the Companion or E Series, that can support multiple Channel folders.



9: File verification

As noted in previous examples, SaberCopy provides several file verification options. While not very likely, it is indeed possible that files can be successfully copied but some of the contents of one or more of the files could be corrupted.

This is usually due to a very brief electrical "blip" between the computer and the player during the copy process. The interruption may not be significant enough to cause the file copy itself to fail but some of the data being transferred at that moment could become "scrambled".

Some of the causes could possibly be:

- If using a hub…
  - A problem with the USB cable that connects the computer to the hub
  - A problem with the hub itself or one of the ports on the hub
  - A problem with the power source the hub is plugged into
  - A problem with the power supply to the hub or
  - Erratic power supply to the hub
- A problem with an individual USB cable connecting to the player
- A problem with certain sectors on the memory in the player
- A problem with the USB port on the computer
- A problem with the player's micro-USB connector

Therefore, it is always a good idea to verify the condition of the files *after* being copied, and SaberCopy can help with that. Otherwise, you would never know if there were a corruption until much later.

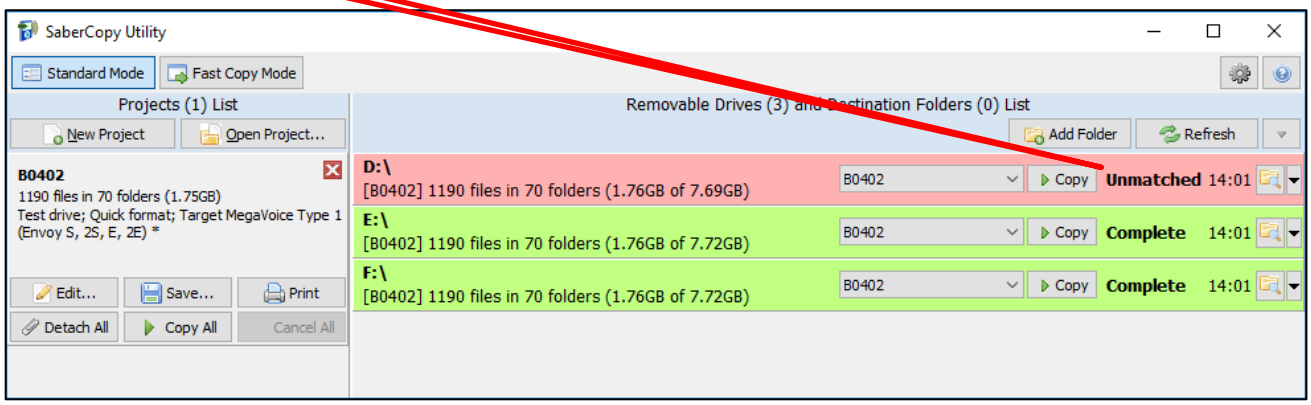
MegaVoice has encountered this phenomenon when programming batches of players concurrently.
The types of problems we discovered were:

- File truncation
  - Playback did not begin from the very beginning
  - Playback worked but suddenly terminated before the actual end
- File would not play at all on the player
- File played but was distorted or garbled

To be clear, this problem is *not* isolated to using SaberCopy. MegaVoice has encountered the same problem when using other software and it could just as easily happen using copy/paste or drag/drop from Windows File Explorer.

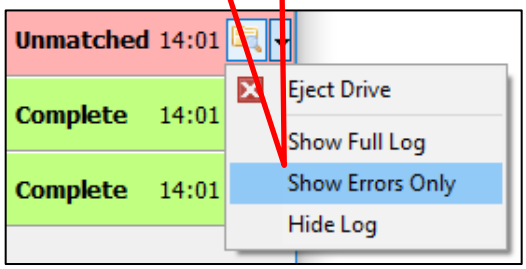
Here three Envoy S players were loaded in a batch together. The project was set to check the first 512K of each file copied to all players when the copy completed.

We see that one player of the three failed the verification. The line is highlighted in red, and the status message is set to "Unmatched".



SaberCopy logs all activity regarding every player connected. The log persists if the player remains connected to the computer. To view the log, click on the drop list menu button (▾) at the very end of the player's line. It is also possible to write the log to each player. See here for details.

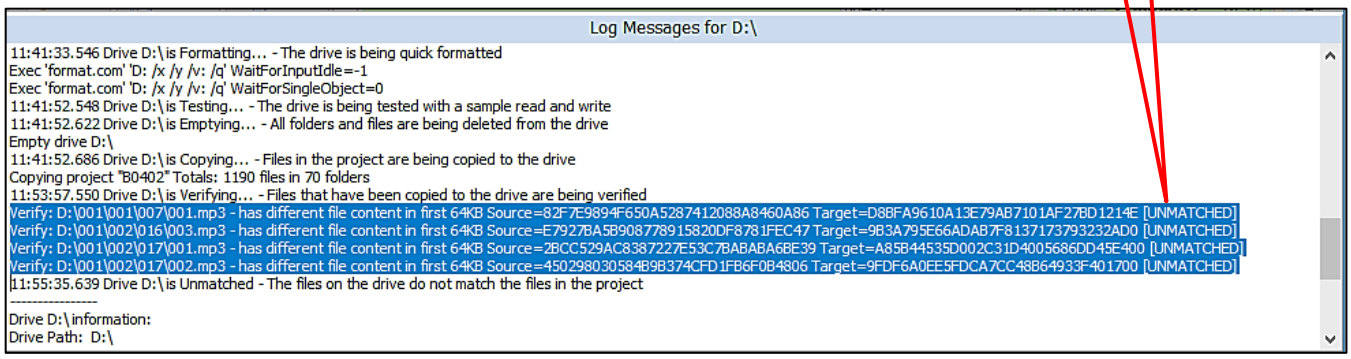
You will be presented with a small menu like that below. You can choose to view the entire log or just the errors. Because there are many messages logged, we just want to see the condensed version with the errors. Select "Show Errors Only".



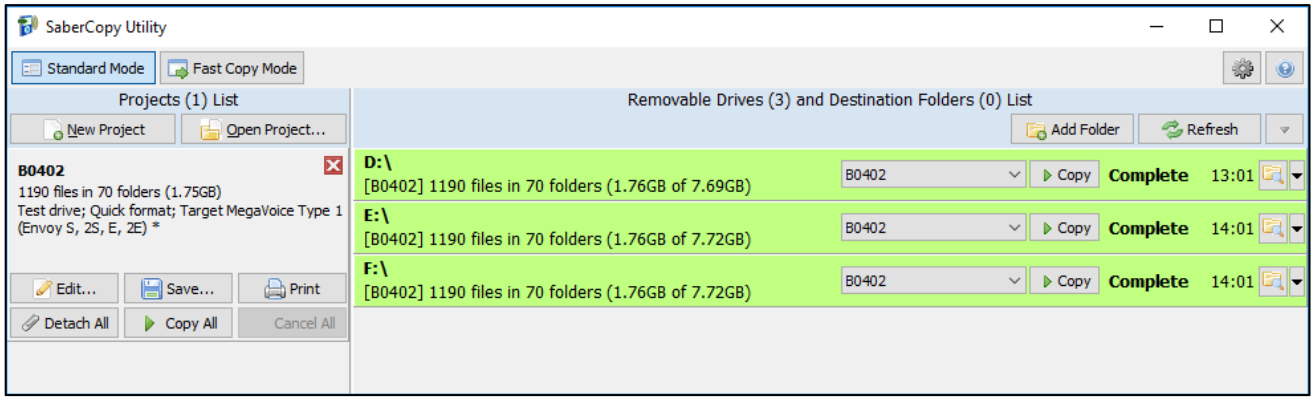
At that point, a window will be opened at the very bottom of the main screen titled “Log Messages for x” where x is the target device (drive letter of the player in question, full path of folder, etc.).

If we scroll to the bottom, we see there are four error messages logged during verification. The checksum for four different files do not match their source counterparts so they are flagged “UNMATCHED”. The message identifies each file specifically identifying it by full path.

<u>This is an actual occurrence!</u> The players used are quite old and some of them have memory and/or USB connectors that may be going bad. Occasionally this can happen.



When this particular type of error occurs, reloading the player a second time most always resolves the problem. In this case it did!

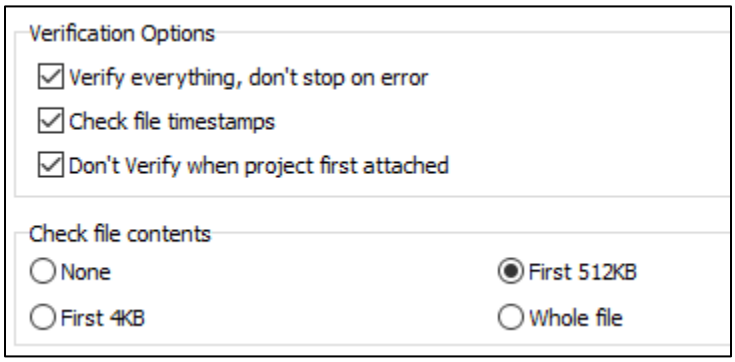


If a second load does not resolve the problem, we may want to inspect the flagged files in the <u>source</u> audio. It could be the corruption is “slight” and the file will still play properly with no audible problem. The fact remains, however, that the copied file does not perfectly match its source and the problem should be investigated.

To hide the log window when finished reviewing the messages, you can either open the drop-down menu used to display the log and choose “Hide Log” or drag the top border of the Log Messages window to the very bottom of the screen.

The window will also close automatically when you disconnect that player from the computer.

Let's review the verification options that SaberCopy offers. They are on the "Copy and Check" tab of the project:



Please note that regardless of the options above, SaberCopy will always perform a rudimentary verification by comparing the file sizes and number of folders and files.

Verify everything, don't stop on error: If not checked, SaberCopy will halt the verification once an error is encountered.

Check file timestamps: If checked, SaberCopy will make sure that the file timestamps on the target match those of the source files within 2 seconds.

Don't verify when project first attached: By default, SaberCopy will perform the verification defined in the project when a player is attached to a project (*before* copy) and *after* the copy process occurs. If you don't want the pre-verification to take place, check this option.

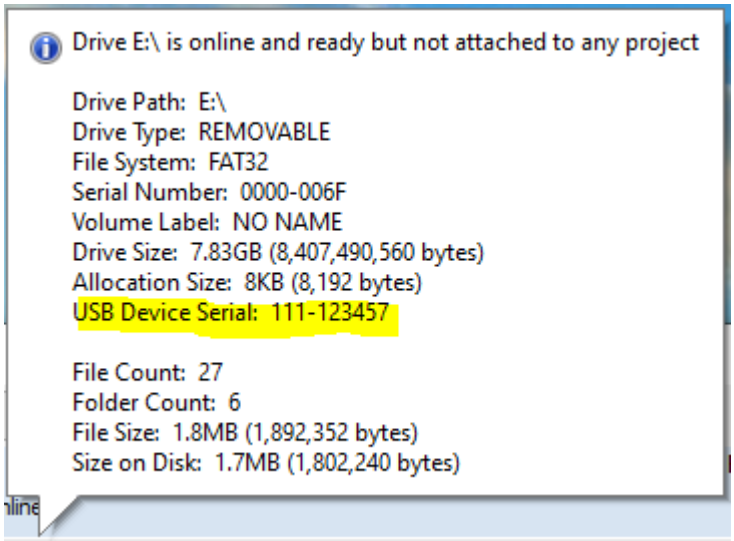
Check file contents: You may choose None, First 4KB, First 512KB or Whole file. The larger the sampling size the longer the verification will take. For peace of mind, it is worth it to take a little extra time to know for sure that the files copied match the source. See Hash method for verification for details on the various checksum methods available for file comparison.

10: Device serial number display

New to versions 4.8.x and later! For players like the Envoy Connect that have USB serial numbers defined, SaberCopy will now display that for you.

This option is controlled by a setting on the Application Settings screen.

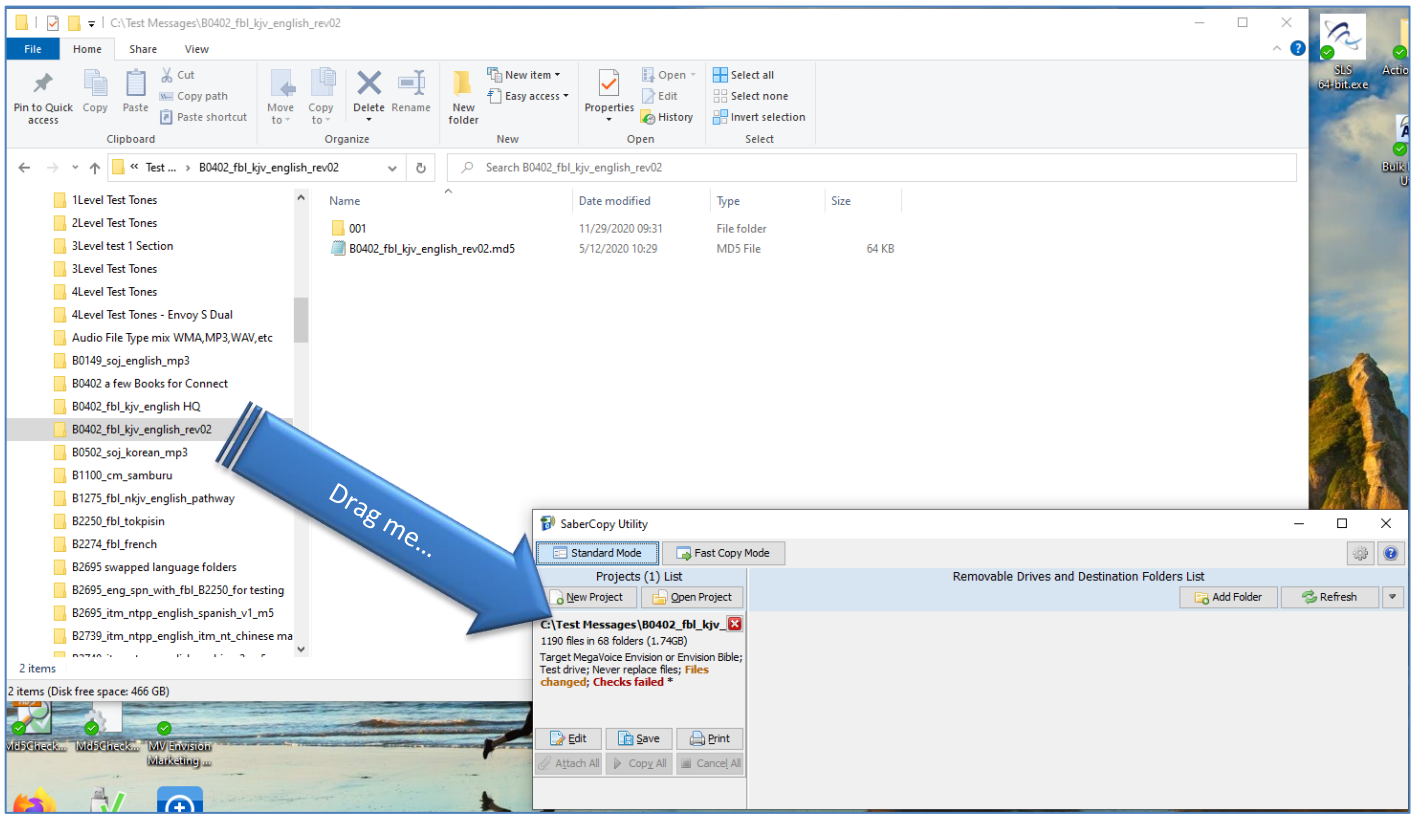
When you mouse-over a connected player on the Main Screen, the device details are displayed in a pop-up balloon. The USB device serial number, if defined, appears along with other information.



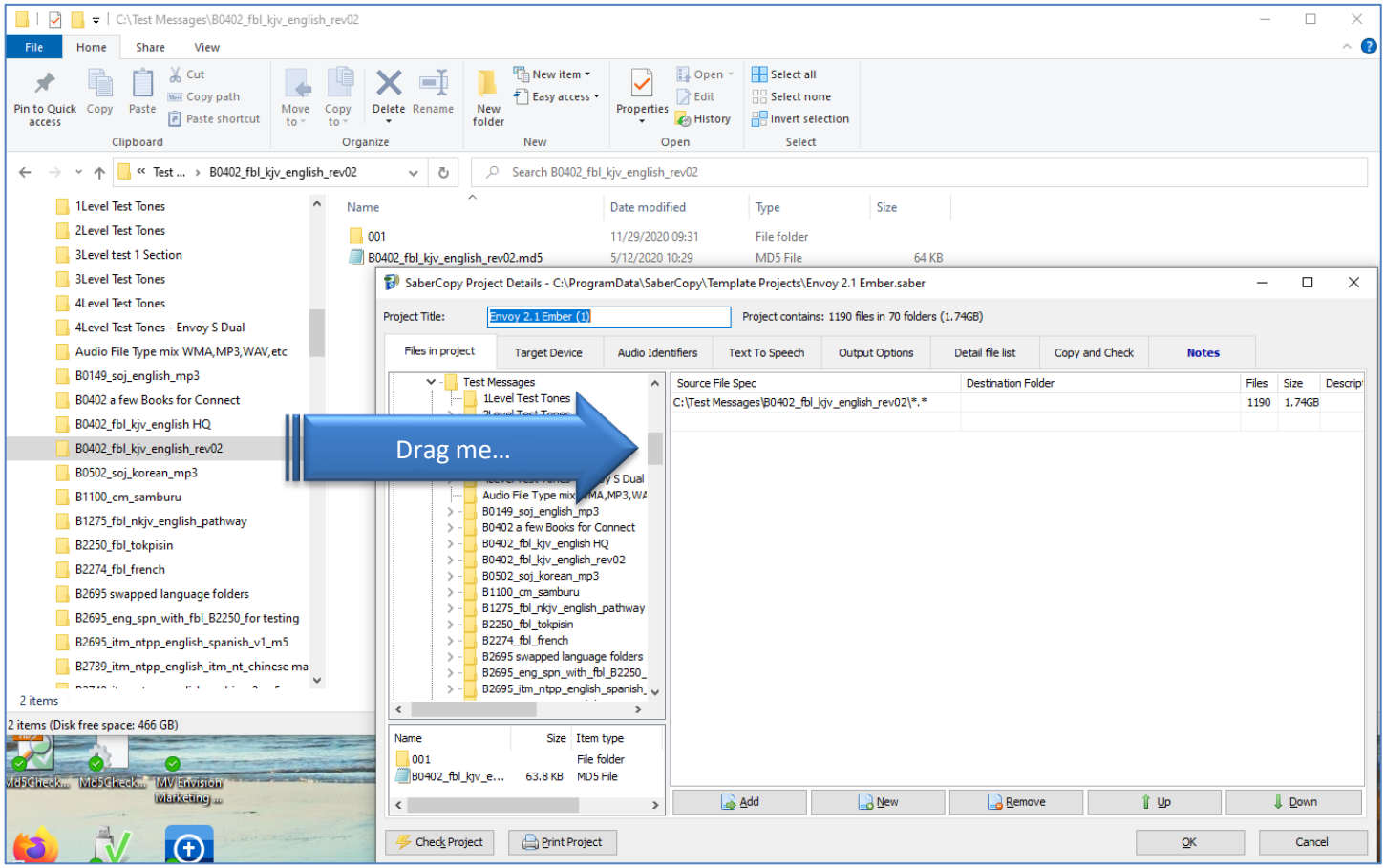
11: Drag and Drop/Multi-Select

New in v4.9.x and later! Two new drag and drop features have been added.

Dragging a folder (or several) from a Windows Explorer Window onto the Main Screen will automatically create a New Project with the folder name as the project name and with the selected folder(s) as the file specification.



Dragging an audio folder from Windows File Explorer onto the “Files in Project” tab of an open project will populate the Source File Spec the same as if you navigate to the source from within SaberCopy. When you have your audio folder already available in File Explorer this method is faster than navigating from within SaberCopy.



On the “Files in project” tab, SaberCopy provides two features to make it easy for you to select Folders and Files for your project.

- *Drag-and-drop*
- *Multi-select*

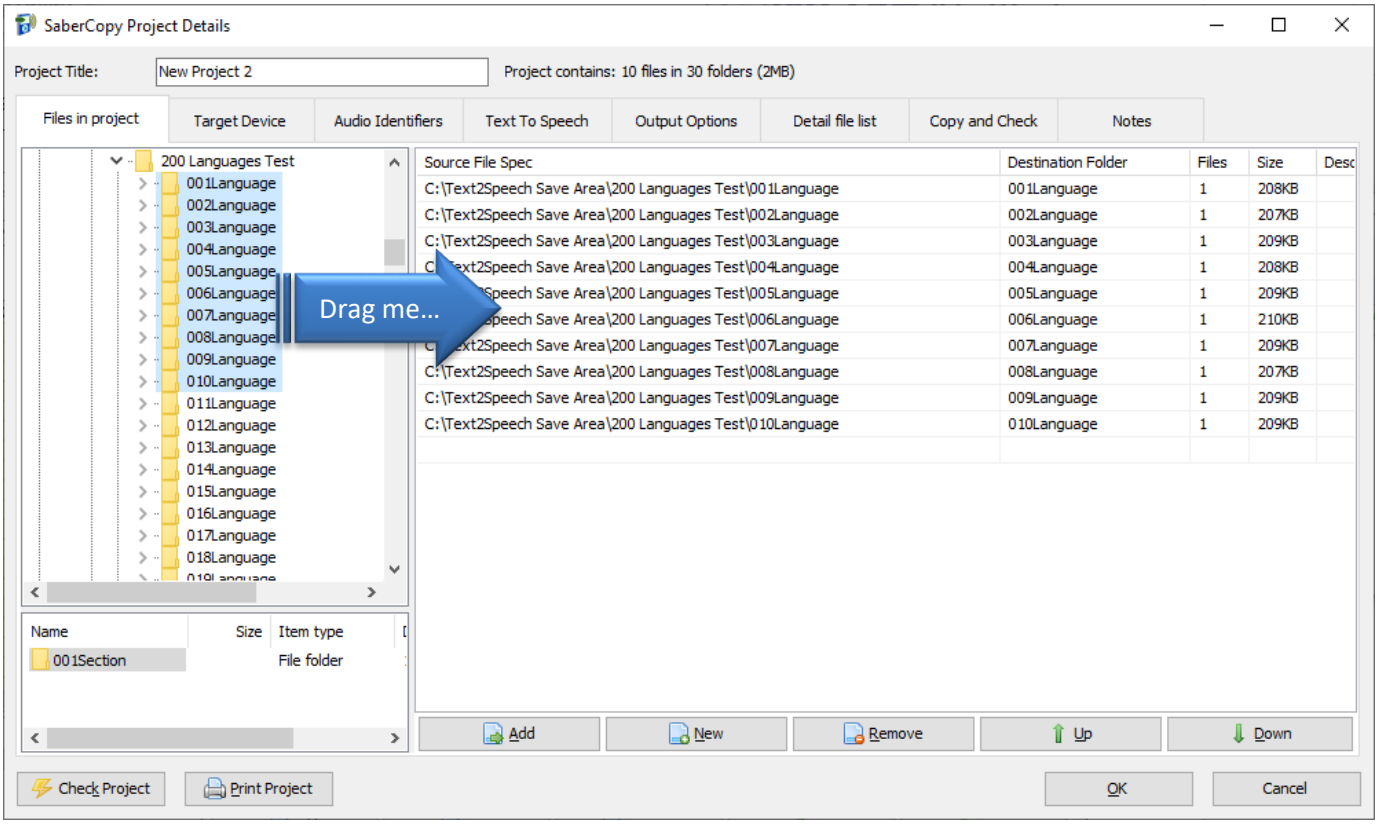
In the File Explorer pane on both the top left and bottom left, you can highlight multiple folders (or files), “drag” the entire group to the Source File Spec pane on the right and “drop” them. SaberCopy will order them correctly, regardless of the order they were selected.

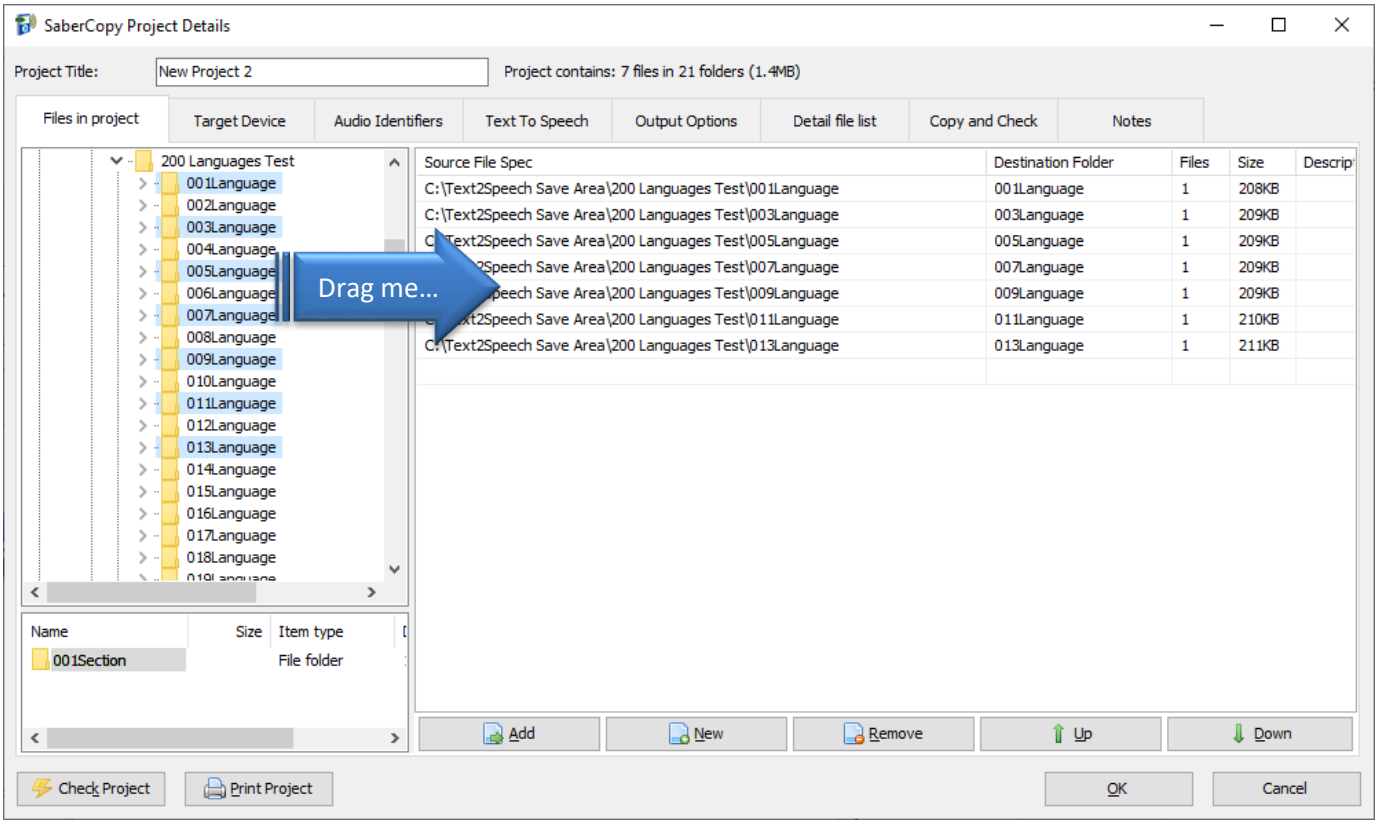
With multi-select you can select folders (or files) using Shift+click (for a continuous group) or Ctrl+click (for a non-continuous group).

These are established selection options available in Windows for many years. See tutorial on this topic here.

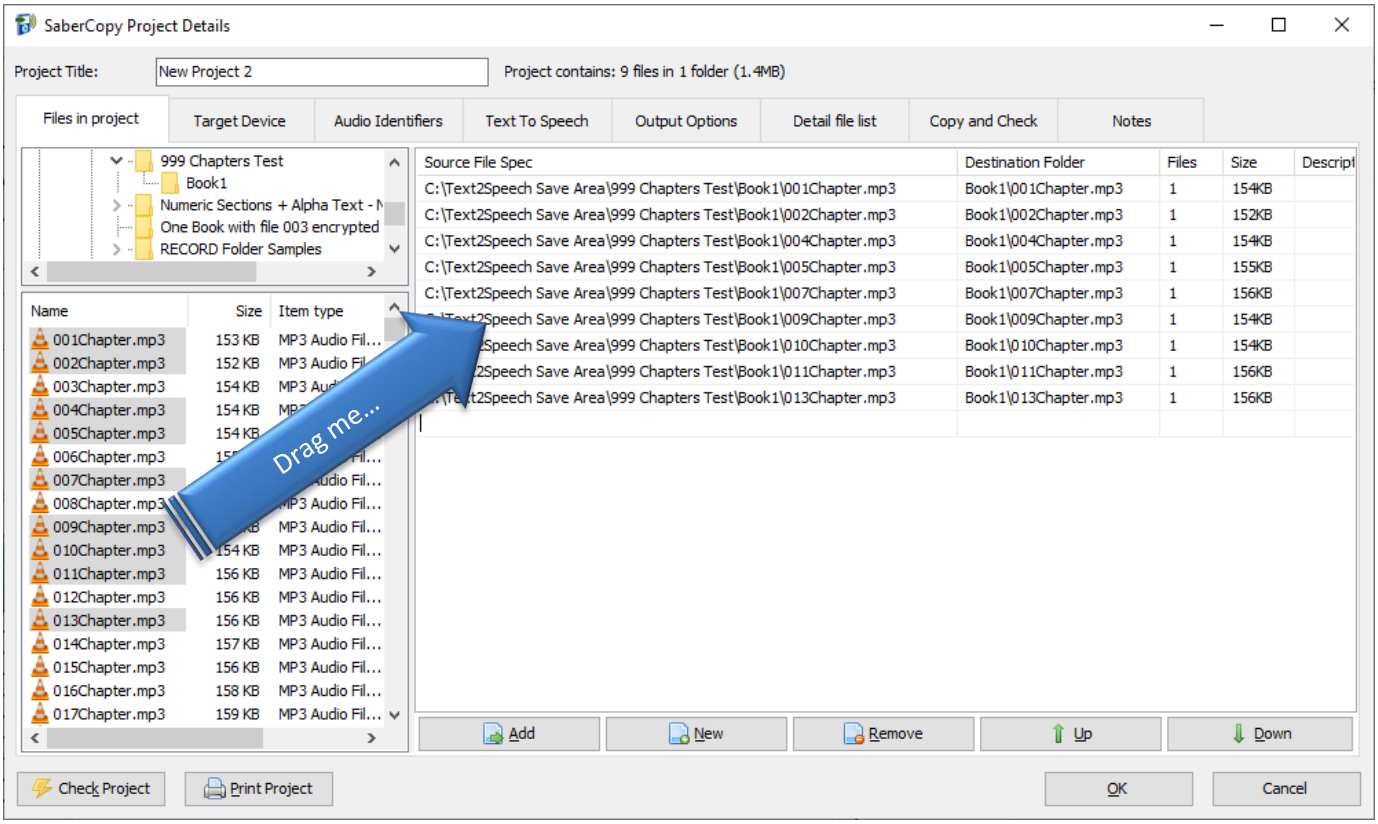
See examples on the following pages…

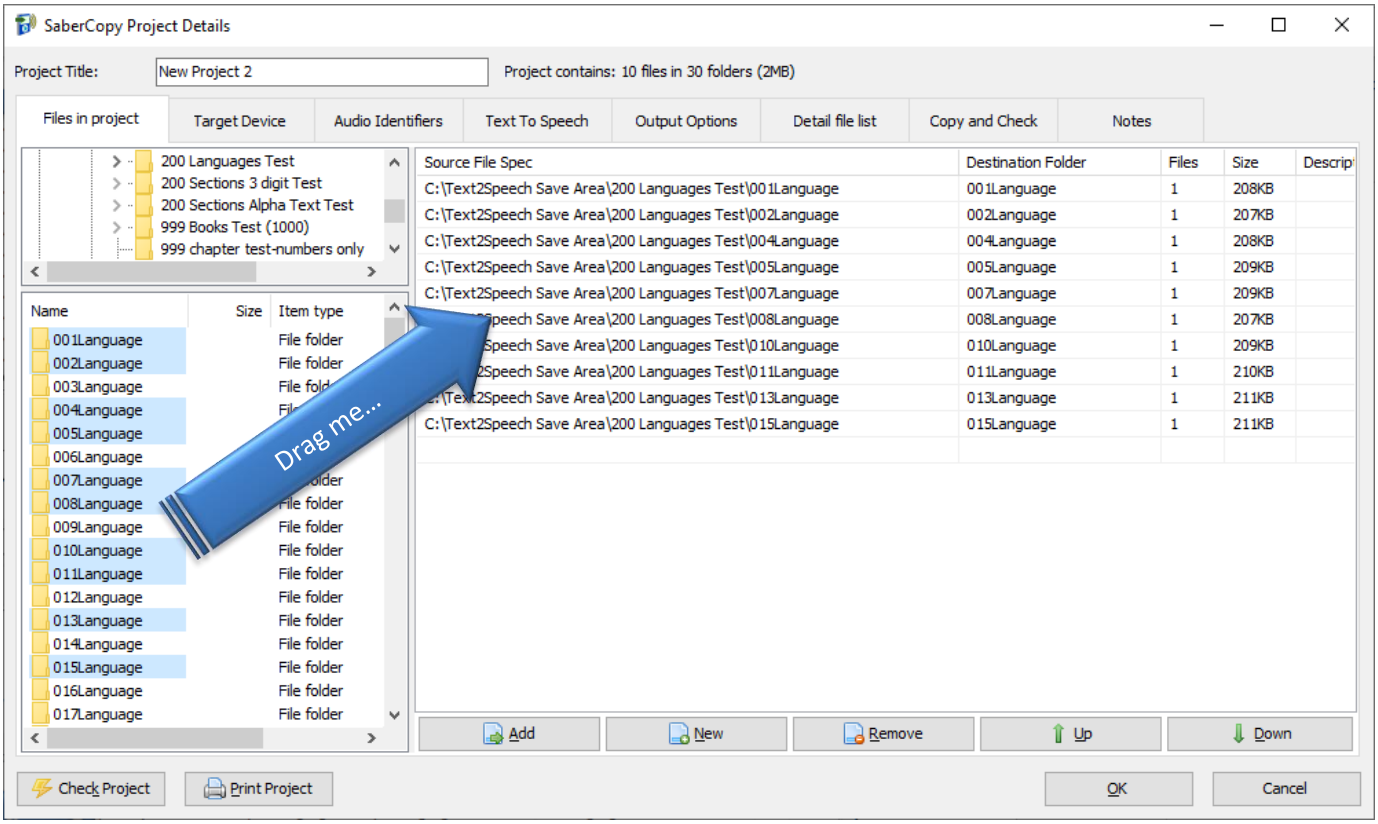
In the two examples below, a “group” of Channel folders was selected and then the group was “dragged” to the rightmost pane and “dropped”. This is much easier than dragging them one at a time.



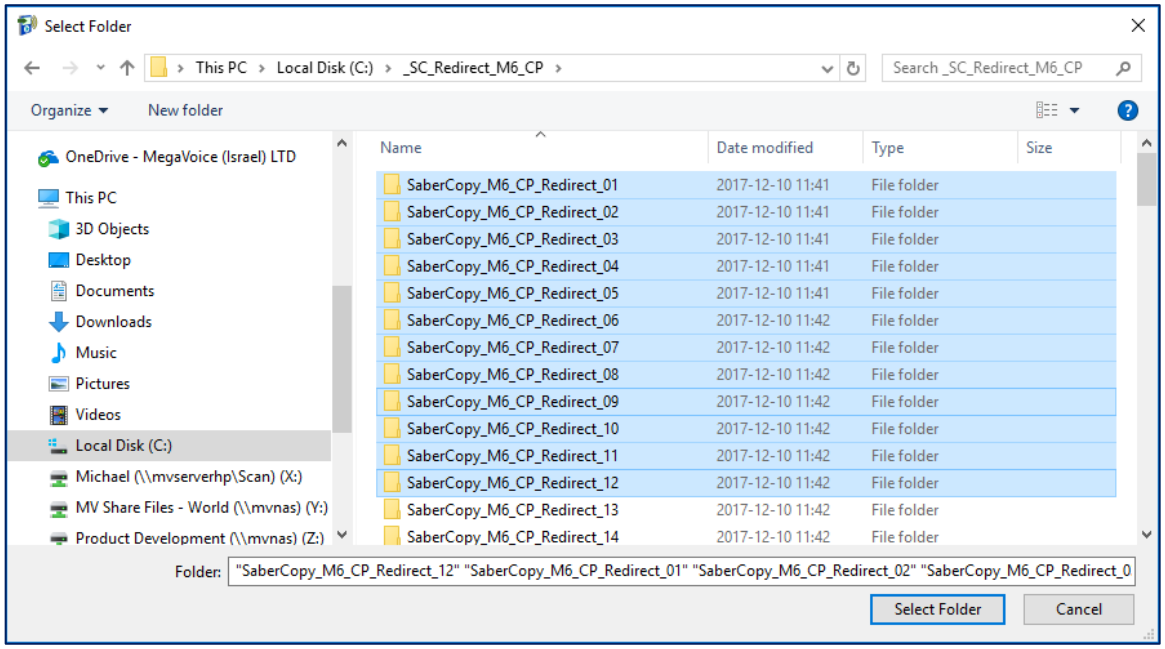


You also have the same option from the File Explorer window in the bottom left pane. This applies to both folders and files. In the examples below, the “group” was selected and then “dragged” to the right and “dropped”.





Multi-select also works from the “Add Folder” selection dialog!



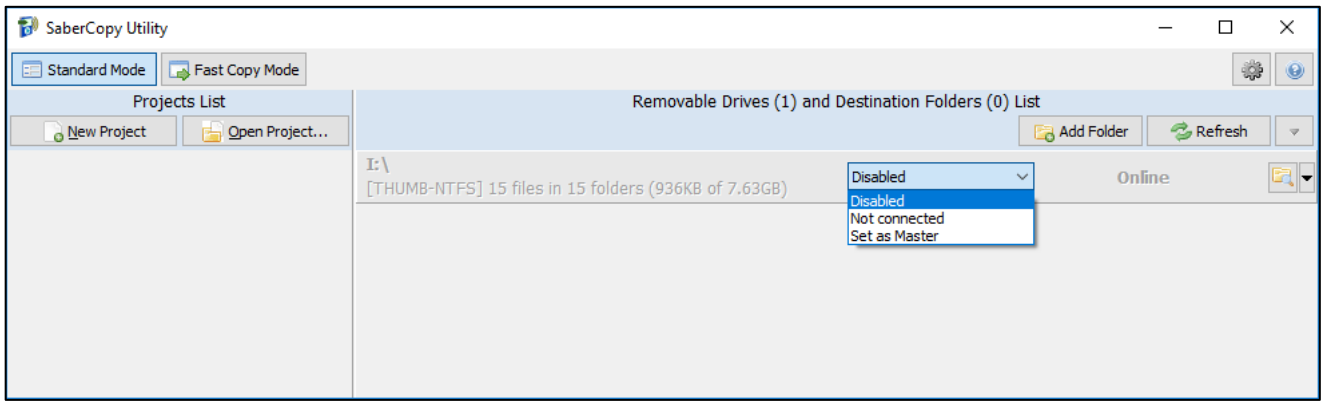
12: Teaching SaberCopy to ignore devices

If you have external hard drives, USB thumb drives or other data devices that are usually connected to your computer, you can "teach" SaberCopy to always ignore those devices when the program is active and thus prevent accidental access when loading players.

Here is how:

1. Start SaberCopy with *only* those devices connected to your computer (i.e., no other players or devices).

2. In the drop-list for each of those devices, change the setting to "Disabled".



3. Close SaberCopy and restart it. The drives still show in the device list, but they are grayed out and set to "Disabled". If these devices remain connected to the same USB ports, SaberCopy will remember them as "Disabled" and not touch them whenever players/devices are attached to a project.

4. If you also use the option to hide disabled and absent drives, the drive will be "hidden" the next time SaberCopy is started.

5. If you detach the device and later reconnect it, you will need to teach SaberCopy again to ignore it.

13: Comparing the contents of 2 players

What if we have two players that we *think* have identical contents but are not sure? The folder and file counts match, as well as the data size, but that is not always enough to prove it.

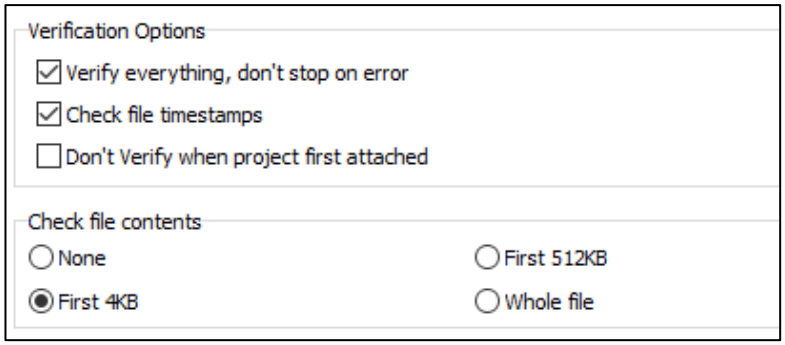
SaberCopy can help with that, and it is very simple to do!

1. Connect both players to the computer.

2. Change one of them to be the Master (Set as Master) in the drop list of the player line. If you are more confident about one of them, choose that one as your "Master"; otherwise, it really doesn't matter which.

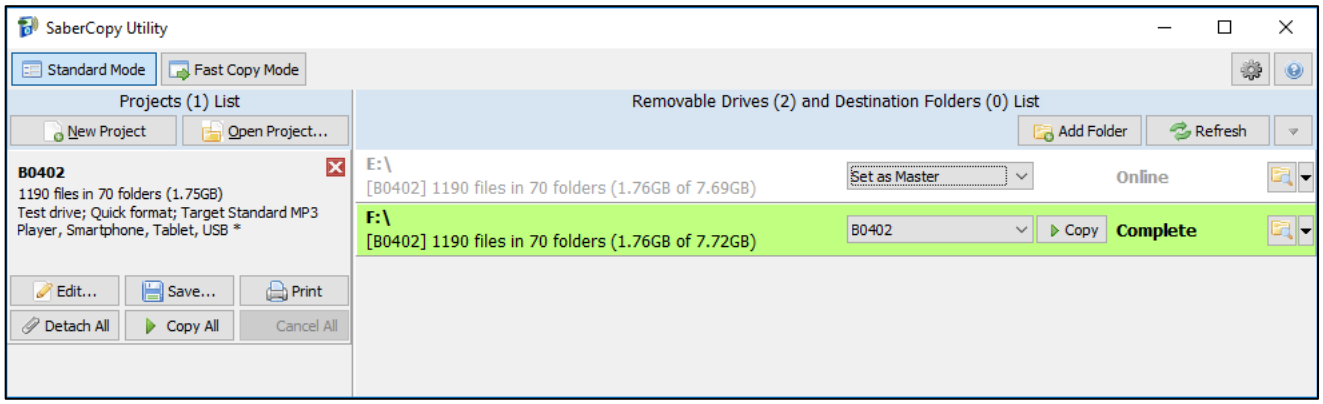
3. Edit the project that is created.

4. On the "Copy and Check" tab, make sure **Verification Options** are set <u>exactly</u> as below. Select a "Check File Contents" value of at least 4K. Close the dialog with OK.



5. Click the "Attach All" button. SaberCopy will immediately begin to compare.

6. Once the pre-verification finishes it will either show as "Complete" (green) if they match or "Unmatched" (red) if not.



7. If the verification showed "Unmatched" and you want them to be identical, you can execute the copy; otherwise, the task is finished.

14: Flattening a folder structure

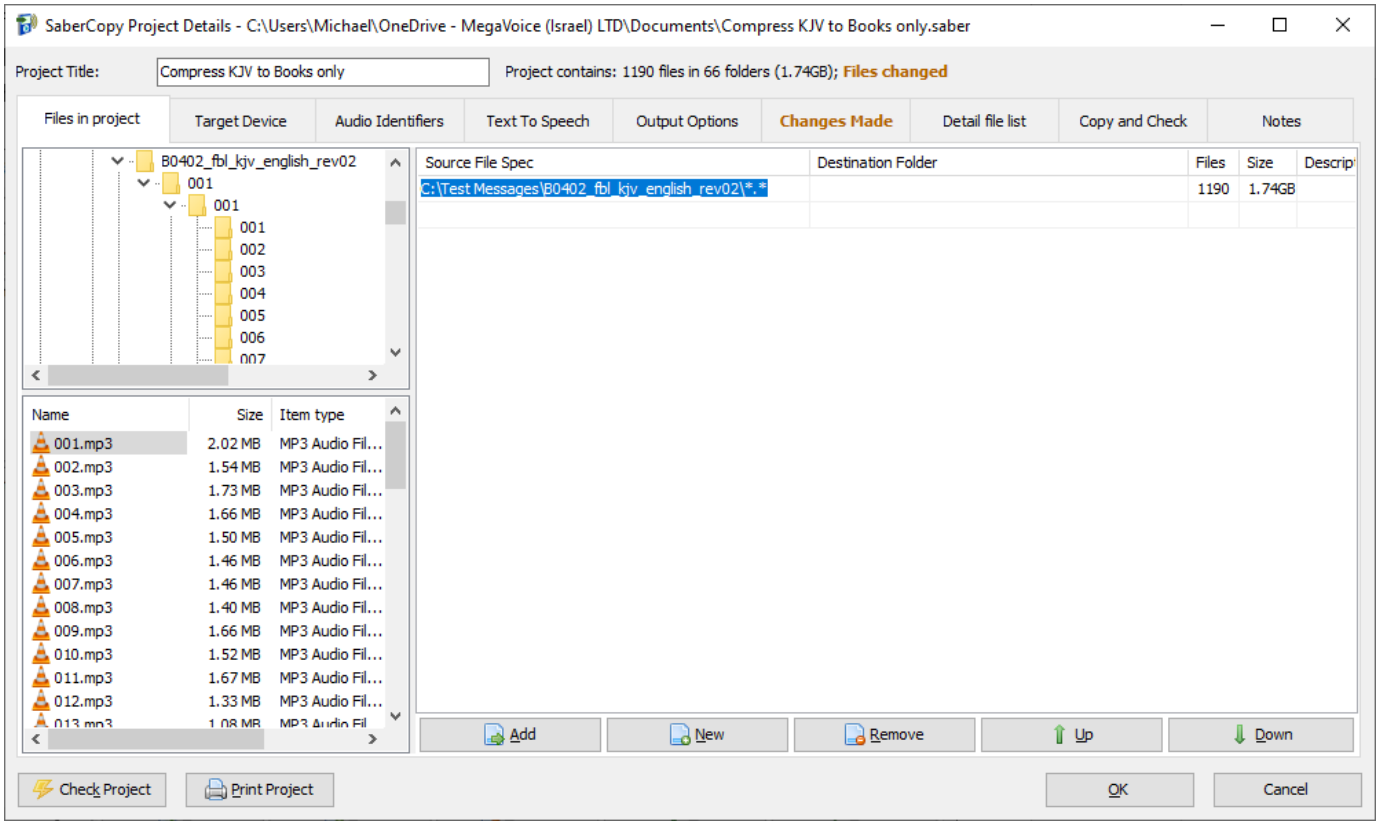
Over the years, almost all MegaVoice players required a 4-level audio folder structure. This means there are three folder levels along with the file level. Most of the audio MegaVoice has produced is in this structure.

But now MegaVoice has several players, like the Envoy Connect and Pathway, which require a 2-level structure. That is one folder level (Book) with one file level (Chapters).

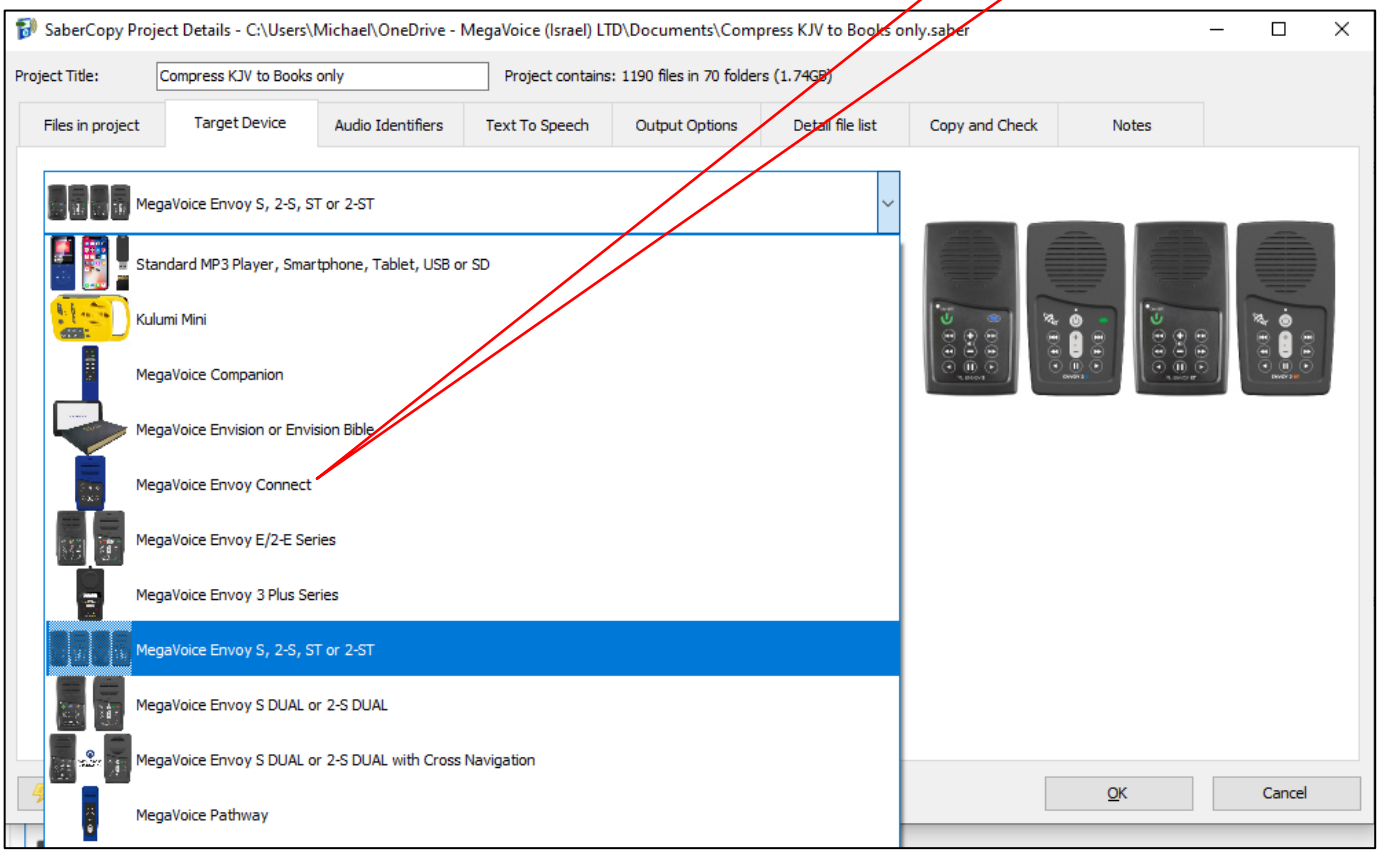
So, what do you do when you have existing 4-level audio structures and would like to use them on a player like the Connect that requires a 2-level structure?

Typically, you would have to restructure the audio *manually* and make a second copy of it somewhere on your hard drive. However, SaberCopy can do that for you *automatically* and you won't have to change anything in your original audio structure! Here is how:

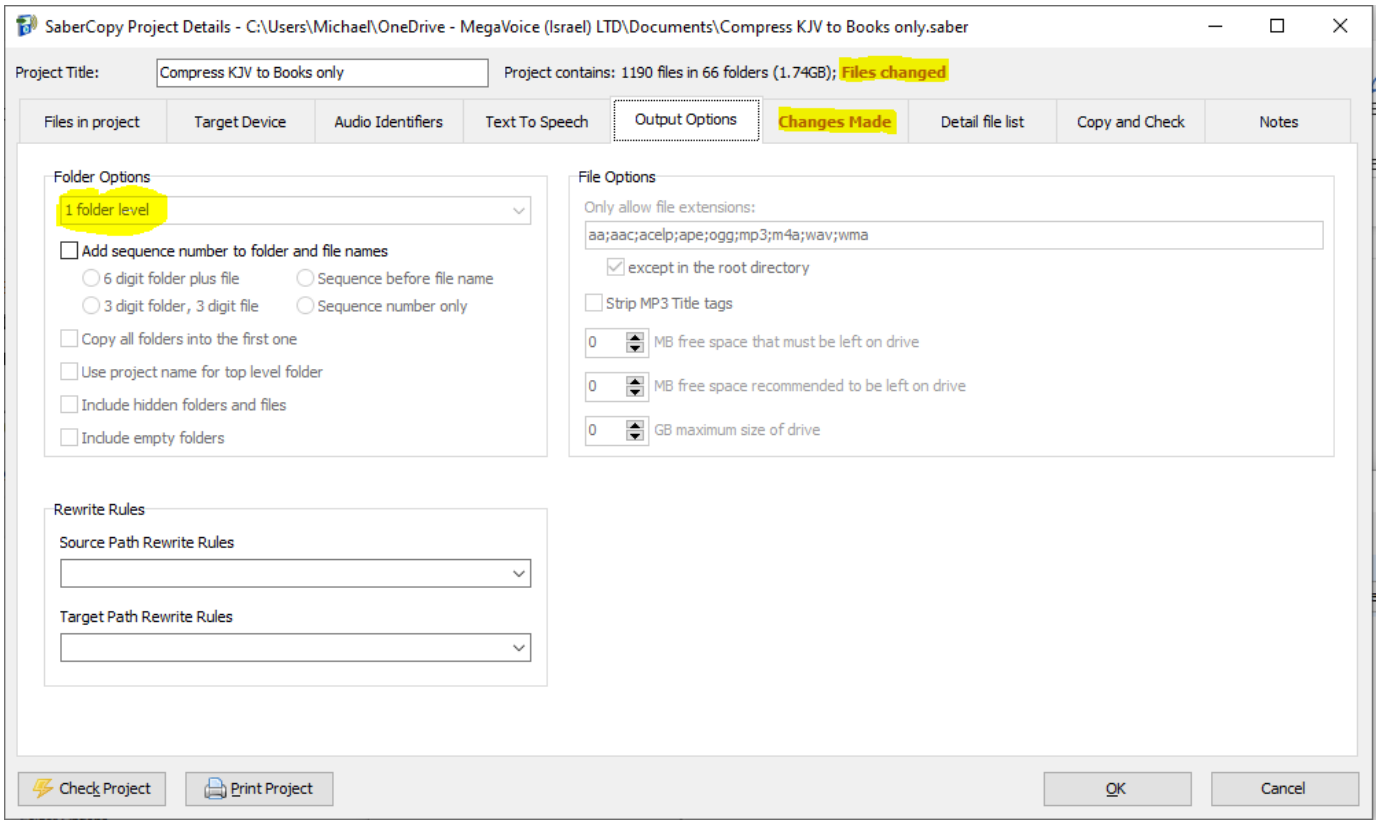
1. Open a new project. On the "Files in project" tab, navigate to audio folder you want to compress. For our example, we will use the full KJV Bible. It is a typical 4-level structure with a single Channel folder containing three Section folders. Each Section folder contains the Books for that Section. Within each Book folder are the relevant audio files (chapters). In summary, 3 folder levels with 1 level of files.



2. Now go to the Output Options tab. The current target output device is Envoy S/2S/ST/2ST, which of course supports the 4-level structure. Open the drop list and change that setting to "MegaVoice Envoy Connect".

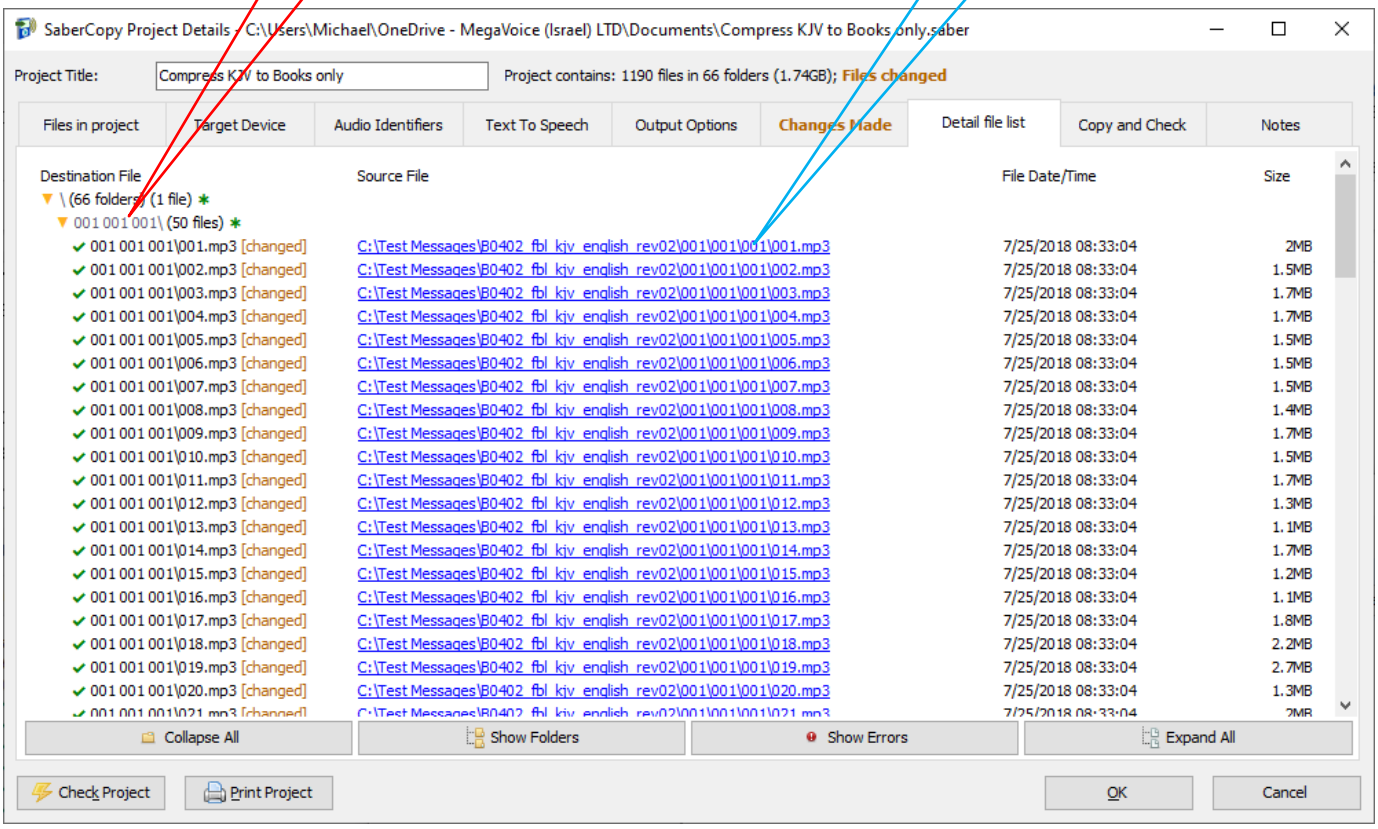


3. Note that the Folder Options automatically changed to “1 folder level”. Note also that the notification Files changed appears at the top of the screen along with the Changes Made tab. This is because SaberCopy automatically compressed the 3 folder levels down to 1 folder level. As a result, all the relevant rules for the Connect have been satisfied.

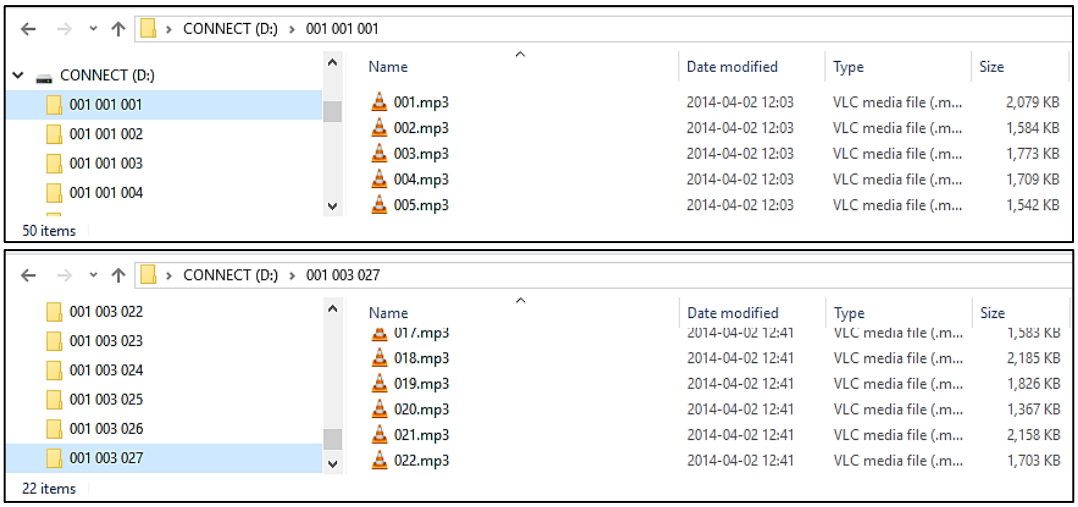


4. To see what SaberCopy will do, go to the "Detail file list" tab. Here you can preview the output to the player before the actual copy occurs. In this dialog, each file in the selected source with its full path is displayed and how it will appear on the target player. You can see how SaberCopy will compress the folders.

   SaberCopy generates the new folder name from the original names so you can still identify it.
   The new name "\001 001 001\" (1 level) was derived from the original "\001\001\001\" folder (3 levels).



5. After making appropriate settings on the "Copy and Check" tab, we can attach the player and execute the copy process. A quick view of the target player contents shows SaberCopy delivered what it promised! There is a single level of folders with each containing the relevant audio files. It plays on the Connect!

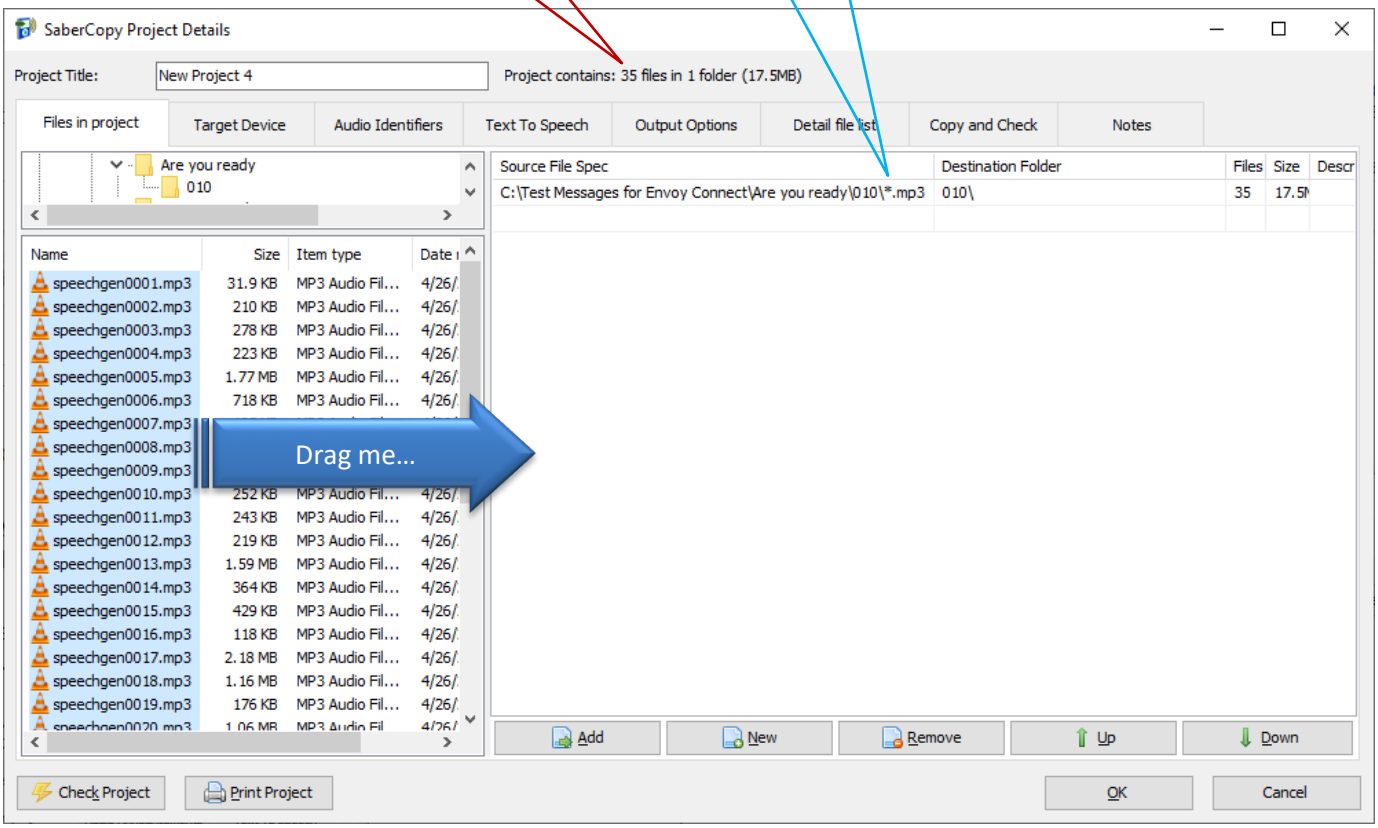


15: The wildcard feature for file selection

New to versions 4.3.x and later! A new feature has been added to the “Files in project” tab when selecting files.

When you select files that have common text at the beginning of each file, SaberCopy will attempt to reduce multiple file entries to a single entry using the “*” wildcard.

In the example below, 35 files from one folder have been selected. When highlighted and dragged to the right side of the dialog, SaberCopy condenses them to a single entry of “*.mp3” (instead of 35 separate entries).



16: Overcoming drive letter limitation with mapped folders

Using "mapped folders" (mount points) with SaberCopy is *briefly* outlined below to make our users aware.

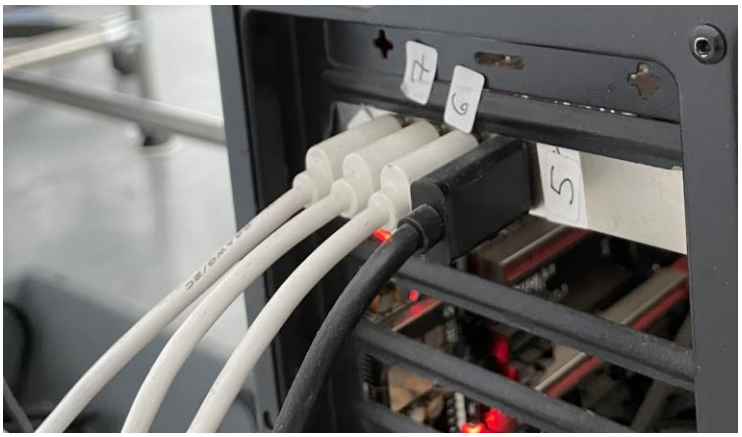
When you connect players to a computer in the conventional way, Windows automatically assigns the device a "drive letter". On most computers, A, B, C and D are typically already reserved. There could also be other drive letters reserved per the installed hardware on the computer as well as mapped network drives which also require a drive letter assignment.

In the *best case*, there are 22 (26 – 4) letters available for connected USB devices. Once all the letters in the alphabet are assigned, no additional devices can be recognized by SaberCopy (the computer). If you are connecting players that have a microSD card reader (i.e. Envoy E/2E) then the card reader too requires a drive letter! This further reduces the number of concurrent player connections to a maximum of 11!

When there is a need to load large batches of players (assuming the computer has sufficient CPU power), this drive letter limitation poses a real problem. MegaVoice encountered this limitation in our production lab and overcame it by using a Windows convention for mapping USB ports to folders on the hard drive.

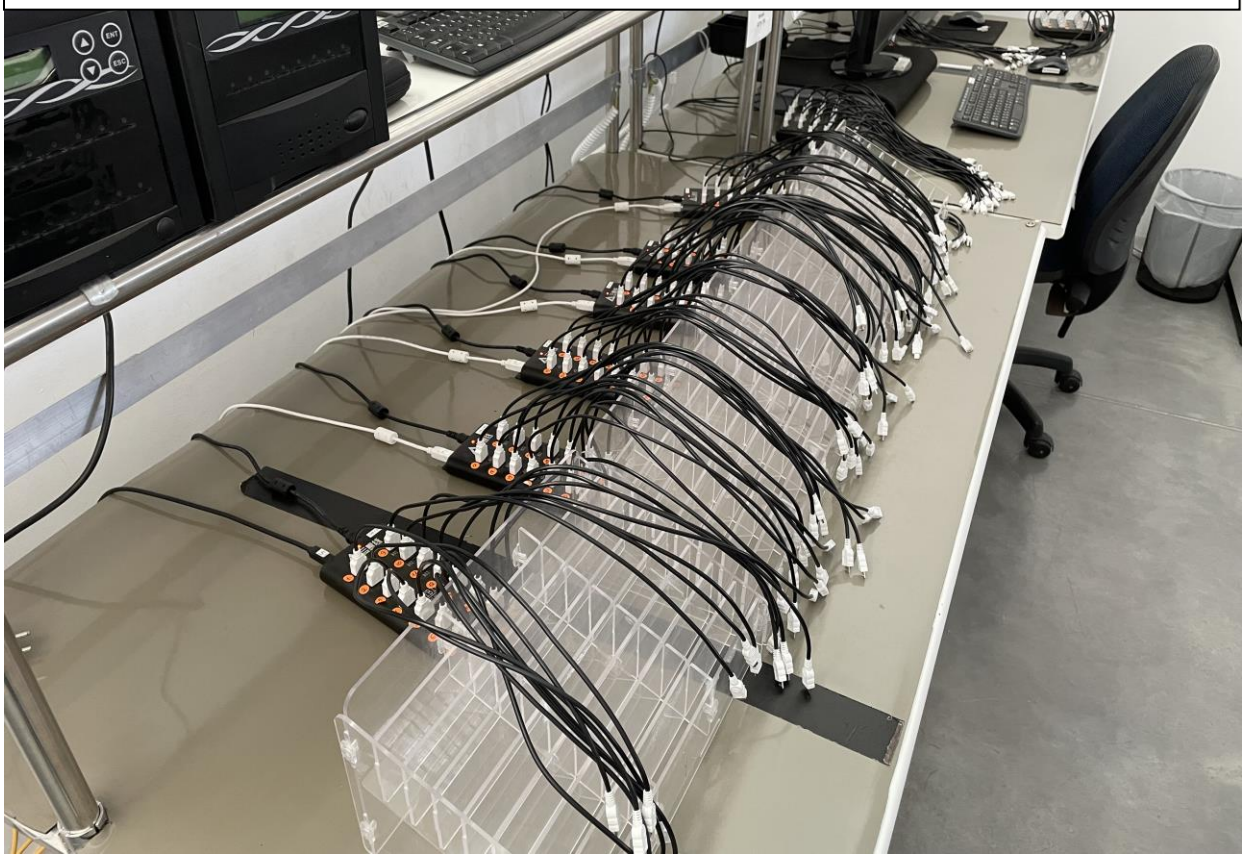
Since SaberCopy can copy to either USB devices or folders on disk, this is an ideal solution.
MegaVoice has one computer set up for 160 devices (10 hubs x 16) and another for 96 devices (6 hubs x 16)!
To achieve this, hardware changes were required to the computer along with significant setup.

1. All available drive letters must be "blocked" by making dummy assignments so that Windows cannot assign a device to a drive letter when connected. This is easily accomplished using a start-up script.
2. Depending on the configuration of the computer, the USB host controller imposes a limitation for how many USB connections it can support. To overcome this limitation, a PCI Express USB expansion card must be added to the computer. If a multi-port card is chosen, it must be of the type where each USB port has its own separate USB controller (what MegaVoice uses). Alternatively, multiple single-port cards may be used.
3. Multi-port powered USB hubs must be used. MegaVoice uses 16-port hubs.
4. The ports on all the hubs must be numbered consecutively from one to the maximum number being used.
5. A collection of folders, each with a number from one to the maximum must be defined on the hard drive.
6. One at a time, a target device must be connected to the hub's USB port beginning with the first. While connected, the Windows Disk Management tool must be used to do the following:
    a. Remove the assigned drive letter (if any)
    b. Assign the matching numbered folder to the port/device and save the definition
    c. i.e., port #1 is assigned to folder #1, port #2 is assigned to folder #2, and so on
7. Windows stores special system files in each folder so that it remembers these mappings.
8. Once the mapping is completed, from SaberCopy the target devices will be the mapped folders.
9. Connect all devices/players to the hubs beginning from port #1 and verify connectivity by the folder icons.
10. Depending on how many devices/players are connected, use the "Add folder" button to select (using multi-select) all the required folders, i.e., if you have 30 players connected select only folders 1 – 30.
11. Configure your project and attach it to the list of folders. Perform the typical copy process.
12. What happens during the copy is that the data "passes through" the mapped folder to the associated player. Nothing is written to the folder on disk, so available disk space is not a consideration.



Close-up view of the StarTech PCI card from the back of the computer, with 4 different hubs attached to each of the USB connections.
Each USB port is managed by a separate USB controller (per Windows Device Manager) providing maximum USB throughput.

One of the MegaVoice computers configured to use 96 mapped folders (6 hubs with 16 ports each). Each hub is connected to a USB port managed by a separate USB controller internally. The 6 USB ports in use are from the motherboard (2) and the PCI Express card (4).
Notice the plastic “hives” in the foreground that hold the players upright for easy connection while keeping them separated for reduced chance of disturbance during loading which may lead to a disconnect.

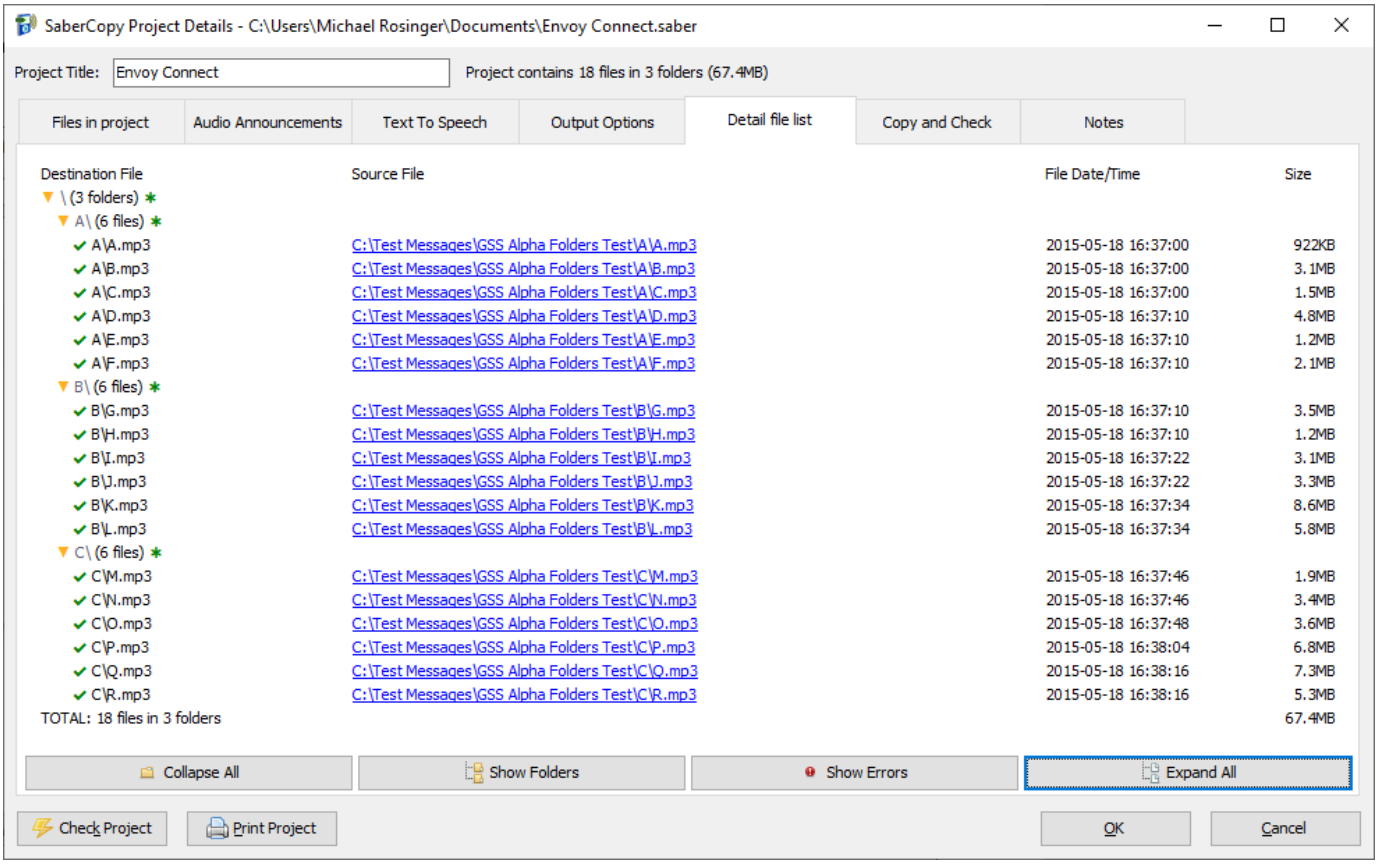


17: Using automated sequence numbers

New to versions 4.3.x and later! SaberCopy offers a feature where it can append or replace sequence numbers to both folder and file names. This can be quite a handy tool if you have audio where the folders and/or file names are primarily free text, or when there are existing sequence numbers, but they do not begin with 001 or where they exist but are not consecutive.

SaberCopy can do this for you automatically and without modification of the original audio message!

Consider the following audio collection that contains 3 Book folders where both the folder and file names are alphabetic.



Let's see how SaberCopy can modify these folder and file names with sequence numbers...

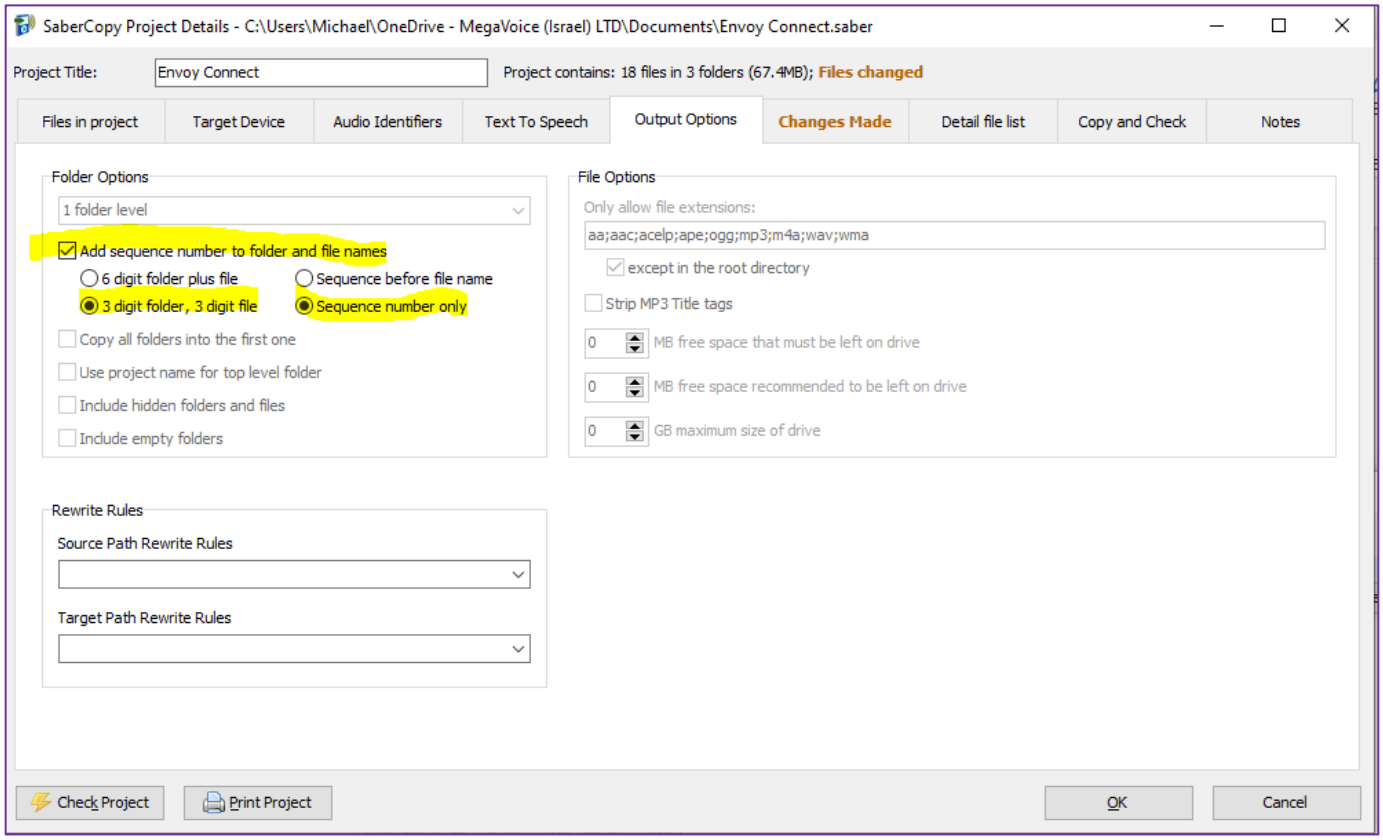
SaberCopy offers several sequence number options in the **Folder Options** section of the "Output Options" tab. After choosing your specific target device, *some* of the options on the bottom of the screen become enabled according to the device.

If you wish to change any of those options, choose the device "Custom Output Options", where there are no restrictions, and all settings may be modified.

In this example, we are using an Envoy Connect as our target device. To set the sequence number options, check the box "Add sequence number to folder and file names".

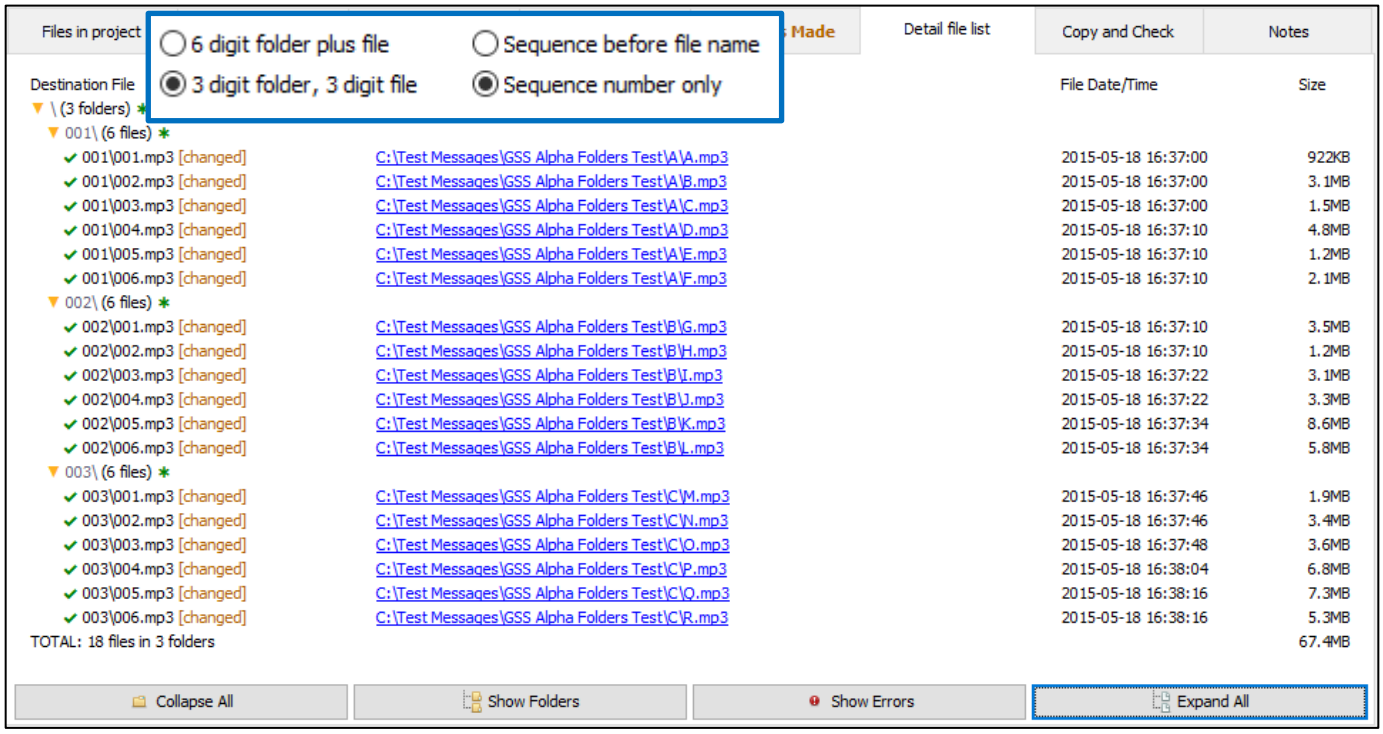
The options available are:

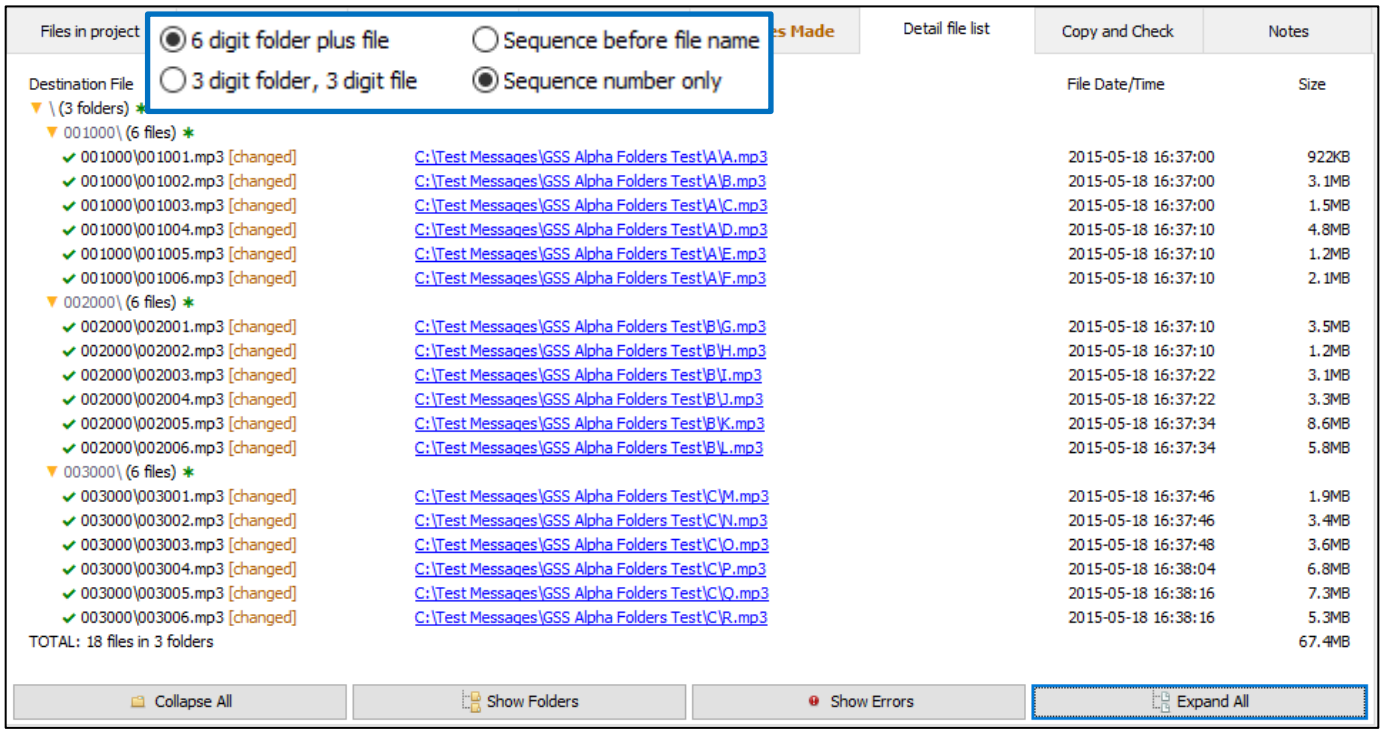
- 3- or 6-digit sequence numbers
- Prefix the sequence number to the existing name
- Replace existing names with sequence numbers only



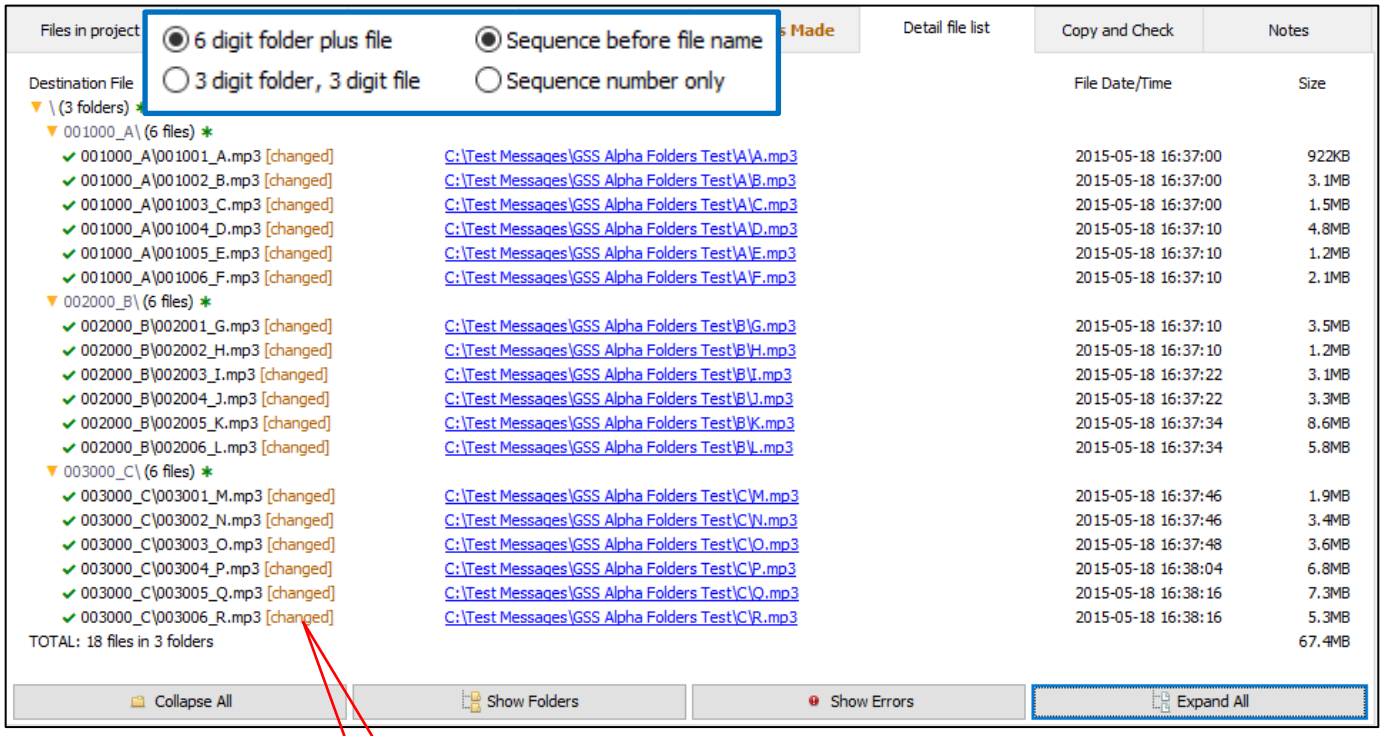
Let's look at examples of how SaberCopy implements the possible option combinations on the next page.

You can always preview setting changes on the "Detail file list" tab before the actual copy process takes place.

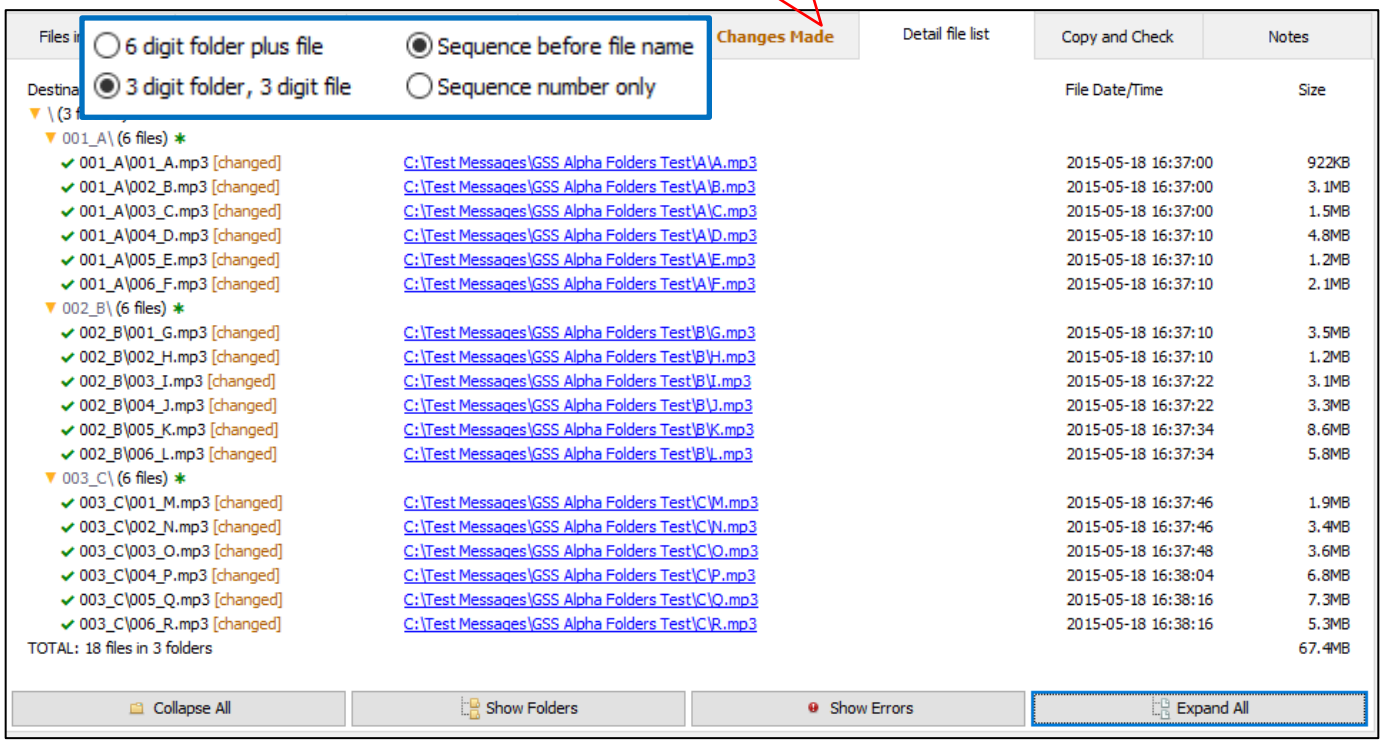




Note: When using the 6-digit sequence number option, notice that the file names reflect their folder name. This means that the file names are unique within the entire collection. When using the 3-digit option, every folder will contain a 001 file, etc. The 6-digit naming convention will prevent confusing similarly named files.



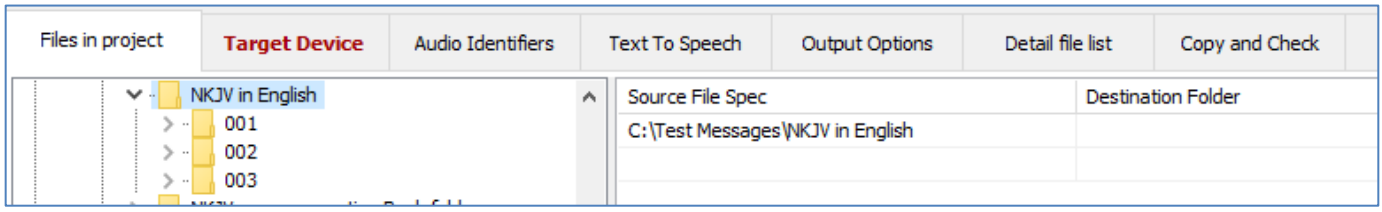
Note that SaberCopy flags each file or folder name that it modifies. All changes that SaberCopy makes to the original folders and files are also listed on the "Changes Made" tab.



18: Device rules validation

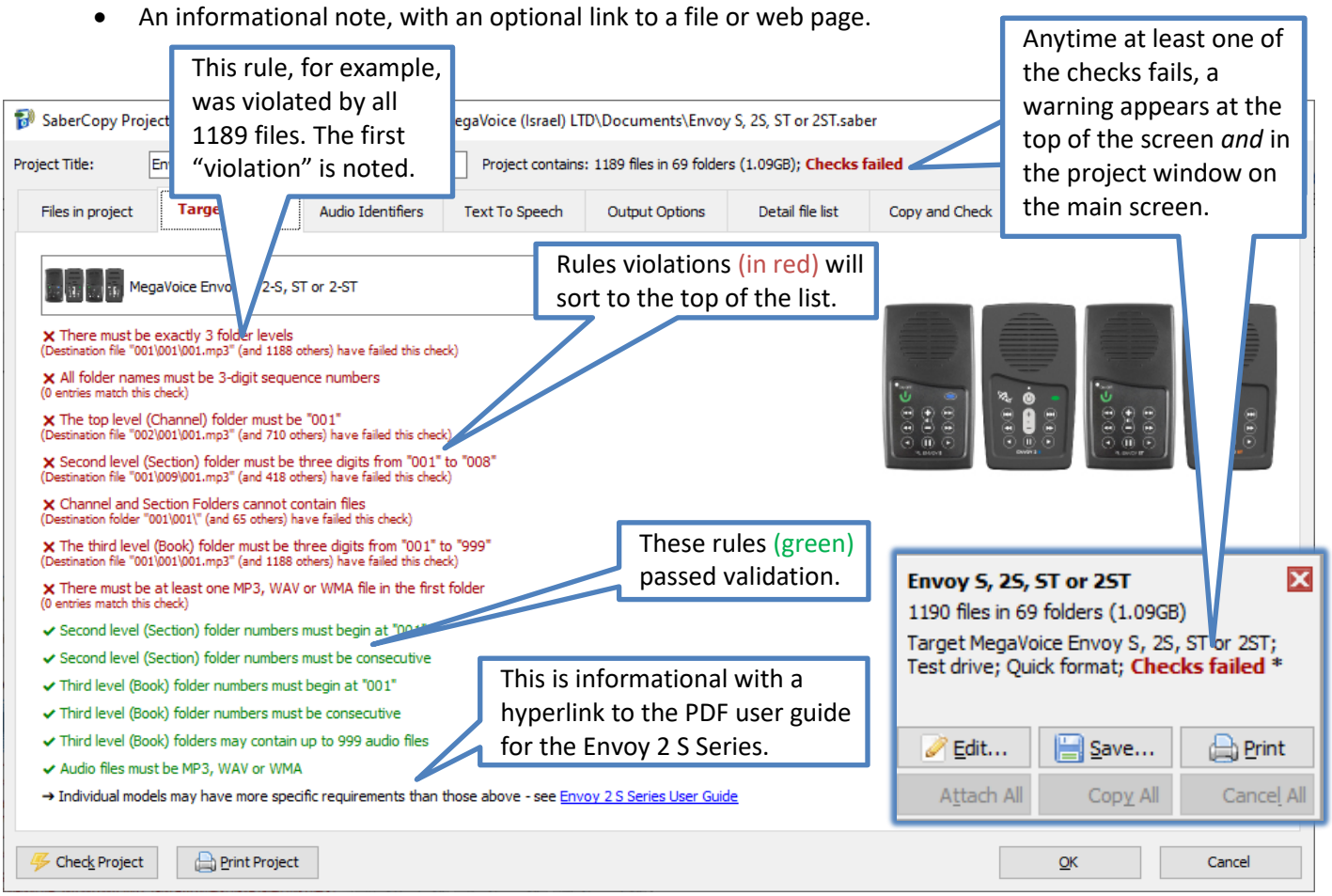
New to versions 4.3.x and later are individual device/player definitions, each with its specific content rules. Once files are selected on the "Files in Project" tab, SaberCopy will immediately check the folder structure and files against the defined rules for the current device.

Refer to the example below illustrating how SaberCopy checks a message for the Envoy S/2-S/ST/2-ST group. A 4-level (3 folder levels) message is mandatory, but a 3-level (2 folder levels) message was chosen by mistake.

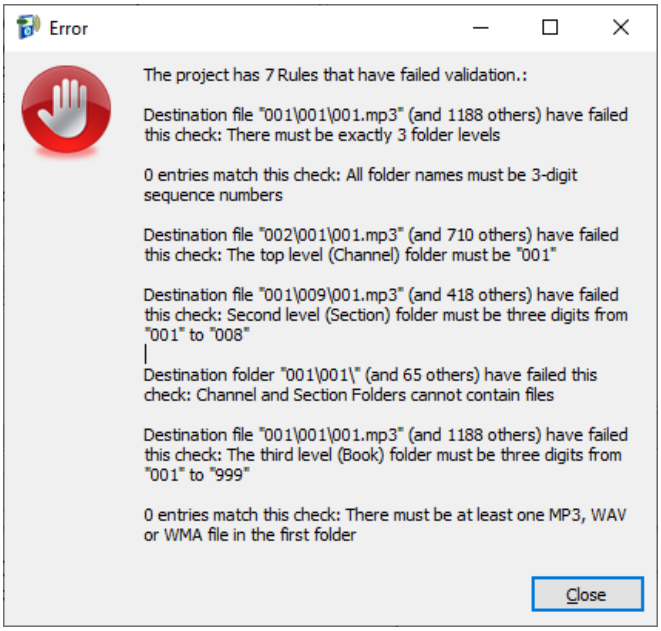


On the "Output Options" tab, the rules are color coded with associated icons:

- ✗ Failed
  - Rule violations are *warnings* since they will not prevent copying files to a player.
  - ⚠ If violations are ignored, the target player may not navigate or play correctly.
- ✔ Passed
- → Informational (2 types):
  - A player rule that cannot currently be checked by SaberCopy (but may be in future versions).
  - An informational note, with an optional link to a file or web page.



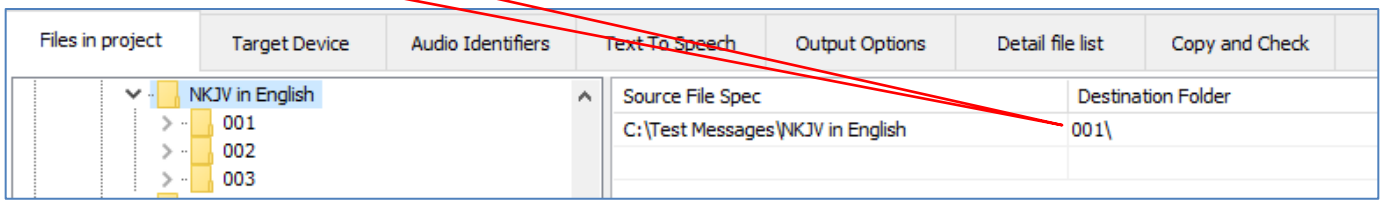
While on any tab of the project dialog, you can also get a quick list of rules that failed validation by clicking on the Check Project button at the bottom left of the screen.

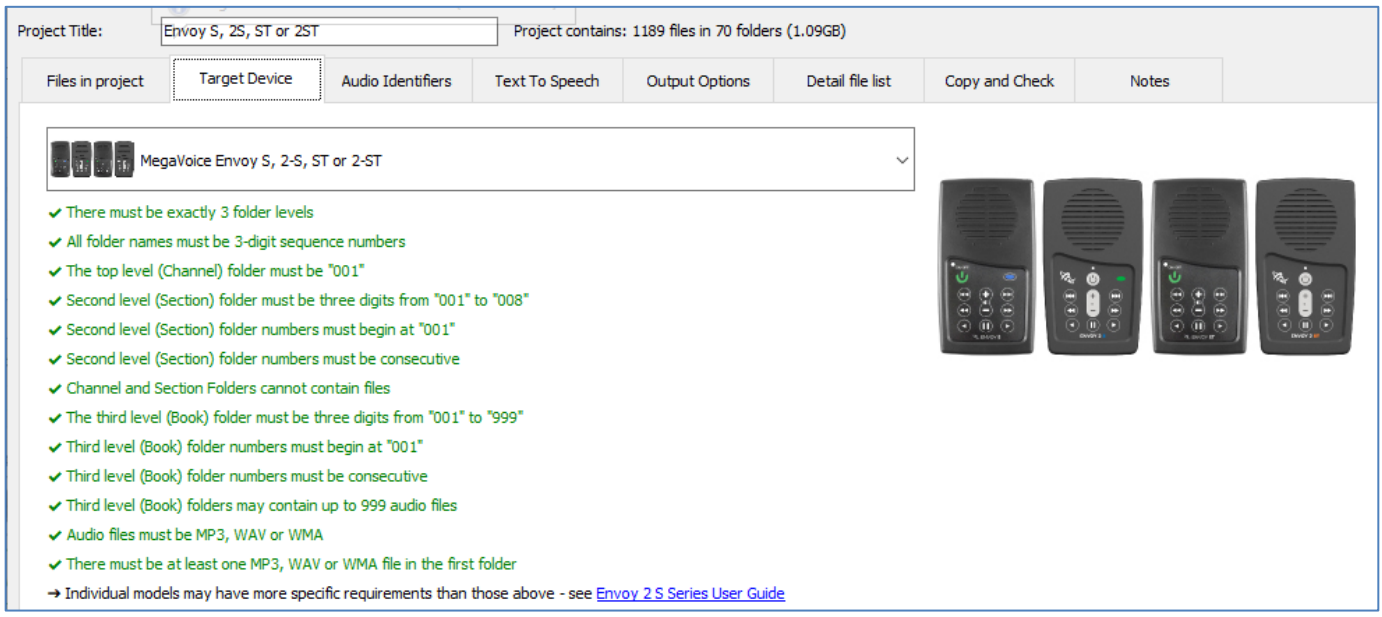


NEW New to versions 4.8.x and later! Any unresolved rule violations will be recorded in the player log to allow for later review.

As mentioned on the previous page, a 3-level message was selected for a player that requires a 4-level structure. This is the root cause of **all** the rules violations.

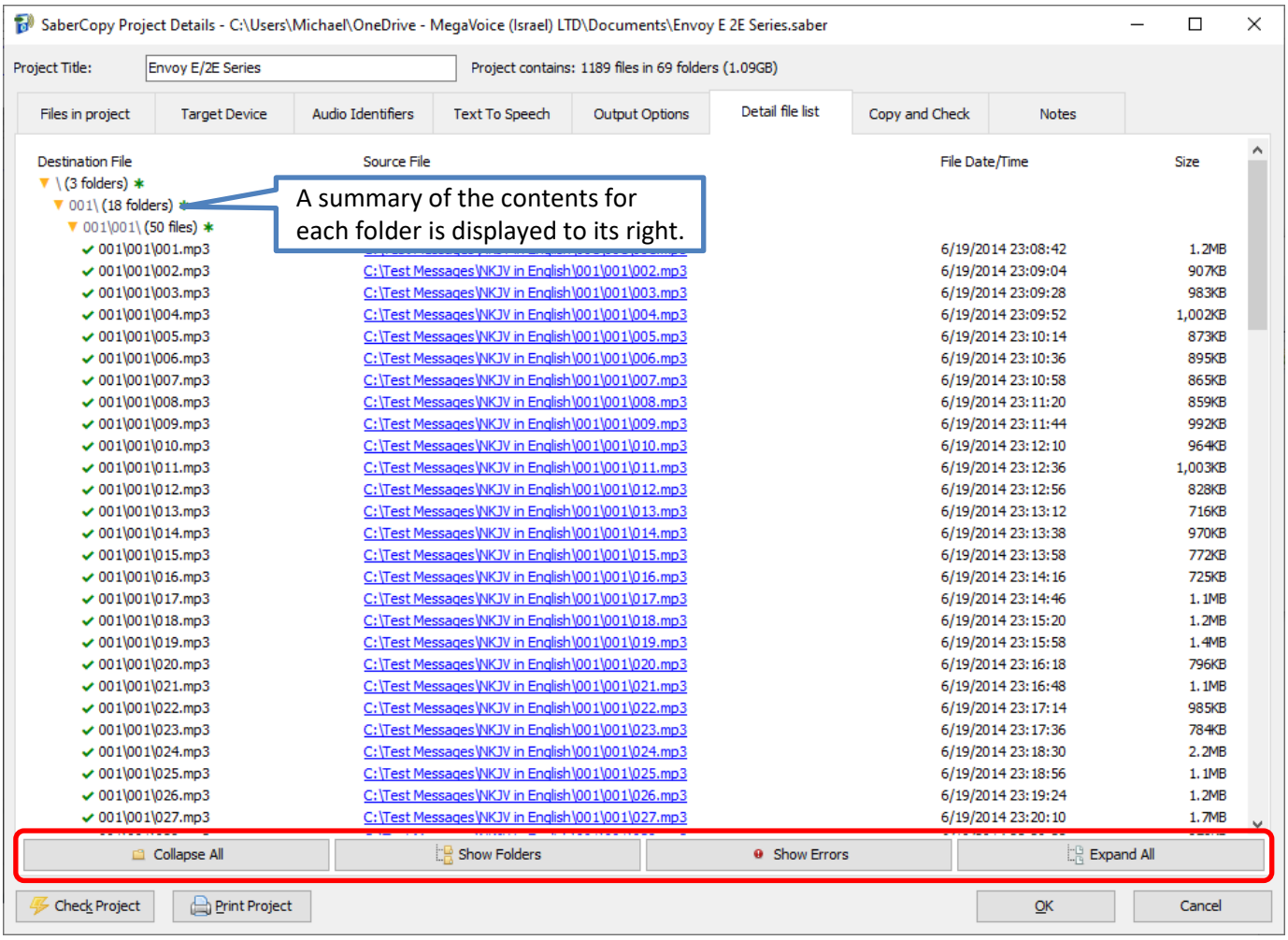
Adding a fourth level (Channel folder) to the message structure fixes the problem and causes all rules to pass!





19: Detail File List tab

New to versions 4.3.x and later, a completely redesigned interface has been added to the Detail File List tab of the Project dialog.
The display is now HTML-style where you can collapse and expand folder levels as needed.
Each (source) file can be listed as a hyperlink. You can click on it and SaberCopy will open that file in the associated application, if it has been defined to Windows. For details on controlling the display and number of hyperlinks see Maximum links to source files

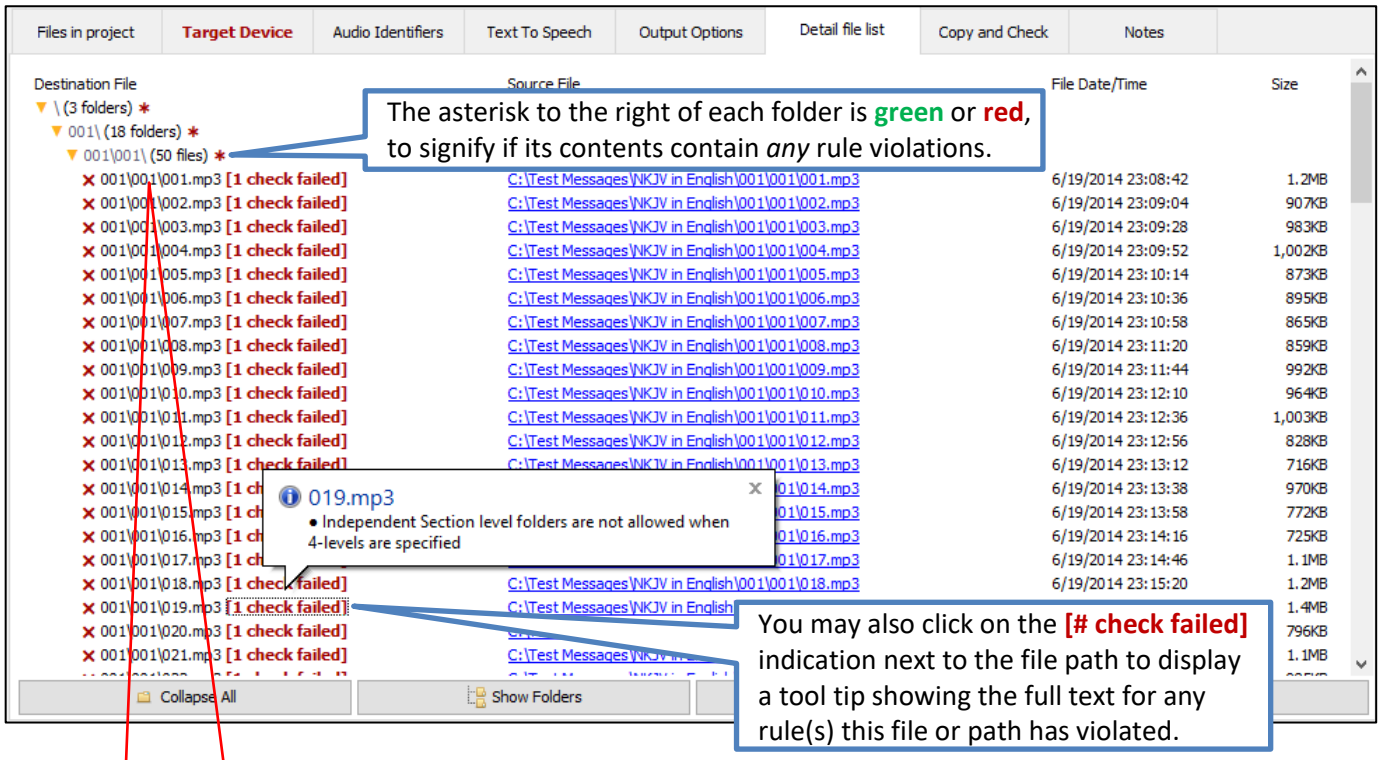


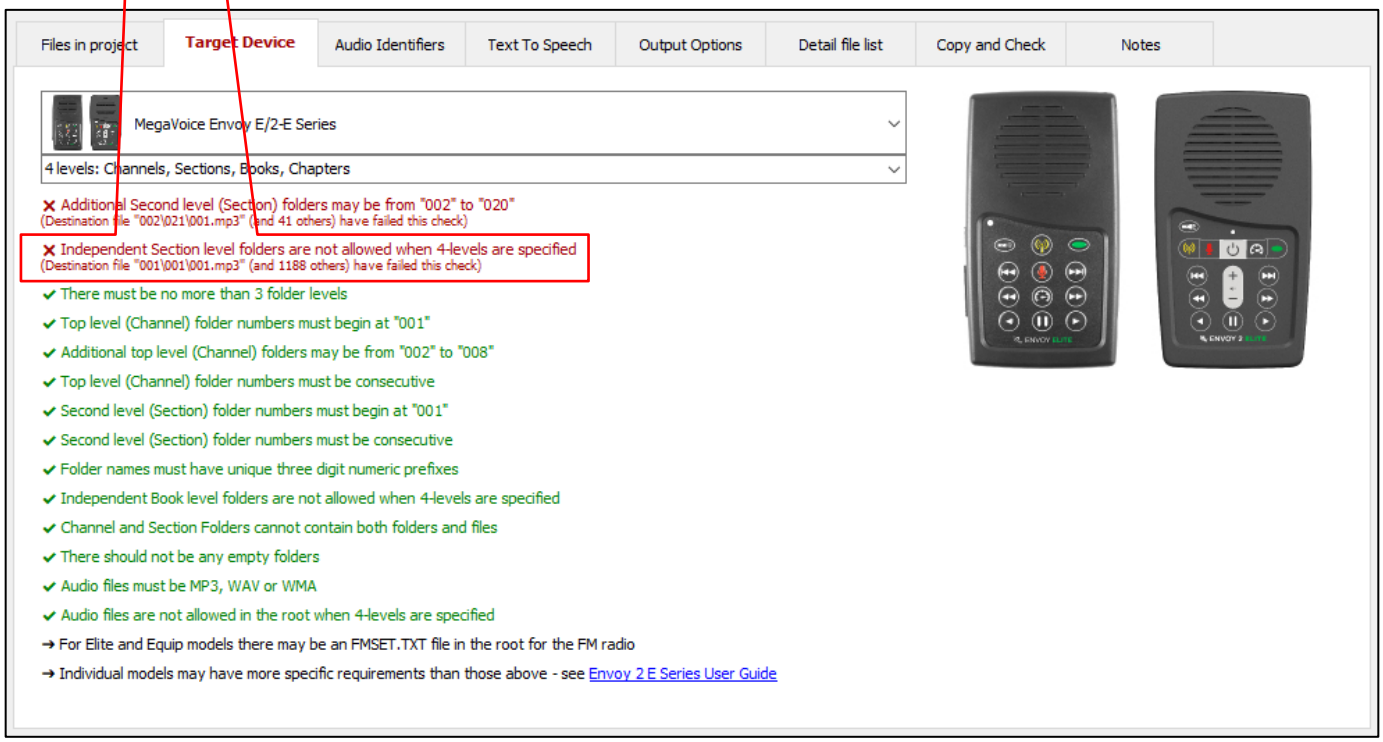
There are 4 buttons at the bottom which control the overall display:

- Collapse All — Collapses all folders to the highest level(s)
- Show Folders — Expands all levels of folders revealing the complete folder structure
- Show Errors — Expands only folders where rules violations occur for quick identification
- Expand All — Expands all levels of folders showing all files in each folder

By clicking on the gold triangle icons ▶▼, it is also possible to collapse and expand individual folders as needed.

Whenever a rule check fails, each folder and/or file is marked along with how many rules it violated. In the example below, the rule violated happens to be the one regarding “Independent Section level folders…”.
We know this based on the first file listed following the specific rule on the Output Options tab, or from displaying the tool tip.
The root problem here is that the audio selected is 3-level and, according to the target device specified, SaberCopy was told to expect 4-levels!

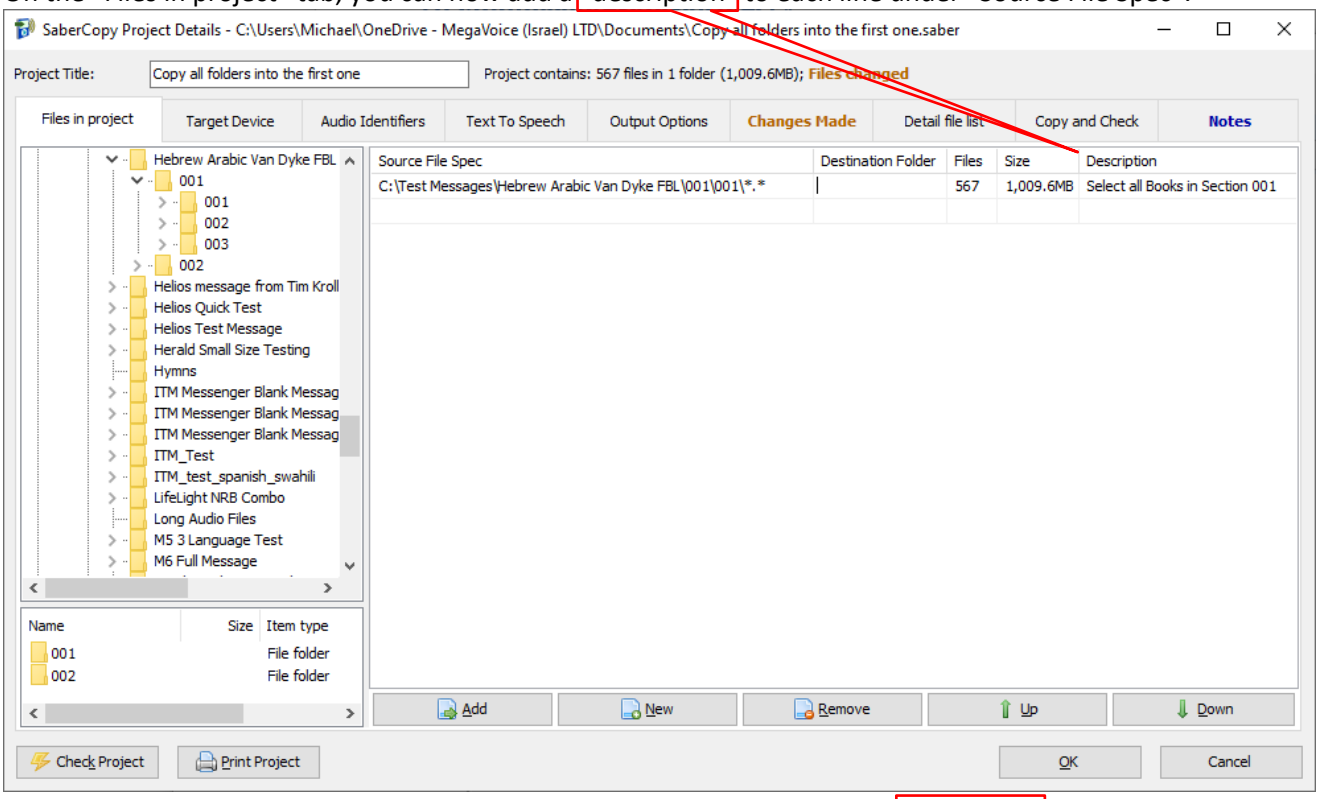




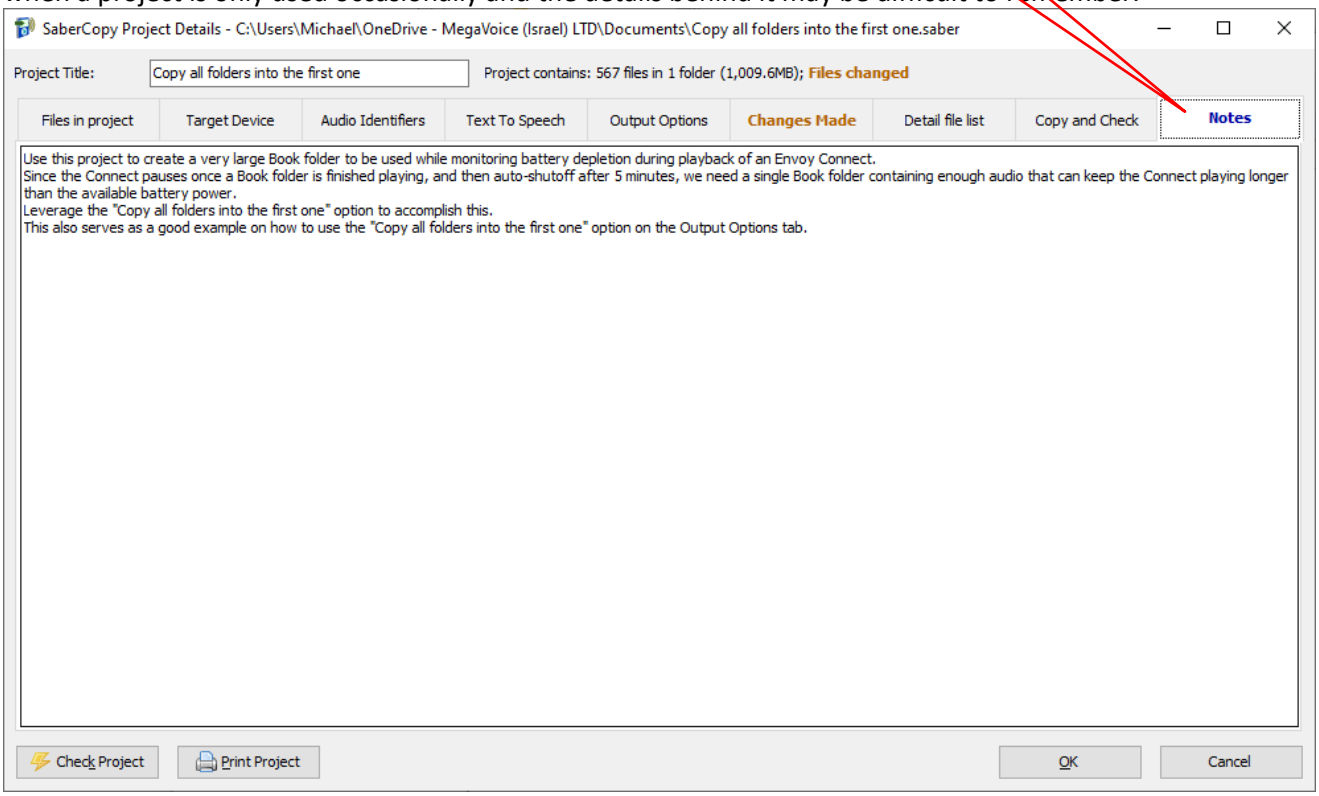
20: Adding notes to a project

New to versions 4.4.x and later! You can store notes in any project.

On the "Files in project" tab, you can now add a "description" to each line under "Source File Spec".



You may also add a narrative describing the details of a project on the new "Notes" tab. This is especially helpful when a project is only used occasionally and the details behind it may be difficult to remember.



21: Folder and filename rewrite rules

New to versions 4.7.x and later! A new system of rewrite rules has been added to transform a source folder structure into something different for the target device. Initial use of this feature is to rename numeric folder and file names (i.e., '001/001/001/001.mp3') into book of the Bible names (i.e., 'Old Testament/Genesis/Chapter 001.mp3') especially for the MegaVoice **Envision** tablet, or potentially any other player providing visual navigation.

This is facilitated by use of an INI type script that uses RegEx (regular expressions) to manipulate folder and file names. SaberCopy provides a default script in the installation folder **C:\Program Files (x86)\SaberCopy**. The file is named "SaberCopy_rewrites.ctl".

In the example below, a group of rewrite rules are defined with the name [Bible Books (Source Rules)]. The square brackets denote a "section" which includes every line following it until the end of the file or another section. Next, to the left of the "=" there is line defined for matching each book folder expected to be found in a typical 4-level full Bible structure. To the right of the "=" is the instruction of how to transform the matched item.

SaberCopy_rewrites.ctl - Notepad

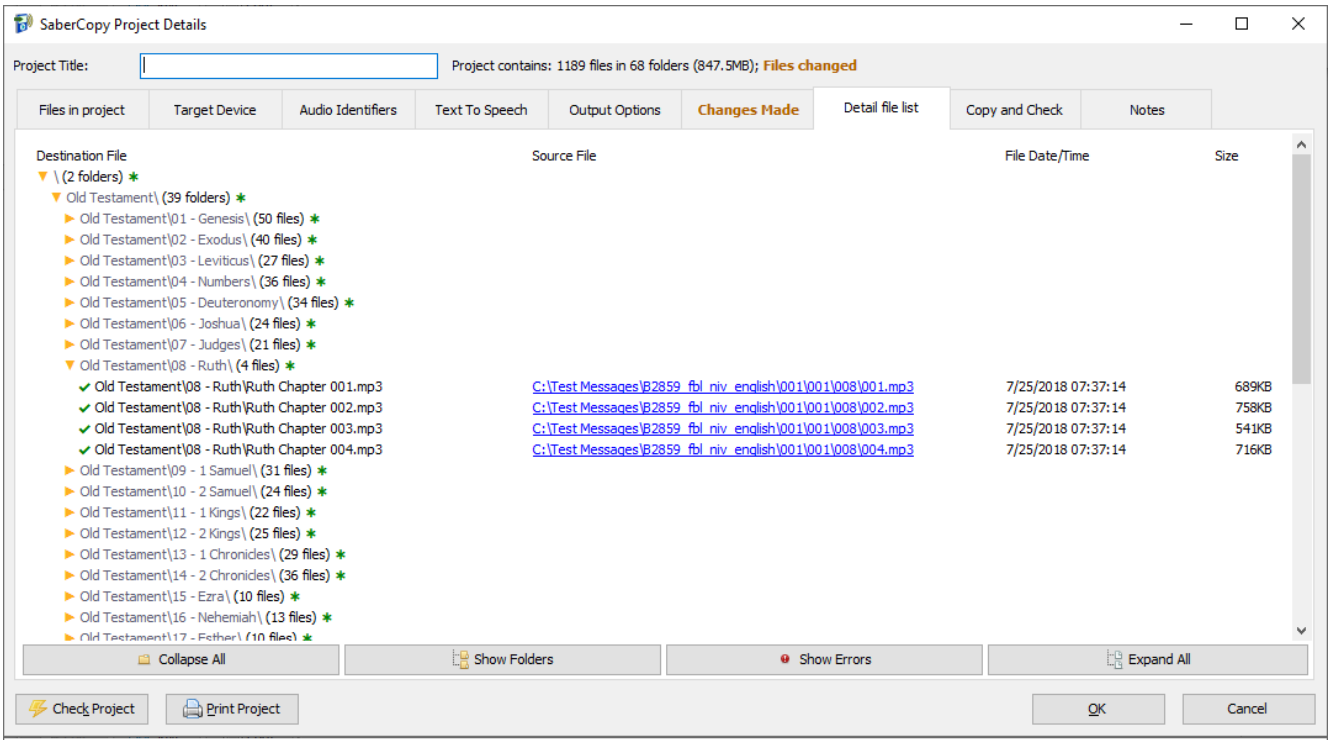
File Edit Format View Help

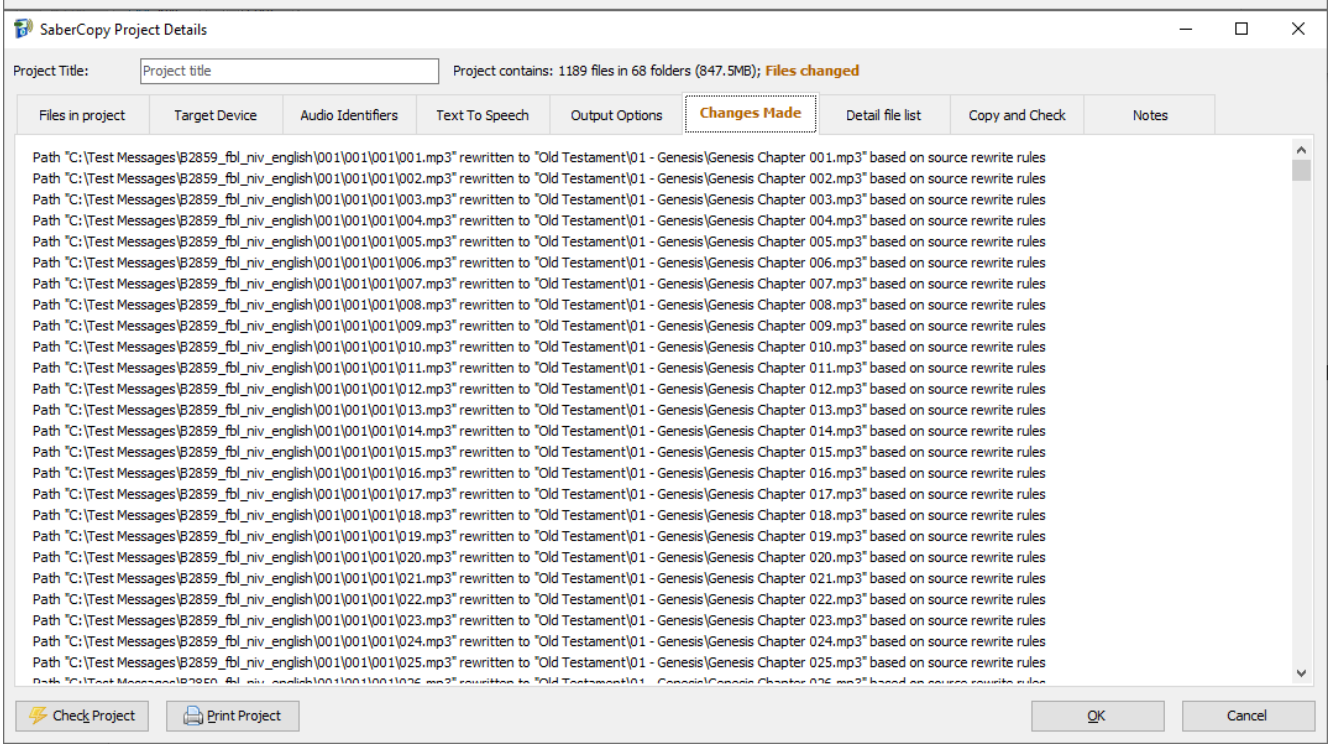
```
[Bible Books (Source Rules)]
; Turn numbered folders into named books of the Bible
B[0-9]{4}_fbl_[^\\]*\\001\\001\\001\\(.*) = Old Testament\01 - Genesis\Genesis Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\002\\(.*) = Old Testament\02 - Exodus\Exodus Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\003\\(.*) = Old Testament\03 - Leviticus\Leviticus Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\004\\(.*) = Old Testament\04 - Numbers\Numbers Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\005\\(.*) = Old Testament\05 - Deuteronomy\Deuteronomy Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\006\\(.*) = Old Testament\06 - Joshua\Joshua Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\007\\(.*) = Old Testament\07 - Judges\Judges Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\008\\(.*) = Old Testament\08 - Ruth\Ruth Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\009\\(.*) = Old Testament\09 - 1 Samuel\1 Samuel Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\010\\(.*) = Old Testament\10 - 2 Samuel\2 Samuel Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\011\\(.*) = Old Testament\11 - 1 Kings\1 Kings Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\012\\(.*) = Old Testament\12 - 2 Kings\2 Kings Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\013\\(.*) = Old Testament\13 - 1 Chronicles\1 Chronicles Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\014\\(.*) = Old Testament\14 - 2 Chronicles\2 Chronicles Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\015\\(.*) = Old Testament\15 - Ezra\Ezra Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\016\\(.*) = Old Testament\16 - Nehemiah\Nehemiah Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\017\\(.*) = Old Testament\17 - Esther\Esther Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\001\\018\\(.*) = Old Testament\18 - Job\Job Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\001\\(.*) = Old Testament\19 - Psalms\Psalms Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\002\\(.*) = Old Testament\20 - Proverbs\Proverbs Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\003\\(.*) = Old Testament\21 - Ecclesiastes\Ecclesiastes Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\004\\(.*) = Old Testament\22 - Song of Solomon\Song of Solomon Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\005\\(.*) = Old Testament\23 - Isaiah\Isaiah Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\006\\(.*) = Old Testament\24 - Jeremiah\Jeremiah Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\007\\(.*) = Old Testament\25 - Lamentations\Lamentations Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\008\\(.*) = Old Testament\26 - Ezekiel\Ezekiel Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\009\\(.*) = Old Testament\27 - Daniel\Daniel Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\010\\(.*) = Old Testament\28 - Hosea\Hosea Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\011\\(.*) = Old Testament\29 - Joel\Joel Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\012\\(.*) = Old Testament\30 - Amos\Amos Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\013\\(.*) = Old Testament\31 - Obadiah\Obadiah Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\014\\(.*) = Old Testament\32 - Jonah\Jonah Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\015\\(.*) = Old Testament\33 - Micah\Micah Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\016\\(.*) = Old Testament\34 - Nahum\Nahum Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\017\\(.*) = Old Testament\35 - Habakkuk\Habakkuk Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\018\\(.*) = Old Testament\36 - Zephaniah\Zephaniah Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\019\\(.*) = Old Testament\37 - Haggai\Haggai Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\020\\(.*) = Old Testament\38 - Zechariah\Zechariah Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\002\\021\\(.*) = Old Testament\39 - Malachi\Malachi Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\003\\001\\(.*) = New Testament\01 - Matthew\Matthew Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\003\\002\\(.*) = New Testament\02 - Mark\Mark Chapter {{1}}
B[0-9]{4}_fbl_[^\\]*\\001\\003\\003\\(.*) = New Testament\03 - Luke\Luke Chapter {{1}}
```

Ln 35, Col 1 | 100% | Windows (CRLF) | UTF-8

So, for any parent folder containing a typical 4-level structure that begins with “B”, followed by a 4-digit number, followed by “_fbl_” (this is common notation for MegaVoice full Bible audio messages), it will convert the top-level folder to “Old Testament” or “New Testament”, followed by the number and name of the Book, followed by the Chapter file including the Book name, “Chapter” and the chapter number.

The transformation results from the rewrites script shown on the previous page can be seen in the Detail File List tab below. You can see the transformed folder and file names under “Destination File” and the original folder and file names under “Source File”. SaberCopy also notifies of each change made on the **Changes Made** tab.





SaberCopy provides for users to edit and maintain their own custom rewrite rules by creating and placing a similar file in the **C:\ProgramData\SaberCopy** folder. The name of the file must begin with "SaberCopy_rewrites-", followed by additional text, with a file type of "ctl". For example, "SaberCopy_rewrites-**1**.ctl".

If your file contains a rule with the same name as appears in the default file, your rule will supercede the one in the default file.

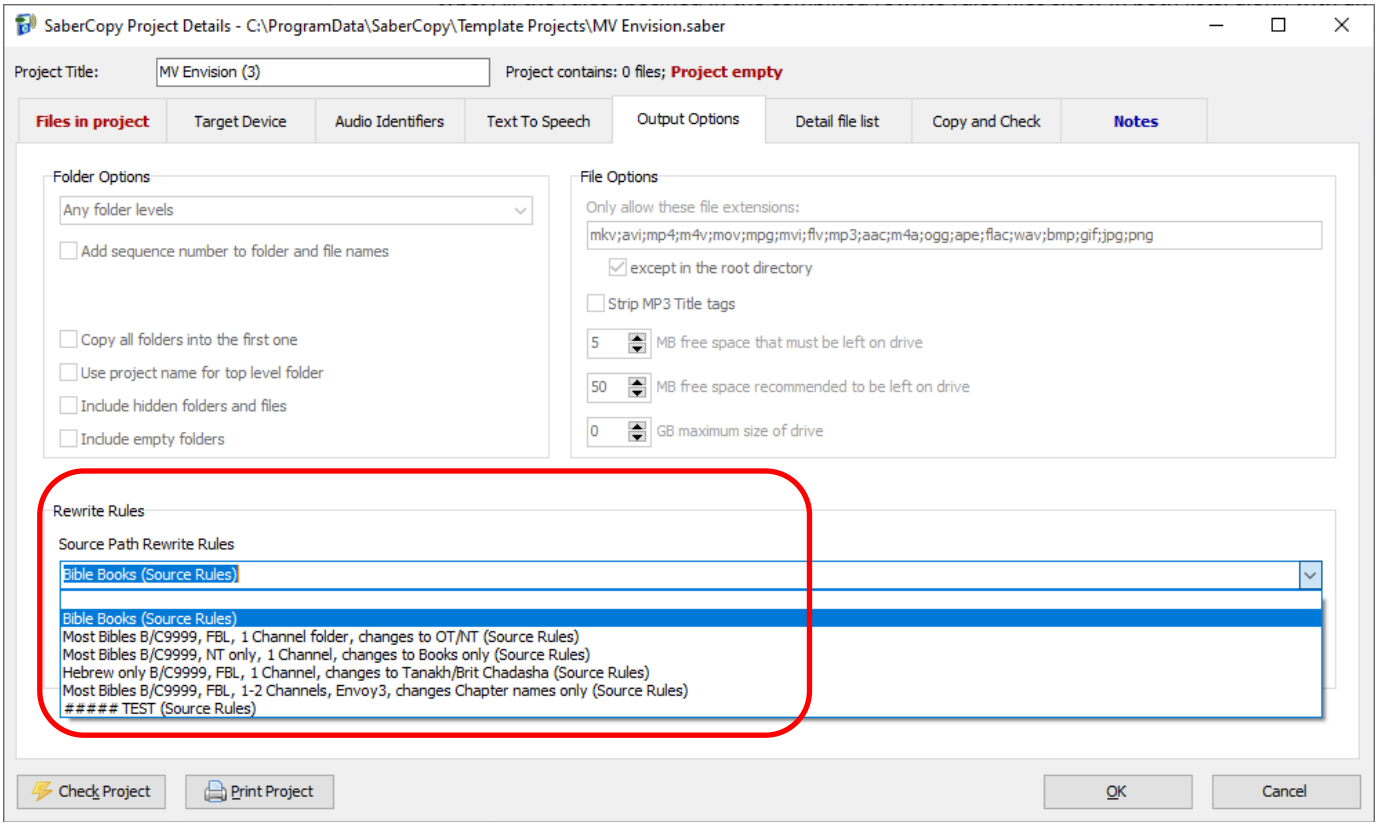
SaberCopy allows for rewrite rules to be processed against the Source Path and/or against the Target Path of the files selected on the "Files in Project" tab.

A Source rewrite rule takes the raw input folder and file name, and manipulates that, before any other folder flattening or renumbering.

A Target rewrite rule takes the output of all the folder flattening and renumbering, and then manipulates that.

These rules (circled in red below) are applied on the "Output Options" tab. There are 2 drop lists, one for each type. All the rules specified in the combined rewrite rules files show in both lists, along with an empty option (which means none and is the default).

It is possible to compose rules so that they could be used for either, but typically they would be for one or the other. For that reason, it is recommended to include "source" or "target" in the name of the rule to help with the choice.



Tips for using SaberCopy

- Always save your projects for reuse later. The project files are very small and can save you lots of time.
- Use the same name for the title and physical file name of the saved project. SaberCopy only uses the physical file name when opening projects while the project title is displayed throughout the application.
- For optimum copy/load time, try to have the source files for a project stored on the local hard drive of the computer. Using network folders, while possible, takes considerably longer to load. If you have a few players to load with the same audio, it is worth it to copy the audio folders temporarily to the local drive and delete them later.
- If you have a group of players and you need to verify that they are all loaded with a specific message, SaberCopy can help you with that. See 13: Comparing the contents of 2 players.
- If you wish to load a player with folders that exist in different audio messages stored on your computer, let SaberCopy aggregate them for you within a project. This saves you from building a completely new message and duplicating the data on your computer. See 2: Loading a Companion Player.
- If you have a limited number of USB connections and need to quickly load a group of players, use SaberCopy's Fast Copy Mode feature. See 5: Fast Copy Mode for quickest loading.
- If you need to load some players with content, and do not have the desired content currently available on your computer, but *do* have a player with that content, you can use SaberCopy to duplicate that player to others. See 6: Duplicating players, microSD cards, etc..
- If you wish to add audio content to a player that already has existing audio without overwriting it, SaberCopy can help you with that. See 7: Appending audio to a player.
- When defining a project, you can always preview the resulting folder structure and files in the "Detail File List" tab. You can do this before executing the copy, if you have defined the source(s) on the "Files in Project" tab. See 19: Detail File List tab.
- Whenever creating a new project (even temporarily when using "Add Folder" – See Quick Start!), always make sure to verify the settings on the "Output Options" and "Copy and Check" tabs to make sure they are what you intend.

- If you keep data devices (external hard drives, USB thumb drives, etc.) regularly connected to your computer, and you always want SaberCopy to ignore them so that they are not accidentally affected, you can "teach" that to SaberCopy. See 12: Teaching SaberCopy to ignore devices.

- When choosing the folders and/or files for your project from the "Files in project" tab, SaberCopy makes this easy for you by providing both drag and drop and multi-select from the File Explorer panes. See 11: Easy Folder and File Selection.

- If you need to "tweak" the default settings for your target device choice on the "Output Options" tab, first select your preferred target device, and *then* select "Custom Output Options" near the bottom of the list. This will enable all of the fields on the bottom portion of the screen, leaving the pre-set values in place but allowing you to change any of them as necessary. See 2: Loading a Companion Player.

- If you need to rename the folders and files in your audio message to sequence numbers SaberCopy can help you with that. See 17: Using automated sequence numbers.

- If you need to duplicate microSD cards for distribution, SaberCopy is an inexpensive solution for that. See here.

Using SaberCopy on Mac OSX

General

SaberCopy is a Windows application. Due to the amount of effort required, the author of SaberCopy, GRN, has no plans to create a version of SaberCopy that is a true Mac application; however, using any of a number of virtualization software packages, SaberCopy can be implemented on most Mac systems.

The following recommendations are based on our testing and were all performed by MegaVoice on a MacBook Pro (Retina, mid 2012) running macOS High Sierra with a 2.3 GHz Intel Core i7 processor and 8GB of DDR3 RAM.

Any type of virtualization or emulation software requires sufficient memory and CPU power to work well. If your Mac is a bare-bones system, the performance you experience with any of these solutions may be disappointing.

While some of the virtualization packages yielded better results than others, we are listing them in order of our preference based on our testing experience. Most of the available options require the purchase of the software, but in our estimation, it is a worthwhile investment to allow for implementation of a true Windows environment on Mac where *any* Windows app may be run – not just SaberCopy.

MegaVoice did not attempt to explore all the features offered by each tested item. In each case, this was the basic process:

1. Download and install the software (and any related packages) on the Mac
2. Using an installation CD/DVD, or ISO image copied to the Mac, install Windows as a VM (Virtual Machine) within the tested software*
3. Get Windows set up, i.e., install all necessary updates + basic configuration*
4. Install SaberCopy in the Windows VM*
5. Test SaberCopy in numerous ways loading multiple MV players

   ** Not applicable to WINE*

MegaVoice assumes no responsibility for any damage that may be caused by the installation of and/or use of any of the 3rd party software products discussed in this section.

The following details are published solely as examples of what MegaVoice succeeded in doing to provide a platform for successful execution of SaberCopy on a Mac computer.

Details noted such as pricing, web site links, system requirements, etc. are correct and verified as of the date of this publication and are subject to change.

VMware Fusion

- VMware Fusion 10 was the most trouble-free of all the software tested. It is our top pick.
- Must be purchased – around 149 USD for a new license, less for an upgrade. A 30-day trial version may be downloaded and tested.
- https://store.vmware.com/sstore?Action=DisplayProductDetailsPage&SiteID=vmwde&Locale=en_IE&Currency=EUR&id=ProductDetailsPage&productID=5223184000
- Any Mac launched in 2011 or later. OS X 10.11 El Capitán minimum required. See details on web site.
- An installation CD/DVD or ISO image for a Windows environment is required (license not included) – Windows 10 is preferred.
- Installation and creation of a VM was simple. Multiple VMs may be installed under Fusion.
- Provides seamless integration and sharing of files and folders between Mac and Windows.
- Both Windows and SaberCopy performed excellently within the VM. Performance is great and no problems were encountered at all during testing. A batch of 7 players was loaded numerous times with different messages from a 7-port powered hub.
- When connecting MV players to the Mac, Fusion automatically asks whether to connect the device to Mac or an active VM (this feature is customizable). No special configuration was required to recognize MV players.

Parallels Desktop for Mac

- Parallels Desktop 13 for Mac is our next choice.
  - Version 10 of Parallels Desktop for Mac was also tested, and works, but only supports up to Windows 7. Setting up Windows 7 is quite time-consuming due to the hundreds of Windows updates that must be downloaded and installed, requiring several reboots. Since Windows 7 is no longer supported by Microsoft, it is not recommended.
- Must be purchased – around 80 USD for a new license, less for an upgrade. A 14-day trial version may be downloaded and tested.
- https://www.parallels.com/products/desktop/
- OS X 10.10.5 Yosemite minimum required. See details on web site.
- An installation CD/DVD, or ISO image, for a Windows environment is required (license not included) – Windows 10 is preferred.
- Installation and creation of a VM was simple. Multiple VMs may be installed under Parallels Desktop.
- The (optional but recommended) Parallels Tools module provides seamless integration and sharing between Mac files and folders and Windows files and folders.
  - BUG!* When Parallels Tools was installed, any attempt to FORMAT a USB device, especially a MV player, from a Windows VM caused Windows to crash with the "Blue Screen of Death". The problem was reported to Parallels support. After weeks of investigation, experimentation and testing under the direction of technical support, a work-around was eventually provided that solved our specific problem.

    **Since this test was originally performed Parallels has released newer versions, which surely correct the above problem.*
  - As of the date of this publication, technical support had not been able to identify the true cause of the problem and would not predict when a fix would be incorporated into the next official version.
  - As stated earlier, we did not explore all available features in Parallels Desktop, so we don't know for sure there wasn't another problem lurking in the background.
- If Parallels Tools was uninstalled, SaberCopy performed excellently (including format) within the VM; however, the removal of Parallels Tools eliminates the ability to share folders and files between Windows and Mac (along with some other features).
- SaberCopy performance is great, and no problems were encountered at all during testing. A batch of 7 players was loaded numerous times with different messages from a 7-port powered hub.
- When connecting MV players to the Mac, Parallels automatically asks whether to connect the device to Mac or an active VM (this feature is customizable). No special configuration was required to recognize MV players.

- Here is the work-around provided by Parallels Technical Support:
- **Since this test was originally performed Parallels has released newer versions, which surely correct the above problem.*
  - The work-around was successful in solving the FORMAT problem in both versions 10 and 13 of Parallels Desktop. It will *probably* work in versions 11 or 12 but MegaVoice has no way to confirm that.
  - MegaVoice assumes no responsibility for any damage to the user's system(s) and/or devices caused by executing this script.
  - The script is a series of commands contained within a Windows command (BAT) file.
  - Before executing the script, it is strongly recommended to take a snapshot of the Parallels VM first. If something goes wrong, you can roll back to the snapshot.
    - Start the VM.
    - Click on the Parallels icon on the menu bar (||).
    - Select Actions | Take a Snapshot.
  - Download a ZIP file containing the command script here.
    - The ZIP file contains a command file named "prl_strg_un.bat".
    - Extract the file to the Windows desktop.
    - Make sure Parallels Tools is currently installed. If you are not sure, the easiest way to determine that is to check installed programs in Windows from the "Programs and Features" dialog in Control Center (Windows 7 and 8.x) or the "Apps" dialog in Settings (Windows 10). If it is not installed, install it before proceeding (a Windows reboot will be required afterwards).
      - If you apply this fix with Parallels Tools *not* installed and then install Parallels Tools later, this will undo the fix! The command script will have to be re-run after Parallels Tools is installed.
    - Right-click on the file and choose "Run as Administrator".
    - Once the script finishes, you will need to restart the Windows VM.
    - After Windows reboots, try to format a USB device to test the fix.

Oracle VM VirtualBox

- Oracle VM VirtualBox is also recommended -- but with a caution.
- This is free, open-source software from Oracle and is offered "as is". It is, however, being actively maintained by a group of developers so there is support.
- https://www.virtualbox.org/
- Also required is the VirtualBox extension pack: https://download.virtualbox.org/virtualbox/5.2.10/Oracle_VM_VirtualBox_Extension_Pack-5.2.10.vbox-extpack
  - Once the extension pack is installed, the USB 3.0 stack should be used in the VM settings. If the installed Windows does not have the driver available, then the Intel 3.0 USB eXtensible Host Controller should be downloaded and installed.
- Requires 10.10 (Yosemite), 10.11 (El Capitán), 10.12 (Sierra) or 10.13 (High Sierra) – 64-bit.
- An installation CD/DVD or ISO image for a Windows environment is required (license not included).
- Installation and creation of VMs was simple. Multiple VMs may be installed under VirtualBox.
- Integration between Mac and Windows was not as seamless as other options.
  - PROBLEM! Sometimes when using one of the VMs under VirtualBox, a simple operation, like resizing or moving the VM window, would cause the VM to simply disappear and abnormally terminate. Windows had to be restarted and any work in progress was lost.
  - Because of the issues noted above we deem it undependable. Since the problems were sporadic and difficult to replicate, we did not pursue a fix with the developers. They may be able to fix this issue if someone is willing to spend time with them on it.
  - VirtualBox also required some additional configuration for it to recognize MV players and connect them to the VM.
    - USB filters had to be specified: Vendor ID=10D6 and Product ID=1101.
- SaberCopy performed well within the VM. Performance is not quite as good as Fusion and Parallels and no problems were encountered at all during testing. A batch of 7 players was loaded numerous times with different messages from a 7-port powered hub.
- When connecting MV players to the Mac, VirtualBox automatically asks whether to connect the device to Mac or an active VM (this feature is customizable).

WINE

- WINE is last in our list. We do not recommend it but wanted to make our users aware that it is an inexpensive, albeit time-consuming, option.
- Even though the claim is that WINE is *not* an emulator (Wine Is Not an Emulator), it does provide a type of emulation and is described as "*a free and open-source compatibility layer that aims to allow computer programs (application software and computer games) developed for Microsoft Windows to run on Unix-like operating systems.*" It will simulate a Windows environment for execution of a single Windows application running on Mac OSX. It requires several other package installations to function correctly. It does not create a VM running Windows as all the other options do.
- All the software required is free to download and use.
- Here is a complete, easy to follow tutorial that will walk you through all the steps necessary for the installation and setup of all the software: https://www.davidbaumgold.com/tutorials/wine-mac/
- Requires macOS 10.10 (Yosemite) or above.
- There is no special integration between Mac files and folders and the Windows application.
- SaberCopy performance was sluggish at best. Not all features of the SaberCopy program work the way they normally do in a true Windows environment. Regardless, we were able to successfully load several players but it certainly wasn't seamless or efficient.
- When connecting MV players to the Mac, it was cumbersome to get SaberCopy to recognize them. There was a process necessary for this, and it was one-player-at-a-time. Sometimes it would remember the USB connection and sometimes it wouldn't, and the process had to be repeated.
- Running SaberCopy from WINE will work, and the price is certainly right (free!), but it is unlikely that one would settle for it after experiencing the performance and features of the better virtualization choices.

macOS versions from Catalina forward cannot run SaberCopy with WINE. See Crossover instead.

Crossover

- Crossover is a more advanced, easier-to-use version of WINE that we recently learned about. Their claim is that "CrossOver is the easiest way to run many Microsoft applications on your Mac without a clunky Windows emulator."
- Take note that they state "many" Microsoft applications and not "any". Some Windows applications may not work with Crossover.
- We have not tested Crossover ourselves but have received positive feedback from partners that are using it successfully with SaberCopy.
- You can download a free 14-day trial version or purchase it for 74 USD.
- https://www.codeweavers.com/crossover

User experience with WINE on Wasta Linux

The following user experience was submitted to us several months ago. It is reposted as it was received.

Using SaberCopy on Wasta Linux

by John Gieske, john_gieske@sil.org

INSTALLING SABERCOPY ON YOUR LINUX MACHINE

1. Install Wine (Wine Is Not an Emulator). Use the default configuration.

2. Download the latest version of SaberCopy.

3. Right-click on the SaberCopy .exe file and select "open with WINE."

4. WINE will lead you through the install process. Make sure you create a desktop shortcut so you can easily access it.

OPENING SABERCOPY

1. Click the desktop shortcut. Your machine will automatically run SaberCopy through WINE.

2. Each time you open SaberCopy it will tell you, "Text to speech functions are not supported on this computer." Click "OK."

TO CREATE A NEW PROJECT

NOTE: Have handy the document "Using SaberCopy to program MegaVoice players," Hereafter shortened to USPMVP.

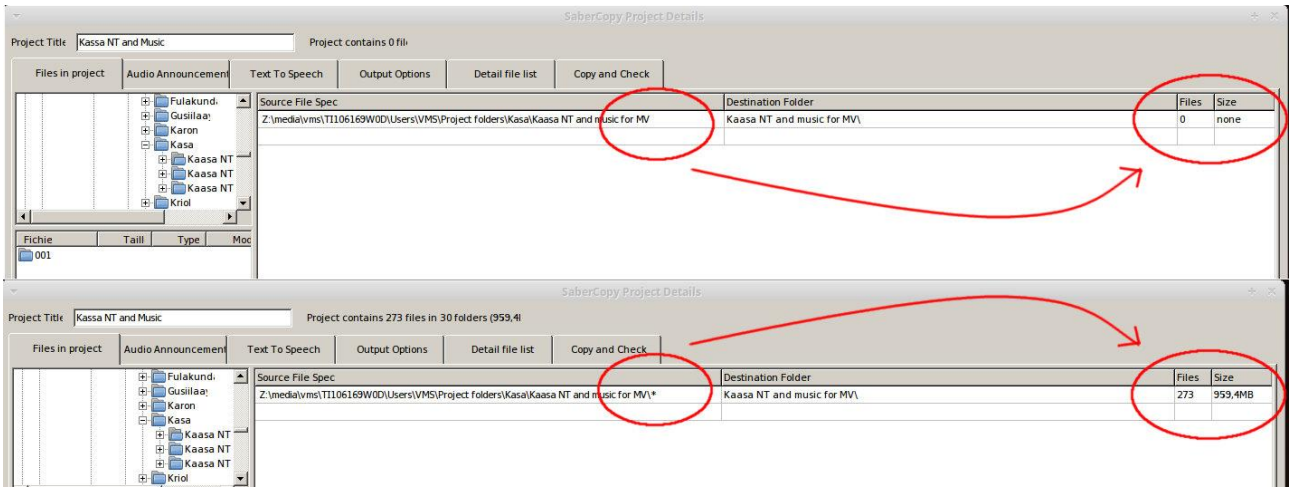
1. Click on "New Project."

2. In the "Files in project" window, navigate to your desired folder.
Note: If your desired folder is not on the same drive as your root folder, this could require some knowledge of the Linux filestructure… or a lot of guessing. The files ARE there, you just need to find them. On my dual-boot system, I go through media\[my user name]\[my hard drive name]\ to access the files on my other partition.

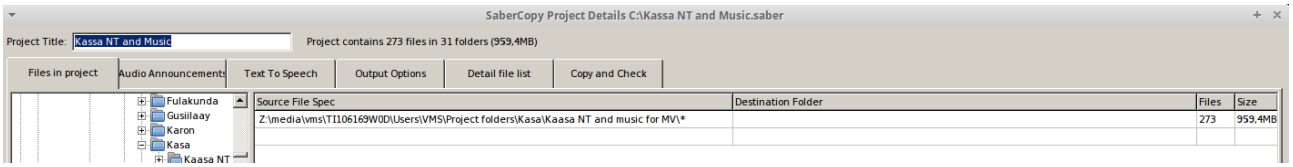
3. Click on your desired folder to select it. This may cause a bug. My Wasta Linux machine tries to rename the folder rather than simply selecting it, which for some reason provokes an error. I click on "Continue Application" rather than one of the other options, and when I have done so it returns to the SaberCopy screen with my folder now selected.
On my Ubuntu Studio machine, the first time I tried to select a folder SaberCopy crashed completely and I had to restart it. It has worked for me without errors ever since then. Whatever your experience, just keep at it and it should work eventually.

4. Once you have the folder selected you can either drag & drop it into the "Source File Spec" field or click the "Add" button. Either method should work.

5. However, SaberCopy will NOT correctly read your folder. Instead, it will say that your project contains 0 files with a size of “none.” In order to make SaberCopy see it correctly, you will need to add * to the end of the filepath as in this screenshot:



6. You can see in the screenshot that SaberCopy has identified the destination folder as “Kaasa NT and music for MV\”. In order to program a megavoice, the “Destination Folder” field must be blank. So if something is in there, delete it:



7. Follow instructions in USPMVP to finish setting up your project.

TO COPY YOUR NEW PROJECT TO A MEGAVOICE

1. Connect the megavoice player to be programmed. It will mount, show up in SaberCopy, and then disappear from the list before you have a chance to click on it. Alternatively it may remain on the list but greyed out with, with status “Not Connected.”

2. In order to actually get access to it, click on “Add Folder” and navigate to the root level of your megavoice. You can do this either by expanding “Workstation” and then selecting the appropriate drive letter, or by navigating to media\user\NO NAME (a virgin Envoy 2S will be called “NO NAME” or an Envoy S will be called “4GB Volume”). Either method should work, though I’ve occasionally had hiccups clicking on the drive letter so I would recommend the other path instead. For some reason the “Add Folder” button only works once, so if you accidentally choose the wrong thing the first time you’ll have to restart SaberCopy to try again.

3. Program the megavoice as per the USPMVP instructions

4. Almost immediately SaberCopy will display the following error:

ERROR LOG:

Exec 'format.com' 'F: /x /y /v: /q' [FAILED] - Error 2 - Fichier introuvable

I assume this means that the Quick Format has failed. Also the “write drive volume” name doesn’t change as specified; it remains as “NO NAME.” Another consequence is that the “emptying” stage can take quite a long time (up to a couple of minutes) if you are overwriting a megavoice that was previously programmed with a large amount of content.

5. Once the copy has completed, use the down arrow on the right to “Close folder.”

6. Eject the megavoice just as you would eject any other usb storage device from your computer.

PROGRAMMING MULTIPLE MEGAVOICES

1. As noted above, for some reason the “Add Folder” button only works once. This means that you have to close SaberCopy each time you finish programming a megavoice and re-open it again to program the next one.

2. Fast Copy Mode doesn’t work at all because of the problem that SaberCopy has seeing mounted devices. The “Add Folder” button is greyed out in Fast Copy Mode so there is no workaround in that mode.

ERRORS THAT YOU MAY ENCOUNTER FROM TIME TO TIME

ISSUE WITH EJECTING ENVOY 2S / ENVOY S
On ejecting a megavoice, the system gives no feedback. Then when you go ahead and unplug the megavoice anyway, Wasta Linux throws up this error:

Impossible to eject NO NAME
unable to find block device for drive

or for an Envoy S, it’s the same message except the volume name is « 4.0 GB Volume »

This error occurs regardless of whether or not you « close » the folder in Sabercopy, and regardless of whether or not you exit Sabercopy before ejecting the megavoice. However, if you plug in and then eject a megavoice without ever opening SaberCopy, you do not get this error.

This error did not seem to interfere with the proper functioning of the copied megavoices. Restarting the computer seemed to resolve the issue, at least temporarily.

ISSUE WITH EJECTING ENVOY S
On ejecting an Envoy S megavoice, the system gives no feedback. Then when you go ahead and unplug the megavoice anyway, Wasta Linux throws up this error:

Impossible to eject 4.0 GB Volume

Error ejecting /dev/sdb: Command-line `eject "/dev/sdb"' exited with non-zero exit status 1: eject: unable to find or open device for: `/dev/sdb'

This has happened to me twice. The first time this error did not seem to interfere with the proper functioning of the copied megavoice. In the second instance I was attempting to reprogram a faulty megavoice so I have no idea whether this error had an impact on the failure of the megavoice to operate properly.

SABERCOPY FREEZE

SaberCopy completely froze up once it had completed copying to my megavoice. I had to stop SaberCopy through the System Monitor before I could eject my megavoice.

This has only happened once out of dozens of tests.

MOUNTING TROUBLES

MegaVoice players do not always mount the first time I plug them in. This happens with both the Envoy 2 S models (using micro-USB cable) and the older Envoy S models (using mini-USB cable). Make sure that your player pops up on your desktop before you attempt to navigate to it in SaberCopy. If it doesn't appear after a couple of seconds, unplug the device, and plug it back in again.

This happens about a third of the time with Envoy 2S models and almost every time with Envoy S models.

TEST MACHINE SPECS

-Computer-

Processor	: 2x Intel(R) Celeron(R) CPU N3050 @ 1.60GHz
Memory	: 3893MB (1253MB used)
Operating System	: Ubuntu 16.04.6 LTS

-Display-

Resolution	: 1366x768 pixels
OpenGL Renderer	: Mesa DRI Intel(R) HD Graphics 400 (Braswell)
X11 Vendor	: The X.Org Foundation

-Version-

Kernel	: Linux 4.4.0-67-generic (x86_64)
Compiled	: #88-Ubuntu SMP Wed Mar 8 16:34:45 UTC 2017
C Library	: Unknown
Default C Compiler	: GNU C Compiler version 5.4.0 20160609 (Ubuntu 5.4.0-6ubuntu1~16.04.11)
Distribution	: Ubuntu 16.04.6 LTS

-Current Session-

Computer Name	: L60-wasta16
User Name	: user (user)
Home Directory	: /home/user
Desktop Environment	: X-Cinnamon (cinnamon)

Apple Boot Camp

Another utility that deserves mention is Apple's own Boot Camp software. Boot Camp is *free* from Apple and includes a *free* license for Windows 10.

MegaVoice did not test this option since it is a known solution that has been available from Apple for some time.

Unlike some of the other software we have reviewed, Boot Camp does not provide a virtual engine but rather is dual-boot software for your Mac computer. It partitions your hard drive into two parts – the current Mac O/S and a Windows O/S. When you turn your computer on, you choose which operating system from which to boot.

While this is a free utility, and is fully supported by Apple, there are disadvantages compared to virtual software:

- You must boot your computer from either Mac or Windows.
- You cannot easily switch from Windows to Mac or vice-versa. One O/S cannot communicate with the other. To change to the other, you must reboot your computer.
- Data is also not "shared" between Windows and Mac, so if you need the same data accessible by both on the hard drive it will likely need to be duplicated or moved to a removable device.
- Since data cannot be shared across operating systems, this potentially reduces the amount of hard disk space available to the Mac O/S even more.

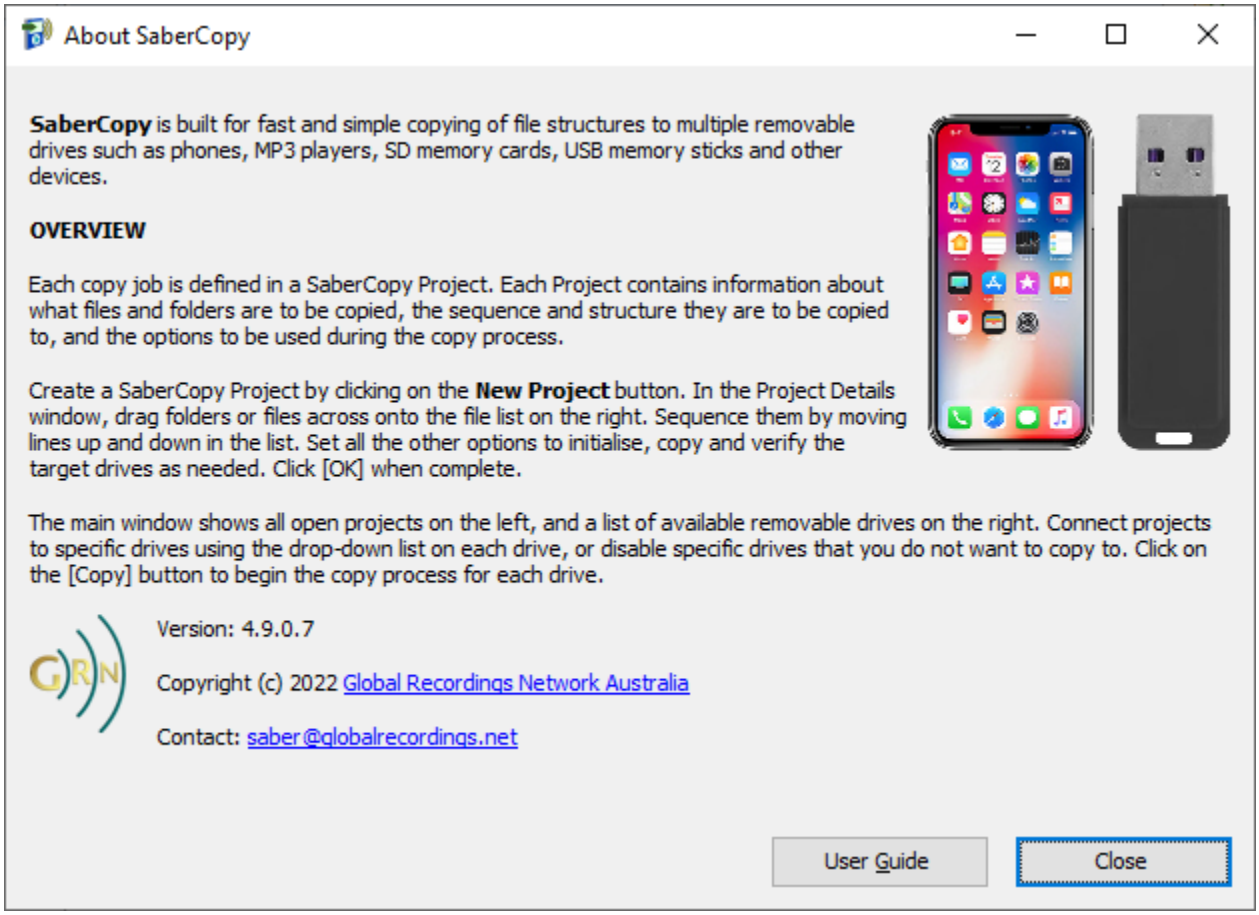
If Boot Camp will work for you, go here to get started: https://support.apple.com/en-us/HT201468

Technical Support

General

SaberCopy is offered “as is” from GRN with no implied warranty.

Support is available, so if you need any assistance with SaberCopy, MegaVoice customers should *first* contact us by clicking here.



User Guide and Support

SaberCopy provides a built in User Guide and you may find the answer to your question there. Click on the “User Guide” button on the bottom right. A PDF will be opened for you.

You may also download the guide here.