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# **MusicBrainz Picard**

***Release v2.6.3***

**Jun 07, 2021**

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## CHAPTER ONE

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### INTRODUCTION

MusicBrainz Picard is a cross-platform music file tagger. For any people who don't know what this means, here is a quick explanation which can be skipped by those people who already know.

Your music files don't just contain music. They also contain "metadata", consisting of "tags" which consist of a tag name or type and associated data, for example the album or track name, the name of the artist, the record label, the year of issue etc. Unless you rip the music files yourself with a very basic tool, your music files probably already contain some basic metadata, however there are literally hundreds of tags that can be applied to your music if you are interested.

Obviously, if you wanted to you could painstakingly research all this information for each album and track individually, and type the data into a tagging tool, but clearly it makes more sense in this internet connected age for one person to do this for each album and track, to upload that data to a shared database and then for the tagging tool to access that database and use the data to tag the music files. And **that** is what MusicBrainz Picard does.

**MusicBrainz** is the database, and **Picard** is the tool that tags the music files.

This User Guide is intended to provide comprehensive information related to the use of **MusicBrainz Picard** and additionally to make this available in alternate formats, including a PDF version suitable for printing. Links to additional information such as scripts, plugins and tutorials are provided when available rather than trying to reproduce the information in this document.

In order to effectively use Picard, it is important to understand what the program can do and, equally important, what it cannot do. Picard is primarily intended to tag and organize albums containing tracks, guided by the user to the specific release of the album that they have, and then to keep the metadata for these tracks up to date as users around the world enhance the quality of the MusicBrainz data associated with that particular release and track; Picard does this very well indeed. However, it is not intended to automatically organize your collection of thousands of random music files, and if this is what you are hoping for then you will likely be disappointed. To quote from the Picard website, "*Picard is not built to be a mass single-track tag fixer. Picard believes in quality over quantity and provides a plethora of customizations to tweak music collections to your needs.*"

### 1.1 Picard Can...

...add metadata tags to your music files, based on information available from the [MusicBrainz website](#).

...look up the metadata either manually or automatically based on existing information, including artist and song name, disc id (for CDs), and a track's AcoustID fingerprint.

...retrieve and embed coverart images from a variety of sources.

...rename and place the music files in directories based on naming template instructions provided in a naming script.

...calculate and submit a disc id to the MusicBrainz database, attaching it to a specified release.

...calculate and submit a music file's AcoustID fingerprint to the [AcoustID database](#).

### 1.2 Picard Cannot...

...automatically identify and remove all duplicate music files in your collection.

...provide metadata not already existing in the MusicBrainz database.

## 1.3 Limitations

### File Formats

Picard currently supports most music file formats, with Matroska (.mka) being one notable exception. Microsoft WAVE (.wav) files can be fingerprinted and renamed and can be tagged using ID3v2 tags, but this is not supported by all playback software. In addition, Picard does not support writing custom tags for all formats.

The [Picard Tag Mappings](#) section provides more information regarding the mapping between Picard internal tag names and various tagging formats.

### Request Rate Limiting

Picard's metadata retrieval is limited to the standard **one request per second** rate limiting for the MusicBrainz API. This becomes quite noticeable when trying to process a large list of files, and is exacerbated by extensions that perform additional information requests from the database.

### Network File Processing

Sometimes Picard needs to rewrite the entire music file in order to add or update the tags. This can take a few seconds, and the delay becomes even longer if the file is accessed across a network (e.g.: file is read from or written to a NAS device). The recommended "best practice" is to process all files on a local drive and then move them to the desired remote directory once processing is complete.

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**CHAPTER  
TWO**

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## **CONTRIBUTING TO THE PROJECT**

This document only exists because of the volunteer effort that went into its development, from the initial documentation on the Picard website, the information posted in the Community Discussion Forum, documentation from scripts, plugins and program source code, proofreaders, editors, translators, and feedback from the user community.

Further high quality contributions are welcomed from all Picard users wanting to be part of the open source community that creates and maintains this valuable music tool. Even if you cannot write code, based on your experience of using Picard any help you can give to improve this documentation further will be most appreciated. Even if you cannot improve the existing help, if you can create or maintain translations into other languages, that would be of great benefit.

If you notice an error in the documentation or have additional material to contribute, please [raise an issue](#) on the [documentation project on GitHub](#). [Pull Requests](#) to address outstanding issues are also appreciated.

**See also:**

[Contributing to MusicBrainz Picard / Picard Translations](#) / [Contributing to the Documentation](#)

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**CHAPTER  
THREE**

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## **ACKNOWLEDGEMENTS**

We gratefully acknowledge the following for their contributions to help develop, maintain and improve the Picard User Guide:

### **3.1 Editor and English Language Lead**

- Bob Swift (rdswift)

### **3.2 Translation Teams**

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- TBA

#### **3.2.3 Spanish (Lead: TBA)**

- TBA

### **3.3 Contributors**

This list includes contributors to the documentation, regardless of their role. In addition to actual content contributors, this includes leads, translators, reviewers and proofreaders. All contributions are valuable and appreciated. As such, the names are presented in alphabetical order so as not to imply the relative importance of someone's contribution based on their position in the list.

Contributors include (in alphabetic surname order):

- Vedant Chakravadhanula
- Pavan Chander
- Rahul Kumar Gupta
- Wieland Hoffmann
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- David Kellner
- Jun Kim
- Sambhav Kothari
- Laurent Monin
- Akash Nagaraj
- Frederik “Freso” S. Olesen
- Theodore Fabian Rudy
- Sophist
- Bob Swift
- Philipp Wolfer
- Shadab Zafar

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**Note:** There are likely others that have not yet been identified, so we apologize if your name has been missed. Please let us know and we'll make sure that it is added to the list.

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## CHAPTER FOUR

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### GLOSSARY OF TERMS

Many of the terms used in this documentation and within Picard itself have specific meaning in the MusicBrainz environment. Specific terms are defined as follows:

#### **acoustic fingerprint**

An acoustic fingerprint is a digital summary of an audio signal, that can be used to quickly identify the audio.

Please see [Wikipedia](#) for a full explanation of acoustic fingerprinting.

#### **AcoustID**

AcoustID is an acoustic fingerprint system built entirely on open-source technology. See the [AcoustID website](#) for additional information.

#### **albumartist**

The musician or group of musicians performing on a release. For example, “The Beatles” is the albumartist for the album “[Past Masters, Volume One](#)”, while the albumartist for “[No Boundaries: A Benefit for the Kosovar Refugees](#)” is “Various Artists”.

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**Note:** The albumartist usage is different for Classical Music releases, which follow the MusicBrainz [Classical Style Guide](#), listing the composer(s) first, followed by the performers.

---

#### **artist**

The musician or group of musicians performing on a track. For example, “Jeen” is the artist on the track “[Be \(One in a Million\)](#)” on the album “[Tourist](#)”.

Please see the [Artist](#) page on the MusicBrainz website for additional information.

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**Note:** The artist usage is different for Classical Music releases, which follow the MusicBrainz Classical Style Guide, showing only the composer and not the performers.

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## **artist credit**

An artist credit indicates who is the main credited artist (or artists) for releases, release groups, tracks and recordings, and how they are credited. They consist of artists, with (optionally) their names as credited in the specific release, track, etc., and join phrases between them. For example, on the release “[Love Sponge](#)” the artist is “[Walk off the Earth](#)” but is credited as “Gianni and Sarah”.

Please see the [Artist Credits page](#) on the MusicBrainz website for additional information.

## **caa**

The [Cover Art Archive](#) which is a joint project between the [Internet Archive](#) and [MusicBrainz](#), whose goal is to make cover art images available to everyone on the Internet in an organized and convenient way.

Please see the [Cover Art Archive page](#) on the MusicBrainz website for additional information.

## **disc id**

A Disc ID is the code number which MusicBrainz uses to link a physical CD to a release listing. It is a string of letters, like XzPS7vW.HPHsYemQh0HBUGr8vuU-. Disc IDs for a release can be seen on the disc IDs tab for the release on MusicBrainz. Clicking on these will give a detailed display of the disc ID, including the list of attached releases.

A release may have any number of disc IDs, and a disc ID may be linked to multiple releases. This is because [disc ID calculation](#) involves a hash of the frame offsets of the CD tracks. Different pressing of a CD often have slightly different frame offsets, and hence different disc IDs.

Conversely, two different CDs may happen to have exactly the same set of frame offsets and hence the same disc ID. For example `lwHl8fGzJyLXQR33ug60E8jhF4k-` applies to a wide [variety of releases](#) by a variety of artists.

## **mbid**

The MusicBrainz Identifier, which is a unique code used to identify each element in the MusicBrainz database. These are 128-bit Universally Unique Identifiers (UUID) represented as 32 hexadecimal digits, displayed in five groups separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters.

Please see the [UUID page on Wikipedia](#) for more information.

## **medium**

One of the physical, separate things you would get when you buy something in a record store. They are the individual CDs, vinyls, etc. contained within the packaging of an album (or any other type of release). Mediums are always included in a release, and have a position in said release (e.g. disc 1

or disc 2). They have a format like CD, 12" vinyl or cassette (in some cases this will be unknown), and can have an optional title (e.g. disc 2: The Early Years). For example, CD 1 of “[The Wall](#)”.

Please see the [Medium](#) page on the MusicBrainz website for additional information.

### **non-album track**

This term is obsolete and has been replaced with ‘standalone recording’.

### **recording**

An entity in MusicBrainz which can be linked to tracks on releases. Each track must always be associated with a single recording, but a recording can be linked to any number of tracks. For example, this recording of “[Bohemian Rhapsody](#)” is found as a track on over 100 releases.

Please see the [Recording](#) page on the MusicBrainz website for additional information.

### **release**

Represents the unique issuing of a product on a specific date with specific release information such as the country, label, barcode and packaging. For example “[Sea of No Cares](#)” is one version of the album released by Great Big Sea.

Please see the [Release](#) page on the MusicBrainz website for additional information.

### **release group**

Groups several different releases into a single logical entity. Every release belongs to one, and only one release group. Both release groups and releases are “albums” in a general sense, but with an important difference: a release is something you can buy as media such as a CD or a vinyl record, while a release group embraces the overall concept of an album — it doesn’t matter how many CDs or editions / versions it had. For example the “[Sea of No Cares](#)” release group contains multiple releases.

Please see the [Release Group](#) page on the MusicBrainz website for additional information.

### **standalone recording**

A recording that is not linked to any release. An example is “[Sea of No Cares \(live\)](#)” by Great Big Sea.

Please see the [Standalone Recording](#) page on the MusicBrainz website for additional information.

### **track**

A track is the way a recording is represented on a particular release (or, more precisely, on a particular medium). Every track has a title and is credited to

one or more artists. For example, track 7 of the album “[Back to Boston](#)” by Jason Anderson is “[Driving Home](#)”.

Please see the [Track](#) page on the MusicBrainz website for additional information.

## **work**

A distinct intellectual or artistic creation, which can be expressed in the form of one or more audio recordings. While a ‘Work’ in MusicBrainz is usually musical in nature, it is not necessarily so. A work could also be a novel, play, poem or essay, later recorded as an oratory or audiobook. For example, the song “[Blinded by the Light](#)” written by Bruce Springsteen has been recorded well over 100 times.

Please see the [Work](#) page on the MusicBrainz website for additional information.

## **See also:**

For more information on these and other terms used, please refer to the [Terminology](#) page on the MusicBrainz website.

## **See also:**

For a detailed explanation of how all the elements are related within the MusicBrainz environment, please refer to the [MusicBrainz Database / Schema](#) webpage.

## GETTING STARTED

### 5.1 Download & Install Picard

MusicBrainz Picard is available for all major desktop operating systems (e.g. Windows, Linux and macOS), and in multiple forms (directly downloadable formal release executables, package manager versions of these, daily build executables, Python source code that you can execute with your own Python environment, etc.)

It is expected that most users will run formal release executables or package manager equivalents as these are easy to install, and are stable versions which are less likely to have bugs in experimental or new functionality.

However, any users wishing to contribute to the development of Picard or its Plugins may want to run from source code, downloading it from GitHub using a version of Git on their own computer. If you want to contribute to the Picard code but you don't understand what the previous sentence said, then you have a bit of a learning curve. :-)

The latest version of MusicBrainz Picard is always available for download from the [Picard Website](#). This includes installers for all supported platforms as well as [release source code](#). The very latest source code is also available at the [GitHub repository](#).

#### 5.1.1 Installing Picard on Linux

##### Installing with Flatpak

Picard is available on Flathub. This version should work on all modern Linux distributions, as long as Flatpak is installed (see [Flatpak Quick Setup](#)).

First enable the Flathub repository:

```
flatpak remote-add --if-not-exists flathub https://flathub.org/repo/flathub.  
↪flatpakrepo
```

You can now install Picard:

```
flatpak install flathub org.musicbrainz.Picard
```

## Installing with Snap

Picard is available as a Snap from the Snap Store. This version should work on all modern Linux distributions, as long as Snap is installed (see [Installing Snap](#)).

If your Linux distribution supports it you can install Picard from your distribution's software center, e.g. Ubuntu Software or KDE Discover. You can also install Picard from the terminal:

```
snap install picard
```

---

**Note:** Picard installed as a Snap is running inside a sandbox and thus it does not have full access to all files and folders on your system. By default Picard has access to your home folder. You can additionally give it access to removable media by running the following command on a terminal:

```
snap connect picard:removable-media
```

---

## Installing from your distribution's package repository

Picard is available in the package repositories of most distributions. The [download page](#) provides links to the packages for common Linux distributions. Please refer to your distribution's documentation for how to install software packages.

Please note that most distributions usually ship older versions of Picard. If you want to use the latest available version, as is recommended, install Picard as Flatpak or Snap as described above.

### 5.2 Main Screen



- 1. Menu Bar:** This provides the pull-down menu of actions that Picard can perform.
- 2. Tool Bar:** This provides quick links to the main functions performed by Picard. This can be customized by the user in the [User Interface Options](#) settings.
- 3. File Browser:** This provides a browser for selecting files and directories for processing.
- 4. Cluster Pane:** Often referred to as the “left-hand pane”, this section allows the user to select and cluster files for scanning, lookup or matching.
- 5. Album Pane:** Often referred to as the “right-hand pane”, this section displays the albums retrieved from MusicBrainz. This is the section where files are matched to downloaded track information.
- 6. Metadata Pane:** This section is a three-column table of the tag metadata for the album or track currently selected in the Album Pane. The first column shows the tag name, the second shows the original value found in the file, and the third column shows the new value that will be written.
- 7. Cover Art:** This shows the new cover art image that will be written to the selected album or track, along with the original cover art image found in the files matched to the selected album or track.
- 8. Player:** The built-in player that can be used to play selected audio files.

**9. Status Bar:** The bar at the bottom of the screen shows information about the current operation of Picard, including such items as number of files, albums, and pending downloads.

Picard is available for different operating systems. And while Picard's functionality is overall the same the specific look of the user interface can be slightly different based on the operating system. Throughout the documentation screenshots taken on different operating systems are used. Below you find a selection of screenshots of Picard's main screen on different systems:

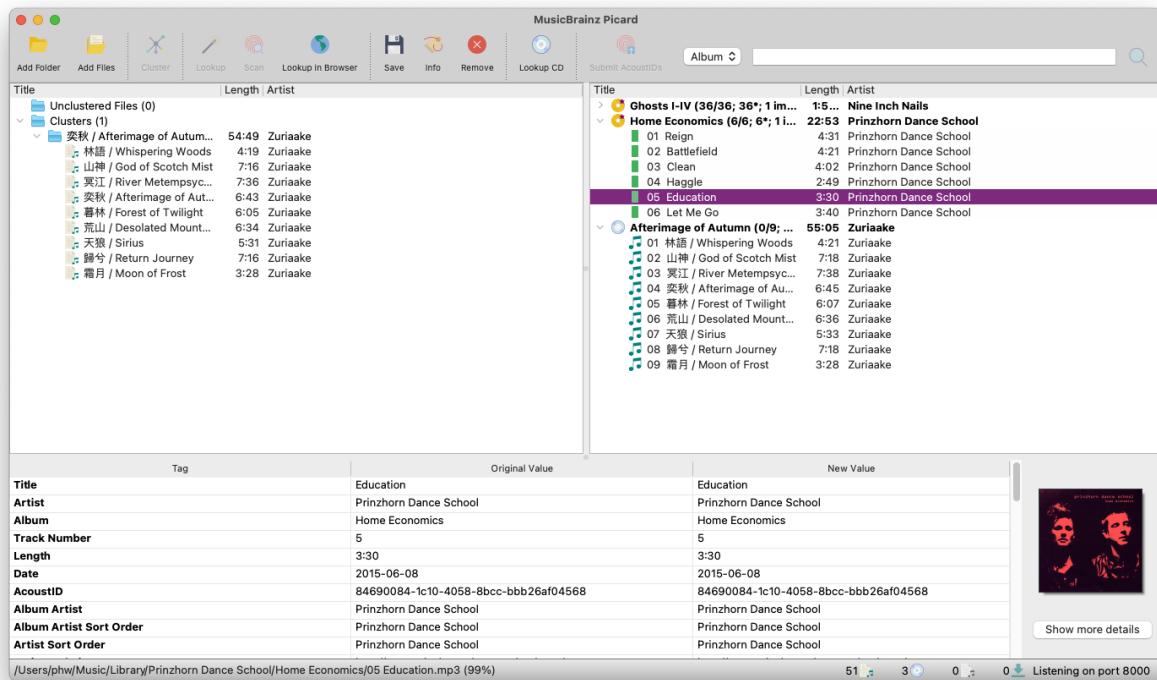


Picard on Windows 10 (with light user interface)

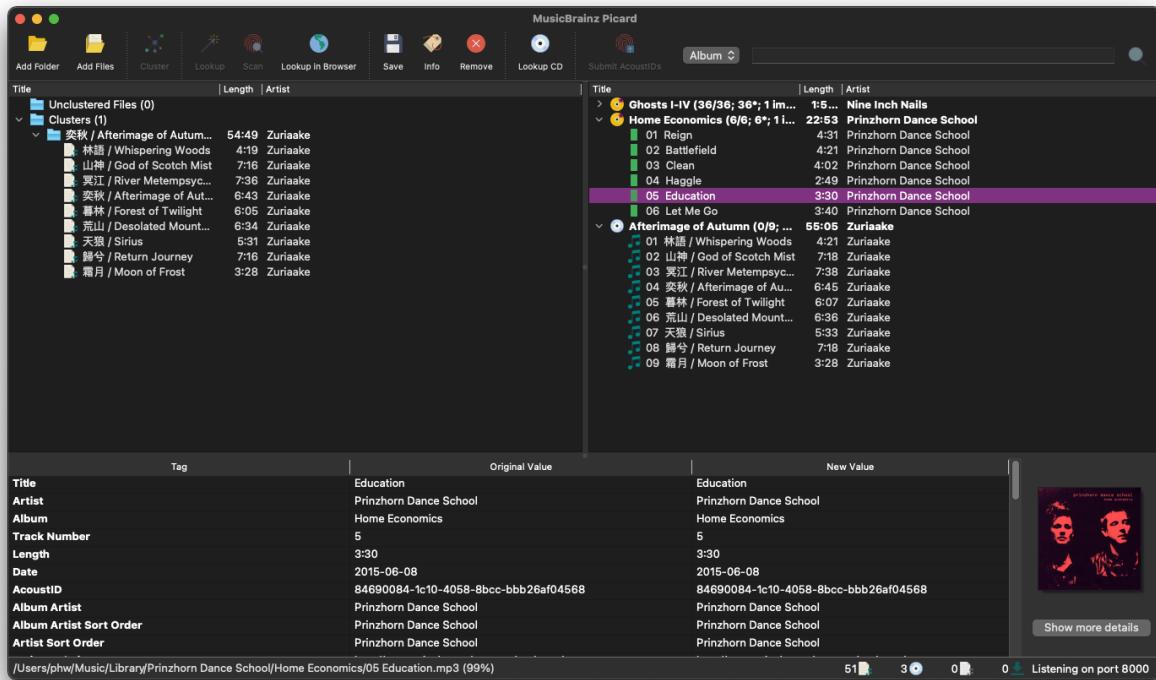
## MusicBrainz Picard, Release v2.6.3



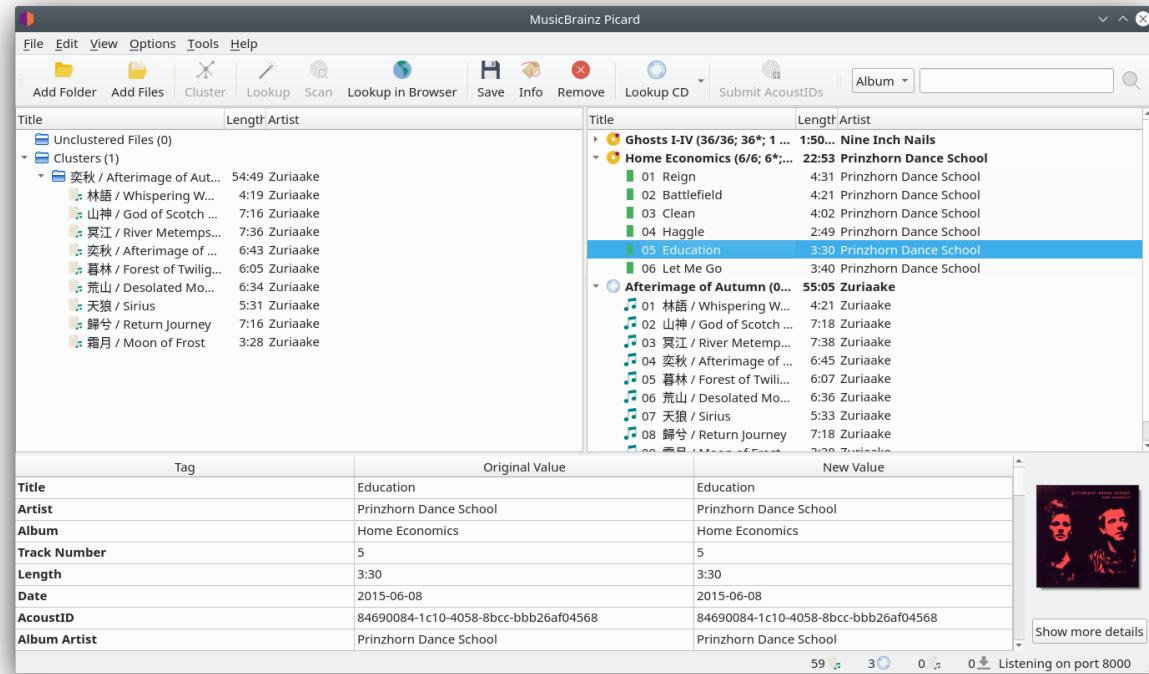
Picard on Windows 10 (with dark user interface)



Picard on macOS



Picard on macOS (dark mode)

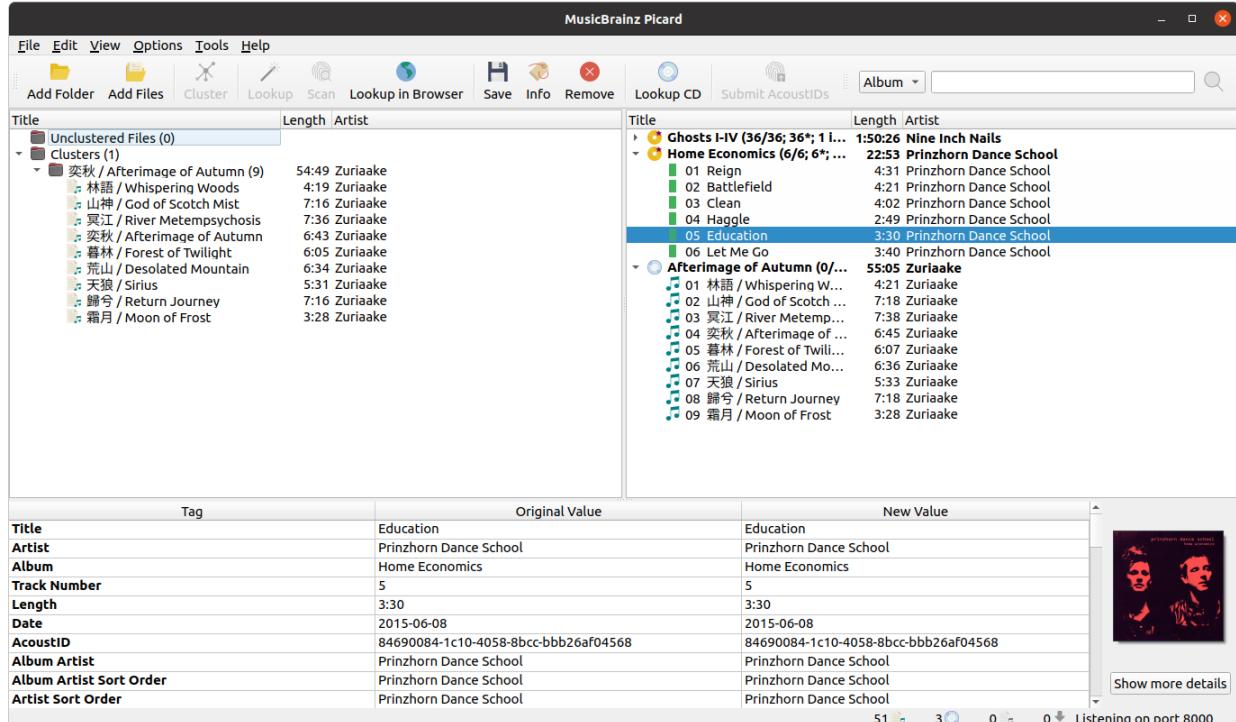


Picard on Linux with the KDE Plasma desktop environment (light theme)

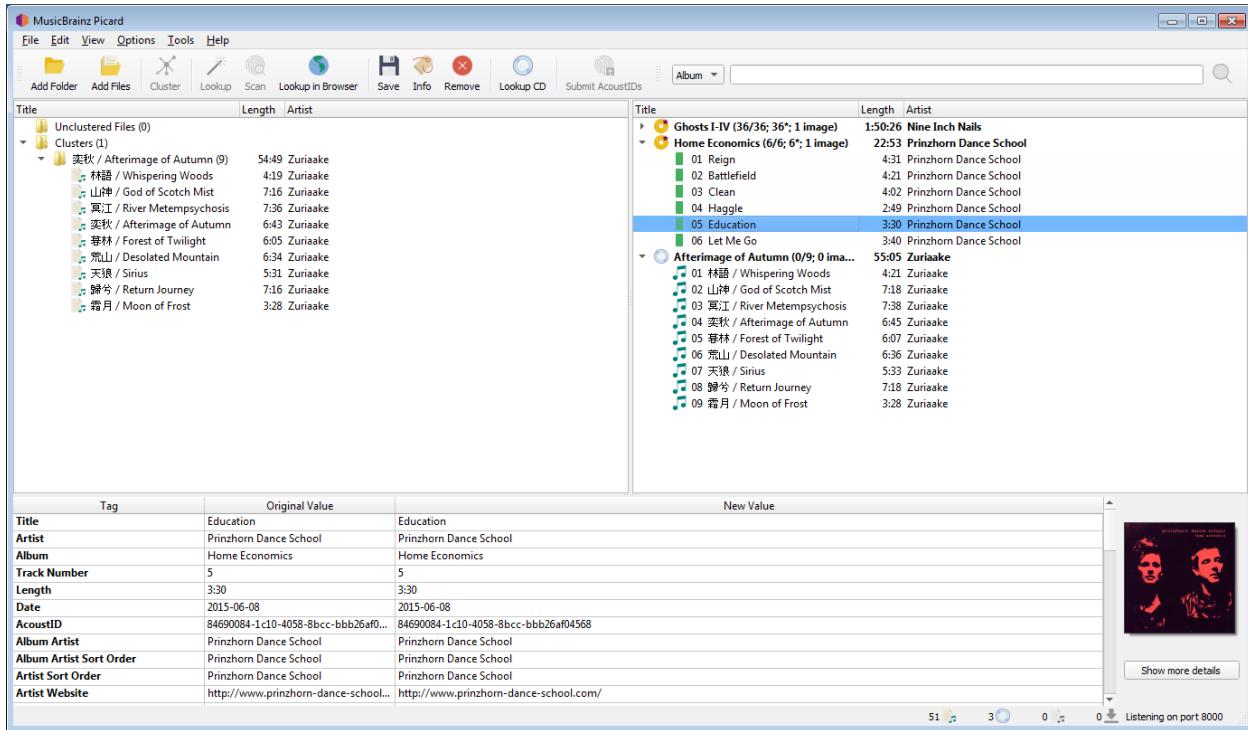
## MusicBrainz Picard, Release v2.6.3



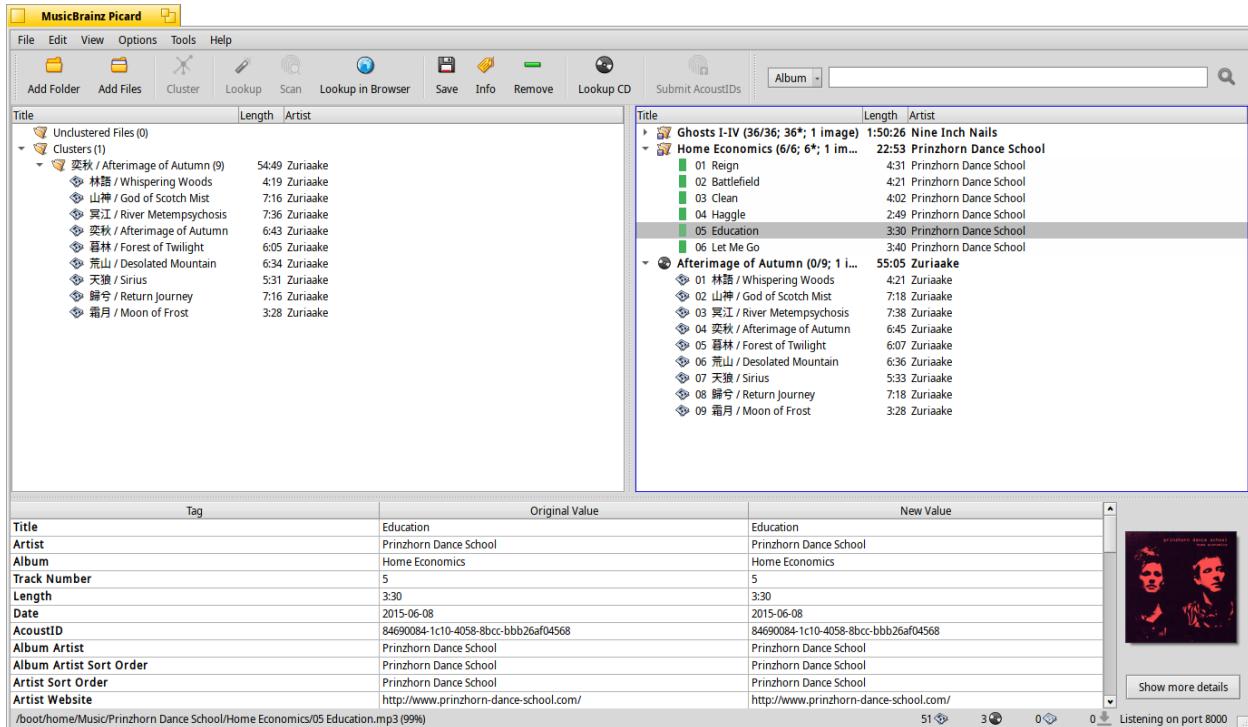
Picard on Linux with the KDE Plasma desktop environment (dark theme)



Picard on Linux with the GNOME desktop environment



Picard on Windows 7



Picard on Haiku

## 5.3 Status Icons

When albums and tracks are displayed in the right-hand pane, each line begins with an icon to indicate the status of the item.

### 5.3.1 Album / Release Icons



This icon indicates that the information for the release has been successfully retrieved from the MusicBrainz database. Some, but not all, tracks may have been matched to files and the information has not been modified.



This icon indicates that some of the tracks have been matched and that the information for the release has been modified.



This icon indicates that all of the tracks have been matched and that the information has not been modified.



This icon indicates that all of the tracks have been matched and that the information for the release has been modified.



This icon indicates that Picard has encountered an error with the release, typically while retrieving the information from the MusicBrainz database.

### 5.3.2 Track Icons



This icon indicates that the track is an audio track and that there is no single file currently matched. This appears if there is no file matched, or if there are multiple files matched.



This icon indicates that the track is a video track and that there is no file currently matched. This appears if there is no file matched, or if there are multiple files matched.



This icon indicates that the track is a data track and that there is no file currently matched. This appears if there is no file matched, or if there are multiple files matched.



These icons indicate the quality of match between the information from the file and the information for the track as provided from the MusicBrainz database. Red indicates a poor match, progressing to all green which indicates a very good match.



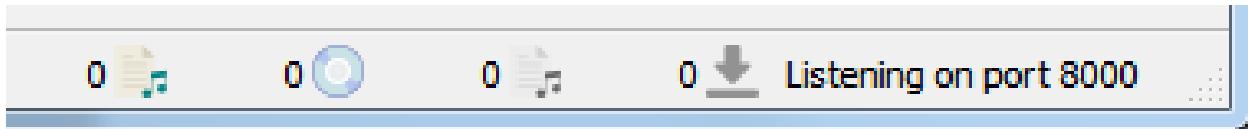
This icon indicates that the track has been saved successfully.



This icon indicates that Picard encountered an error while trying to save the track. This is typically due to the file being marked as read-only, or you do not have sufficient permission to save the file in the specified directory.

### 5.3.3 Status Bar

There is a status bar at the bottom of Picard's main screen, which displays some information about current processing status. This includes four numbers along with the current port number that Picard is monitoring.



From left to right, the four numbers represent:

1. The number of files loaded.
2. The number of MusicBrainz releases loaded.
3. The number of files with pending action (e.g. loading, saving, fingerprinting).
4. The number of active network requests.

You can tell whether or not Picard is currently processing your files by looking at the numbers for pending files and pending network requests. If both are 0 nothing is pending and processing is complete.

---

## CHAPTER SIX

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# CONFIGURATION

Once Picard has been installed on your system, the next step is to configure it to your preferences. The configuration consists of enabling the desired screen sections for display, selecting the desired actions, and setting the various options.

## 6.1 Screen Setup

The screen setup is found under the “View” item on the menu bar. To enable the display of an item, simply check the box for the screen option. The items are:

### File Browser

This displays a file browser on the left side of the screen for selecting files and directories for processing. Files can be loaded into Picard by dragging and dropping them to the right panes, double clicking on individual files or by selecting multiple files and folders and selecting “Load selected files” from the context menu.

Files and directories can also be selected using your system’s file browser by dragging and dropping them onto the Picard application.

### Cover Art

This displays the cover art for the currently selected item (track or release) in a window to the right of the tags section of the display. This allows you to select or replace the cover art saved with the release.

### Actions

This displays the button bar of the actions performed by Picard, located just below the menu bar.

### Search

This displays the manual search box to the right of the “Actions” button bar.

### Player

This displays the built-in player for playing selected audio files.

## **6.2 Action Options**

The action options are found under the “*Options*” item on the menu bar. There are three available actions that Picard can perform when saving selected music files:

### **Rename Files**

Picard will rename each file in accordance with the naming script.

### **Move Files**

Picard will move files to the target directory in accordance with the naming script.

### **Save Tags**

Picard will update the metadata tags in the files in accordance with the specified option settings and tagging scripts.

## **6.3 Option Settings**

The option settings are found under the “*Options → Options...*” item on the menu bar. This will open a new window with the option groups listed in a tree format on the left hand side, and the individual settings on the right hand side. This is where the majority of Picard’s customization is performed.

### 6.3.1 General Options



#### Server address

The domain name for the MusicBrainz database server used by Picard to get details of your music. Default value: musicbrainz.org (for the main MusicBrainz server).

#### Port

The port number for the server. Default value: 80 (for the main MusicBrainz server).

#### Username

Your MusicBrainz website username, used to submit acoustic fingerprints,

retrieve and save items to your collections, and retrieve personal folksonomy tags.

### **Password**

Your MusicBrainz website password.

### **Automatically scan all new files**

Check this box if you want Picard to scan each music file you add and look for an AcoustID fingerprint. This takes time, but may be helpful for you and MusicBrainz. Leave it unchecked if you don't want Picard to do this scan automatically. In any case, you can direct Picard to scan a particular music file at any time using "*Tools → Scan*".

### **Ignore MBIDs when loading new files**

If you disable this option Picard will not use MusicBrainz identifiers (MBIDs) stored in the files to automatically load the corresponding MusicBrainz release and match the loaded file to the correct track. This is useful when re-processing files that have been previously tagged with incorrect information.

### **Check for updates during start-up**

This option determines whether or not Picard will automatically check for program updates during startup. In any case, you can have Picard check for program updates at any time using "*Help → Check for update*".

### **Days between checks**

This option allows you to limit the automatic update checking by selecting the interval, in days, between checks. Set this to 1 if you want to check daily, 7 for weekly checks, and so on. Note that this only applies if the "Check for updates during start-up" option is enabled.

### **Updates to check**

This option allows you to select which levels of update to check. Your options are:

- Stable releases only
- Stable and Beta releases
- Stable, Beta and Dev releases

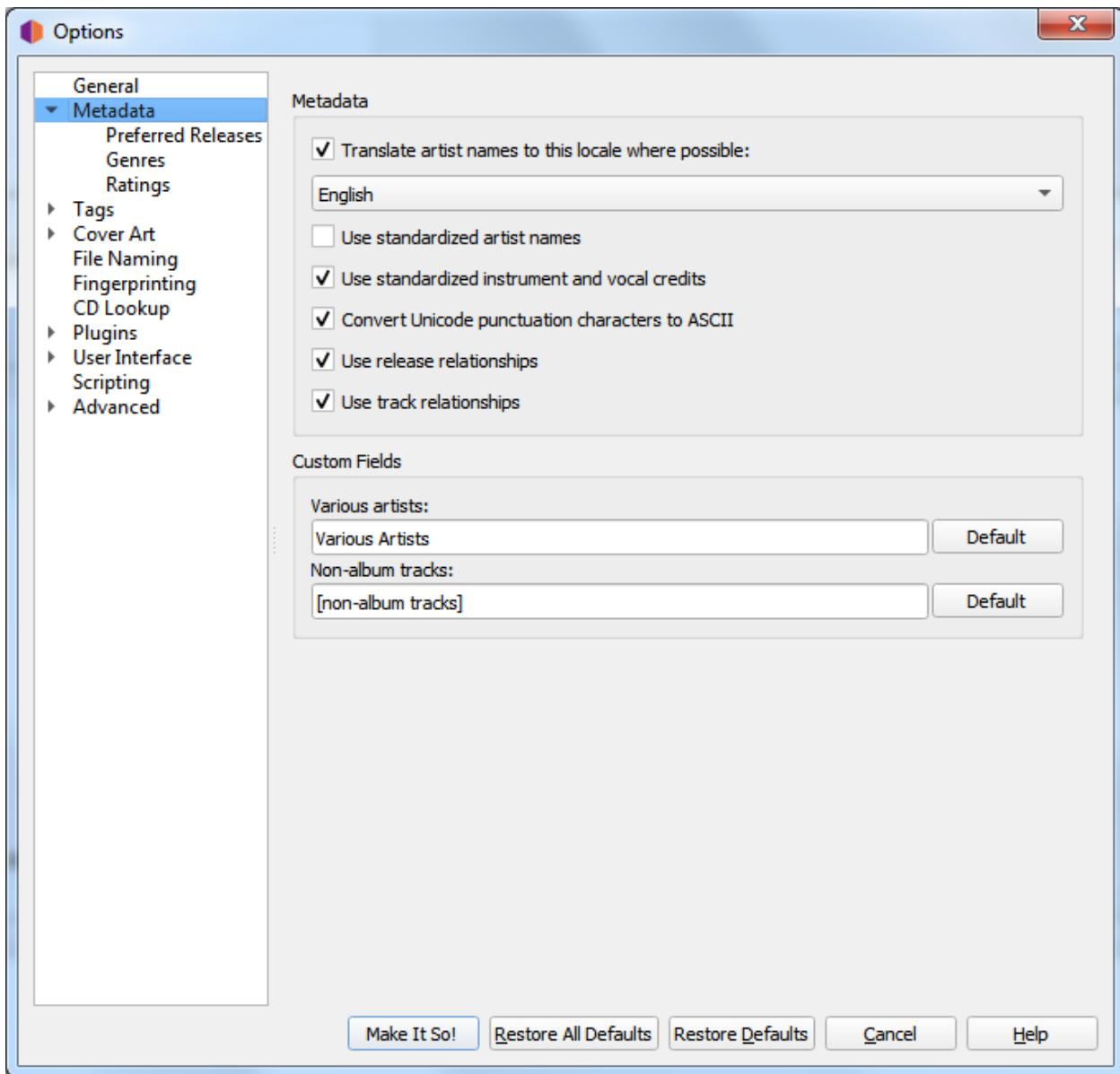
For example, if you subscribe to "Stable releases only" you will not be notified if a new Beta or Dev release is issued.

---

**Note:** The update checking related settings and "*Help → Check for update...*" command may not be available when Picard is distributed as a package. In that case, the user should check with the maintainer of the package to determine when an update is available.

---

### 6.3.2 Metadata Options



#### **Translate artist names to this locale where possible**

When checked, Picard will see whether an artist has an alias for the selected locale. If it does, Picard will use that alias instead of the artist name when tagging. When “English” is the selected locale, the artist sort name (which is, by Style Guideline, stored in Latin script) is used as a fallback if there is no English alias.

#### **Use standardized artist names**

Check to only use standard Artist names, rather than Artist Credits which may differ slightly across tracks and releases.

---

**Note:** If the “Translate artist names” option above is also checked, it will override this option if a suitable alias is found.

---

### **Use standardized instrument and vocal credits**

Check to only use standard names for instruments and vocals in performer relationships. Uncheck to use the instruments and vocals as credited in the relationship.

### **Convert Unicode punctuation characters to ASCII**

Converts Unicode punctuation characters in MusicBrainz data to ASCII for consistent use of punctuation in tags. For example, right single quotation marks are converted to ASCII apostrophes ('), and horizontal ellipses are converted to three full stops (...).

### **Use release relationships**

Check to retrieve and write release-level relationships (e.g.: URLs, composer, lyricist, performer, conductor, or DJ mixer) to your files. You must have this enabled to use Picard to retrieve cover art.

### **Use track relationships**

Check to write track-level relationships (e.g.: composer, lyricist, performer, or remixer) to your files.

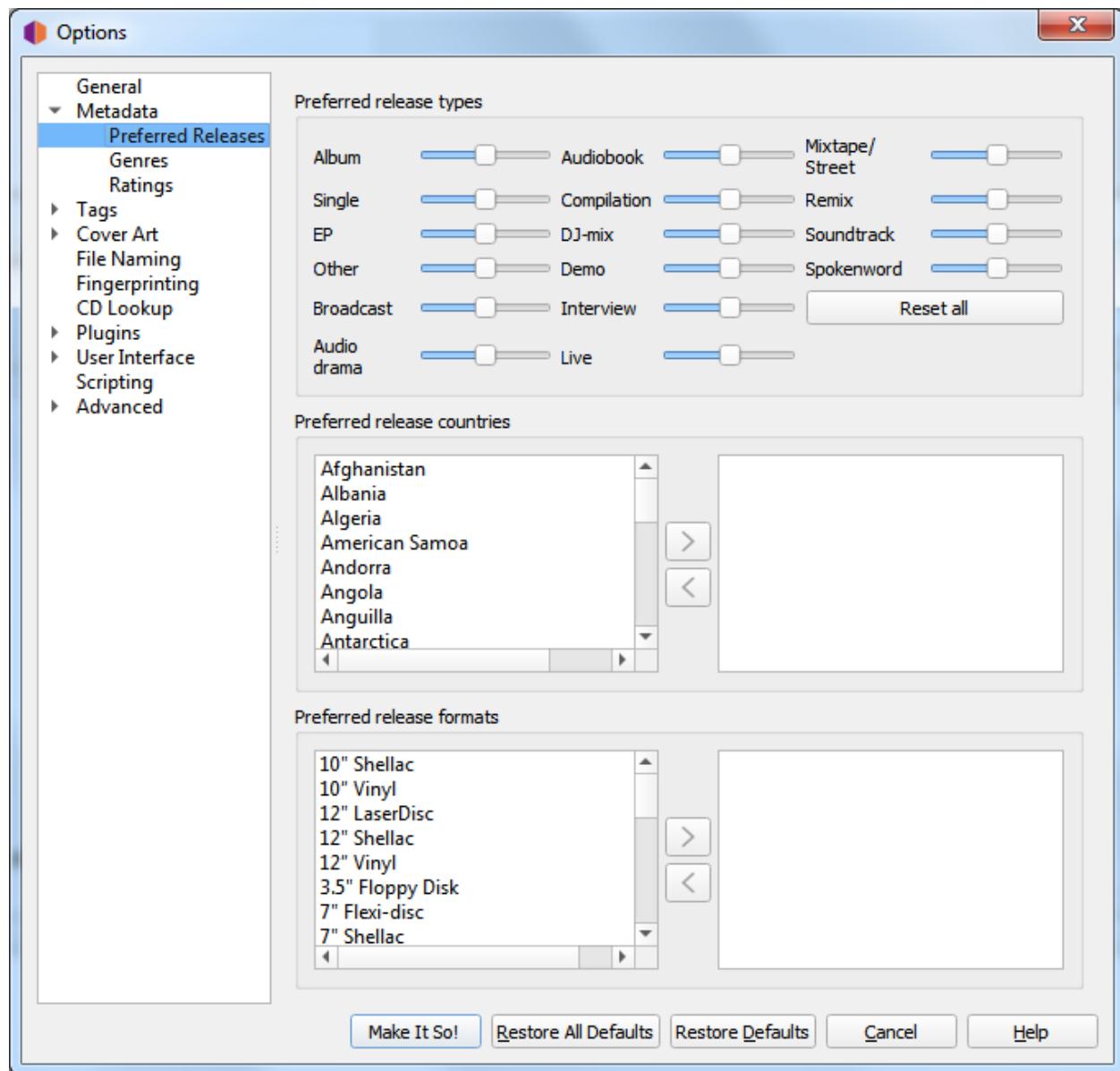
### **Various artists**

Choose how you want the “Various Artists” artist spelled.

### **Non-album tracks**

Choose how you want “non-album tracks” to be grouped.

## Preferred Releases



### Preferred release types

Adjust the sliders for various release types to tweak how likely Picard is to match a file or cluster to releases of various types. For example, you can use this to decrease the likelihood of Picard matching a file or album to a Compilation or Live version.

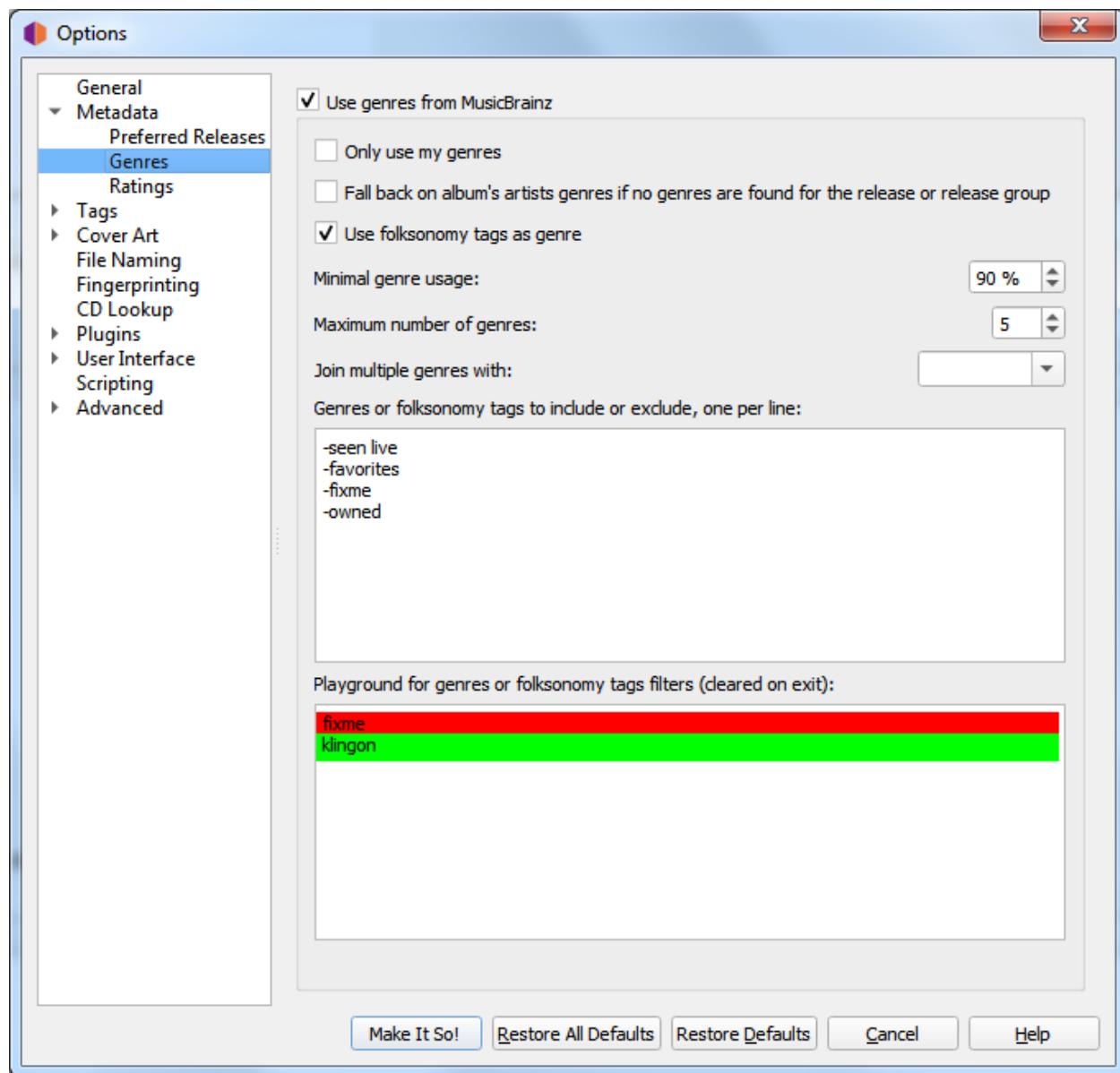
### Preferred release countries

Add one or more countries into the list to make Picard prefer matching clusters or files to releases from the chosen countries. This list is also used to prioritize files in the “Other Releases” context menu.

### Preferred release formats

Add one or more formats into the list to make Picard prefer matching clusters or files to releases of the specified format. This list is also used to prioritize files in the “Other Releases” context menu.

### Genres



#### Use genres from MusicBrainz

Use genres provided by MusicBrainz and save them to the genre tag.

#### Fall back on album's artists genres if no genres are found for the release or release group

If there is no genre set for the release or release group on MusicBrainz, use the genre of the album artist instead.

## Only use my genres

When enabled, Picard will only write genres you personally have submitted to MusicBrainz. You'll need to set your username and password to use this feature.

## Use folksonomy tags as genres

Check to use all folksonomy tags to set the genre. Otherwise only the tags considered by MusicBrainz to be proper genres will be used.

## Minimal genre usage

Choose how popular the genre must be before it is written by Picard. Default: 90%. Lowering the value here will lead to more, but possibly less relevant, genres in your files.

## Maximum number of genres

Choose how many genres to use. Default: 5. If you only want a single genre, set this to 1.

## Join multiple genres with

Select which character should be used to separate multiple genres.

## Genres or folksonomy tags to include or exclude

One expression per line, case-insensitive. You can use the “Playground” text field to enter some genres and test the rules you have setup. Genres that will be excluded will be marked red, included genres will be marked green.

- **Comments:** Lines not starting with ‘-’ or ‘+’ are ignored. (e.g.: #comment, !comment or comment)
- **Strict filtering:** Exclude exact word by prefixing it with ‘-’ (e.g.: -word). Include exact word, even if another rule would exclude it, by prefixing it with ‘+’ (e.g.: +word).
- **Wildcard filtering:** Exclude all genres ending with “word” (e.g.: -\*word). Include all genres starting with “word” (e.g.: +word\*). Exclude all genres starting with ‘w’ and ending with “rd” (e.g.: -w\*rd).
- **Regular expressions filtering (Python “re” syntax):** Exclude genres starting with ‘w’ followed by any character, then ‘r’ followed by at least one ‘d’ (e.g.: -/^w.rd+/).

## Playground for genres or folksonomy tags filters:

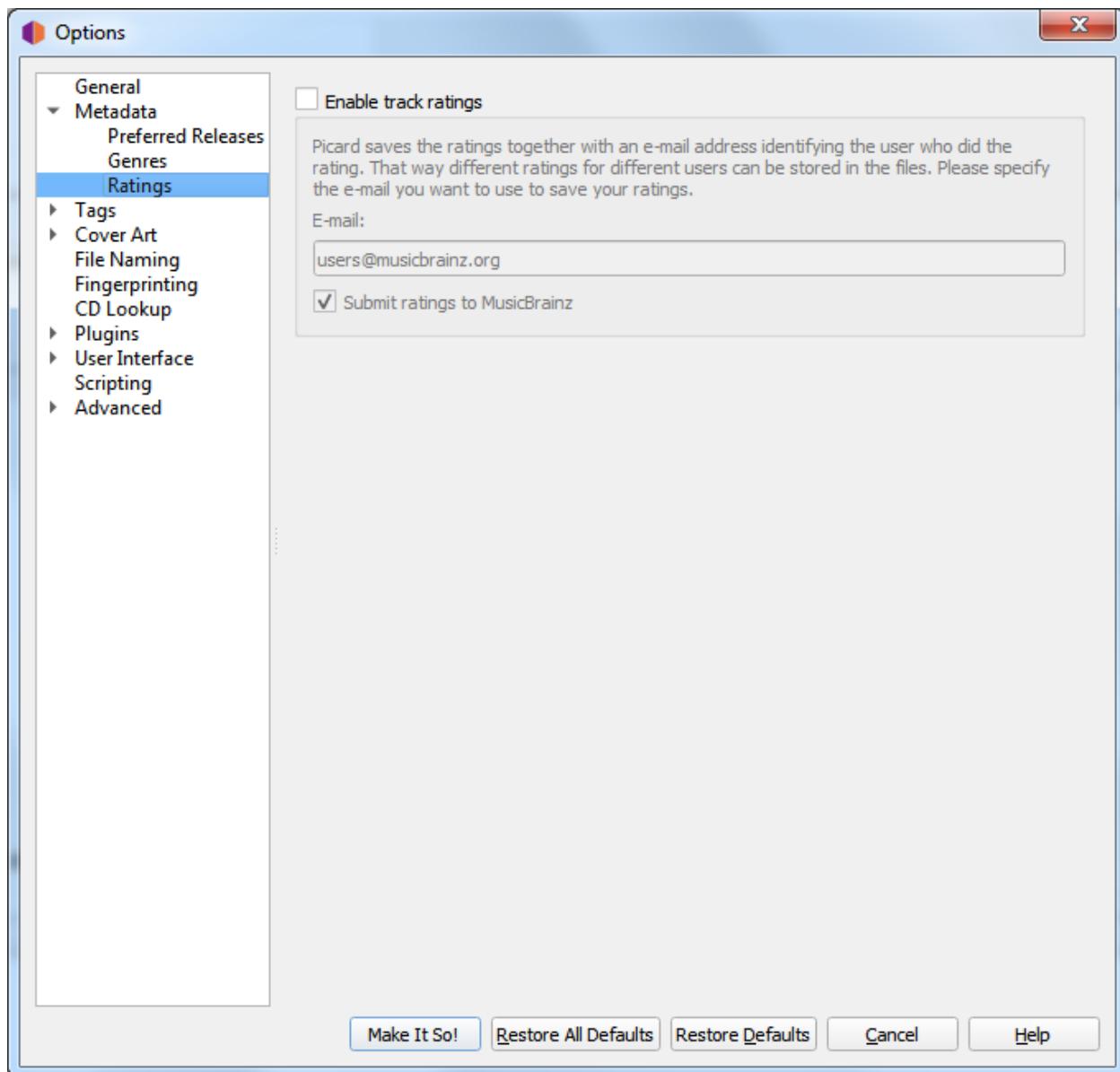
This area allows you to enter genre tags, one per line, to test your filters. If a tag is marked in red, it will be filtered out. A tag marked green will be allowed.

---

**Note:** This list of test tags will be cleared when you exit the configuration section.

---

## Ratings



### Enable track ratings

Check to write track ratings to your files.

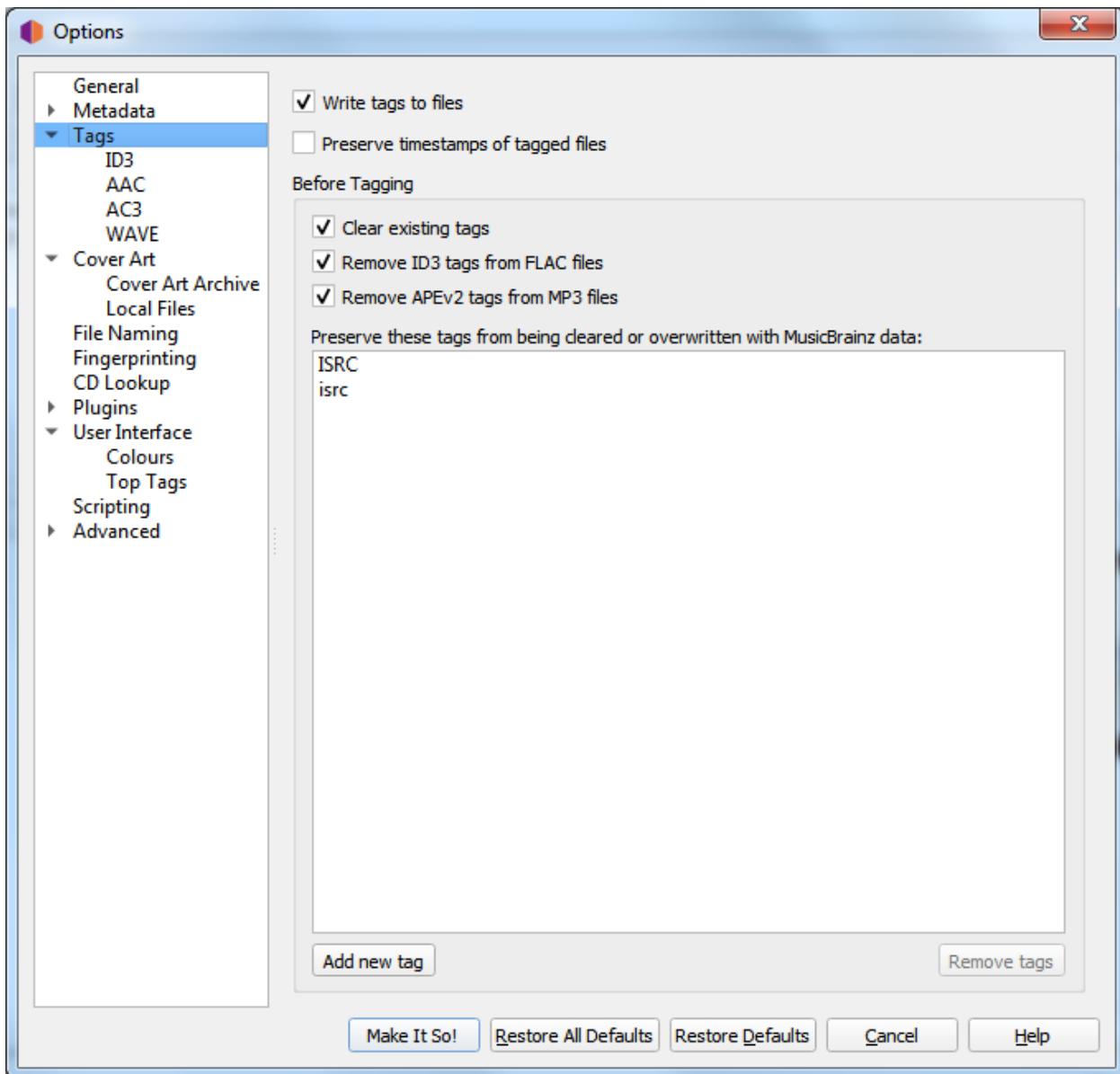
### E-mail

The email address used when submitting ratings to MusicBrainz. This identifies the user that provided the rating.

### Submit ratings to MusicBrainz

Check to submit ratings to MusicBrainz. The tracks will be rated with your account.

### 6.3.3 Tag Options



#### **Write tags to files**

Uncheck to disable Picard from writing metadata to your files. Picard may still move or rename your files according to your settings.

#### **Preserve timestamps of tagged files**

If checked, Picard will not update the “Last Modified” date and time of your music files when it writes new tags to them.

### Before Tagging

#### Clear existing tags

Checking this will remove all existing metadata and leave your files with only MusicBrainz metadata. Information you may have added through another media player such as “genre”, “comments” or “ratings” will be removed.

#### Remove ID3 tags from FLAC files

Check to remove ID3 tags from FLAC files – Vorbis Comments are recommended for FLAC files. Picard will write Vorbis Comments to FLAC files regardless of this setting.

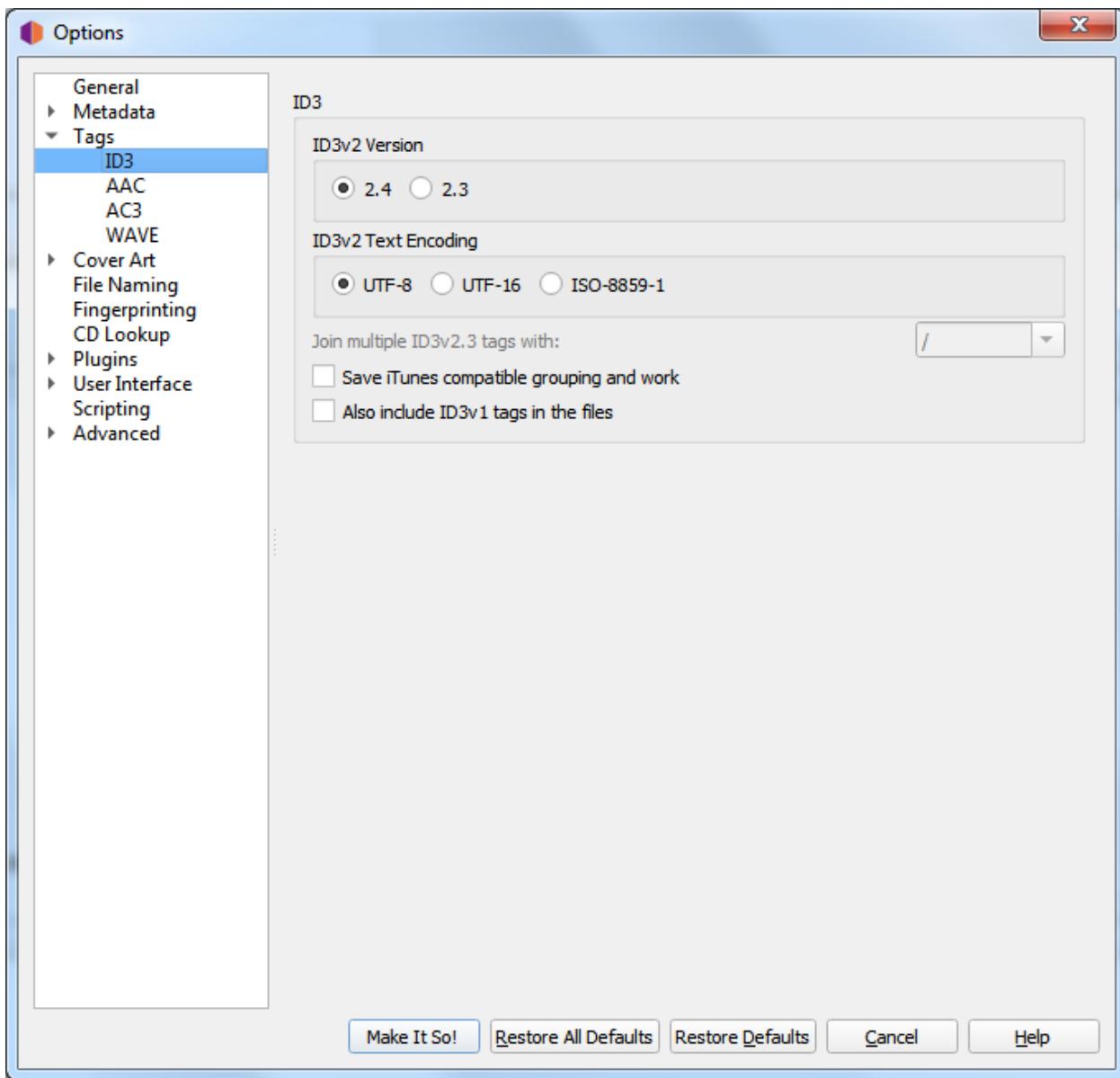
#### Remove APEv2 tags from MP3 files

Check to remove APEv2 tags from MP3 files – ID3 is recommended for MP3 files. Picard will write ID3 tags to MP3 files regardless of this setting.

#### Preserve these tags from being cleared or overwritten with MusicBrainz data

This is an advanced option: If you have tags which you need to preserve, enter their names here to stop Picard from overwriting them.

## ID3 Files



### ID3v2 version

Although ID3v2.4 is the latest version, its support in music players is still lacking. While some software has no problem using version 2.4 tags, others may not be able to read the tags and display the information. Support for ID3v2.4 in other media players (such as smartphones) is variable.

Other than native support for multi-valued tags in v2.4, the [Picard Tag Mapping](#) section will show you what you lose when choosing v2.3 instead of v2.4.

### ID3v2 text encoding

The default for version 2.4 is UTF-8, the default for version 2.3 is UTF-16. Use ISO-8859-1 only if you face compatibility issues with your player.

### Join ID3v23 tags with

As mentioned above, ID3v2.3 does not support multi-value tags, and so Picard flattens these to strings before saving them to ID3v2.3 tags. This setting defines the string used to separate the values when flattened. Use ';' for the greatest compatibility (rather than '/' since tags more often contain a '/' than a ';') and for the best visual compatibility in Picard between ID3v2.3 and other tagging formats.

---

**Note:** This setting is explicitly only for ID3 v2.3 tags, because those don't support proper multi value tags. Hence this separator setting is actually more of a workaround to this fact.

Because Vorbis tags allow the same tag to exist multiple times, and hence support multi valued tags by default, there actually is no separator at all there. It is just multiple values, shown using whatever the player software uses as a separator.

If for some reason you want all the values of the tag in a single field separated by some separator you could use a script like:

```
$set(musicbrainz_artistid,$join(%musicbrainz_artistid%, / ))
```

to flatten all the values into a single field separated by " / ".

---

### Save iTunes compatible grouping and work

Save the tags grouping and work so that they are compatible with current iTunes versions. Without this option grouping will be displayed in iTunes as "work name" and work will not be available.

See the [Picard Tag Mapping](#) section for details.

---

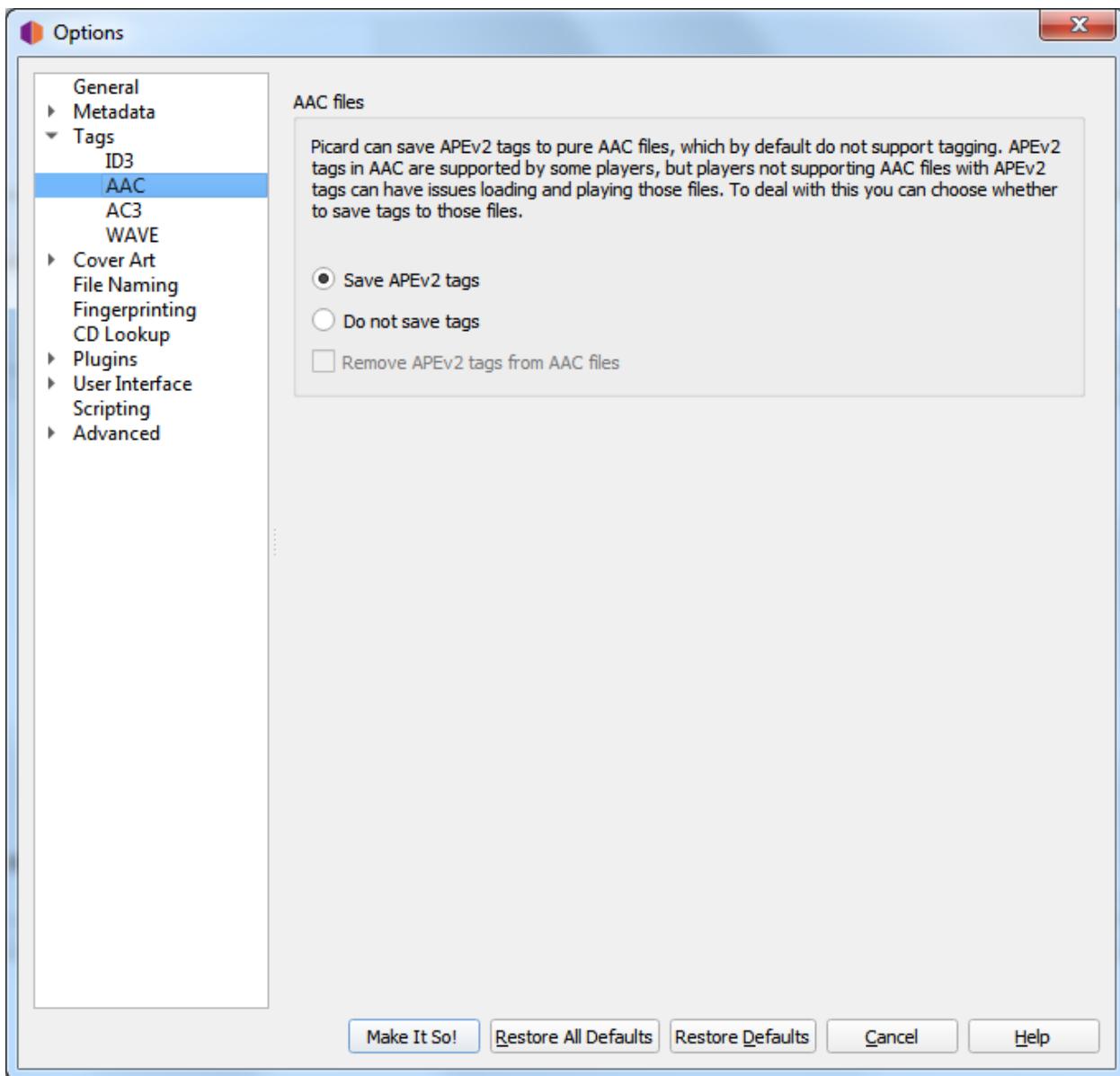
**Note:** For other players supporting grouping and work you might need to disable this option. [MusicBee](#) is one example of this.

---

### Also include ID3v1 tags in the files

This is not recommended at all. ID3v1.1 tags are obsolete and may not work with non-latin scripts.

## AAC Files



Picard can save APEv2 tags to pure AAC files, which by default do not support tagging. APEv2 tags in AAC are supported by some players, but players not supporting AAC files with APEv2 tags can have issues loading and playing those files. To deal with this you can choose whether to save tags to those files:

### **Save APEv2 tags**

Picard will save APEv2 tags to the files.

### **Do not save tags**

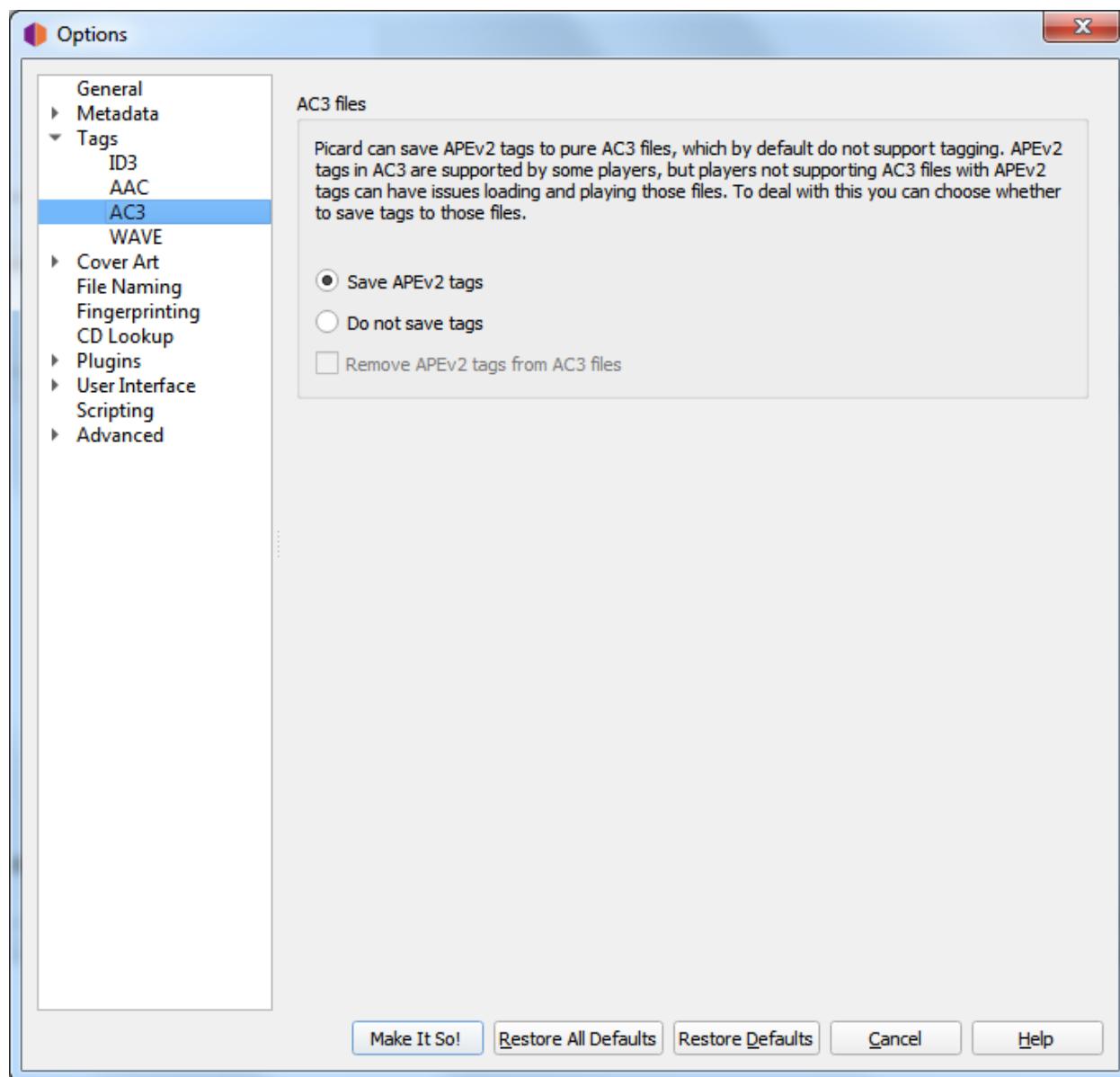
Picard will not save any tags to the files, but you can still use Picard to rename them. By default existing APEv2 tags will be kept in the file.

## Remove APEv2 tags

If you have “Do not save tags” enabled checking this option will cause Picard to remove existing APEv2 tags from the file on saving.

Regardless of how you have configured saving tags Picard will always read existing APEv2 tags in AAC files.

## AC3 Files



Picard can save APEv2 tags to pure AC3 files, which by default do not support tagging. APEv2 tags in AC3 are supported by some players, but players not supporting AC3 files with APEv2 tags can have issues loading and playing those files. To deal with this you can choose whether to save tags to those files:

### **Save APEv2 tags**

Picard will save APEv2 tags to the files.

### **Do not save tags**

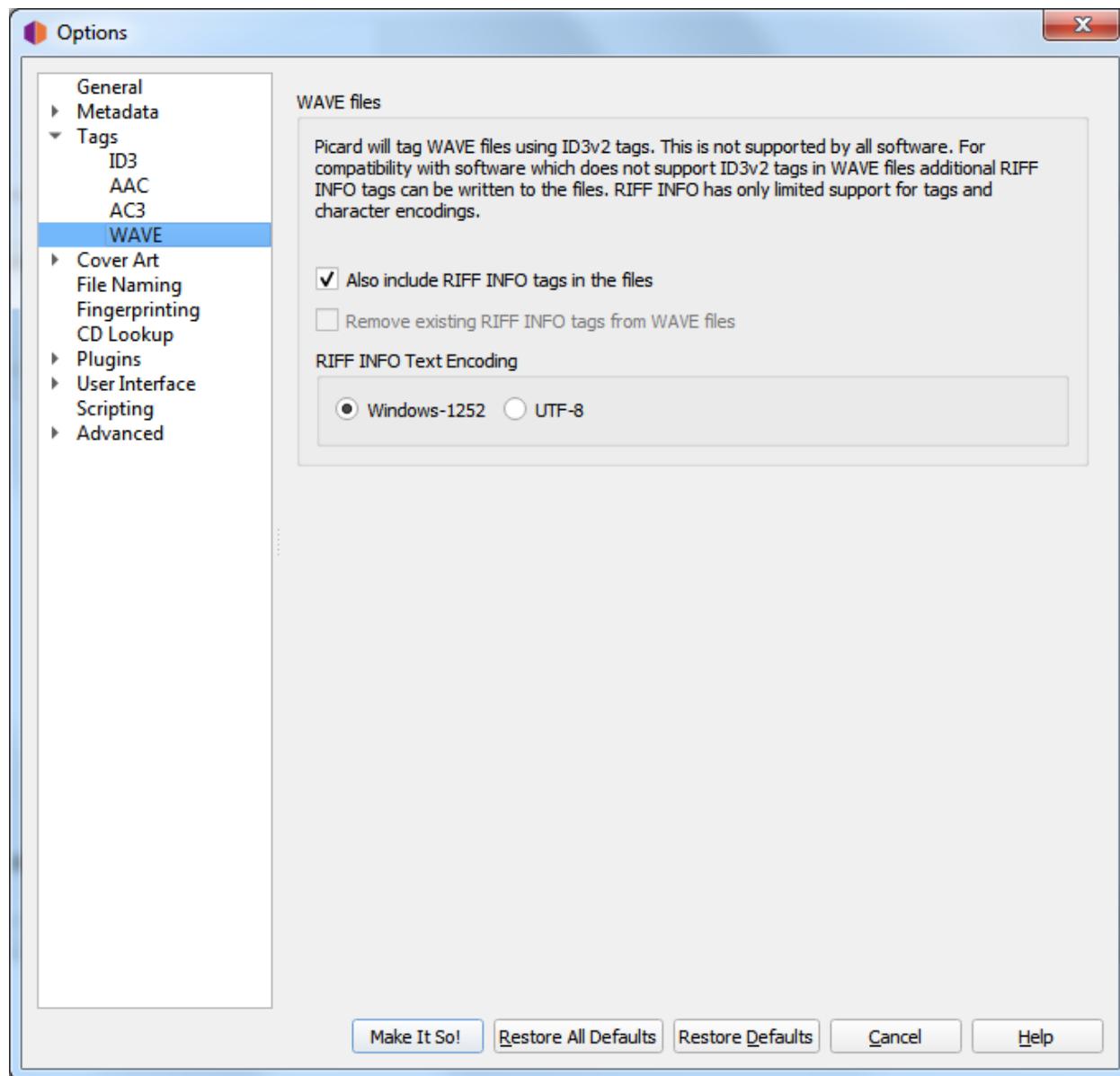
Picard will not save any tags to the files, but you can still use Picard to rename them. By default existing APEv2 tags will be kept in the file.

### **Remove APEv2 tags**

If you have “Do not save tags” enabled checking this option will cause Picard to remove existing APEv2 tags from the file on saving.

Regardless of how you have configured saving tags Picard will always read existing APEv2 tags in AC3 files.

### WAVE Files



WAVE by itself as a standard only supports the INFO chunk tags, which are very limited. In addition, INFO chunks don't have any proper support for encoding.

In all cases Picard will write ID3 tags to the WAVE files. This is supported by quite a few tools; however, it is not supported universally. Tools not supporting ID3 tags should just ignore them. If possible, this is likely the best option to have proper tags in WAVE files. For compatibility with software that does not support ID3v2 tags, Picard can also save [Resource Interchange File Format](#) (RIFF) INFO tags to WAVE files. RIFF INFO is read and written only as an extra. If there are no existing ID3 tags, the data from RIFF INFO will be used. When saving files, RIFF INFO will be written in addition to the ID3v2 tags.

Picard's use of the RIFF INFO tags is determined by the following configuration settings:

## Also include RIFF INFO tags in the files

Picard will save the RIFF INFO tags to the files.

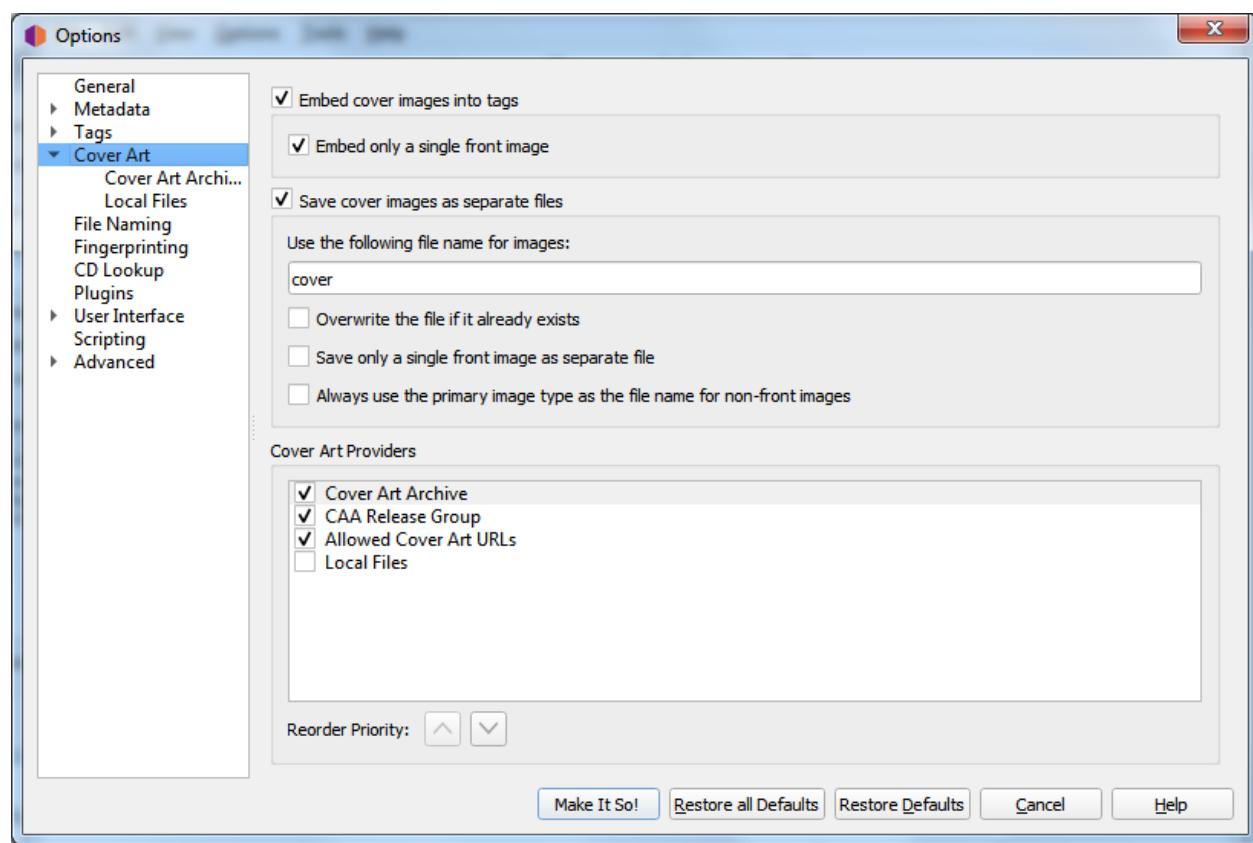
## Remove existing RIFF INFO tags from WAVE files

Picard will remove any existing RIFF INFO tags from the WAVE files. This setting is ignored if the previous setting is enabled to allow writing the RIFF INFO tags to the files.

## RIFF INFO Text Encoding

This setting allows you to specify the encoding used for the RIFF INFO tags written. The default setting is Windows-1252 encoding. Picard can also use UTF-8 as an alternative, which allows for full language support, but it depends on the software reading it. Typically, if the software supports this, it will read the ID3 tags anyway so there is not much to be gained.

## 6.3.4 Cover Art Options



**Note:** You must enable “*Options → Metadata → Use release relationships*” for Picard to be able to download cover art from MusicBrainz cover art relationships.

### Location

#### Embed cover images into tags

Enables images to be embedded directly into your music files. While this will use more storage space than storing it as a separate image file in the same directory, some music players will only display embedded images and don't find the separate files.

#### Embed only a single front image

Embeds only a single front image into your music files. No other images, regardless of their type, will be embedded. Many music players will only display a single embedded image, so embedding additional images may not add any functionality.

#### Save cover images as separate files

In the file name mask you can use any variable or function from *Picard Tags* and *Picard Scripting Functions*. The mask should not contain a file extension; this is added automatically based on the actual image type. The default value is "cover". If you change this to "folder", Windows will display the image as a preview of the containing directory.

In addition to scripting variables already available for a track, you can use the following cover art specific variables:

- `coverart_maintype`: The primary type (e.g.: front, medium, booklet). For front images this will always be "front".
- `coverart_types`: Full list of all types assigned to this image.
- `coverart_comment`: The cover art comment.

For example, specifying a file naming mask such as:

```
%albumartist% - %originalyear% - %album% - %coverart_maintype%
```

will preface the file name with the album artist, original release year and album title.

You can also have Picard save the images to a subdirectory by including this in the file naming mask. For example:

```
Artwork/%albumartist% - %originalyear% - %album% - %coverart_
↪maintype%
```

which will place the images in a subdirectory called "Artwork".

#### Overwrite the file if it already exists

Check this to replace existing files. This is especially recommended if trying to write "folder" previews for Windows.

#### Save only a single front image as separate file

This tells Picard to only save the first “front” image to a separate file with the release. No other “front” images or images of any other type will be saved. If left unchecked, all “front” images will be saved as separate files, along with any other specified image types to be downloaded.

### Always use the primary image type as the file name for non-front images

This setting changes how Picard names image files **other than front images**.

When checked, Picard will use the type of the image (e.g.: back, booklet, etc.) as the filename when saving, as long as the type is not front. If the image has been assigned multiple types, then the first type will be used. For example, if the image is of types “back” and “raw”, then “back” will be used for the filename. If unchecked or if the image is of type “front”, Picard will use the file name specified in the “Use the following file name for images” setting.

## Cover Art Providers

Picard can download Cover Art from a number of sources, and you can choose which sources you want Picard to use. You can activate more than one provider and choose the order in which the providers are queried. Picard will try the providers from top to bottom until an image is returned.

### Cover Art Archive

The Cover Art Archive (CAA) is the MusicBrainz archive of cover art in cooperation with the [Internet Archive](#). The Cover Art Archive is the most comprehensive database of cover art (e.g.: front covers, back covers, booklets, CDs).

### CAA Release Group

This provider uses the Cover Art Archive cover image assigned to the release group. This is usually the image that best describes the release group as a whole or the image with the best visual quality, but is not necessarily the exact cover of the release you are tagging. This provider is a good choice if you care more about visual quality than having an exact representation of your release. It is also a good fallback for the Cover Art Archive provider.

### Allowed Cover Art URLs

This will use images provided from approved third-party sites. The image location is stored as a URL relationship for the release within the MusicBrainz database, and only approved sites can be used for this relationship.

---

**Note:** This relationship type is now deprecated in MusicBrainz, and is no longer used. See [Cover art whitelist](#) in the Style Guide for more information.

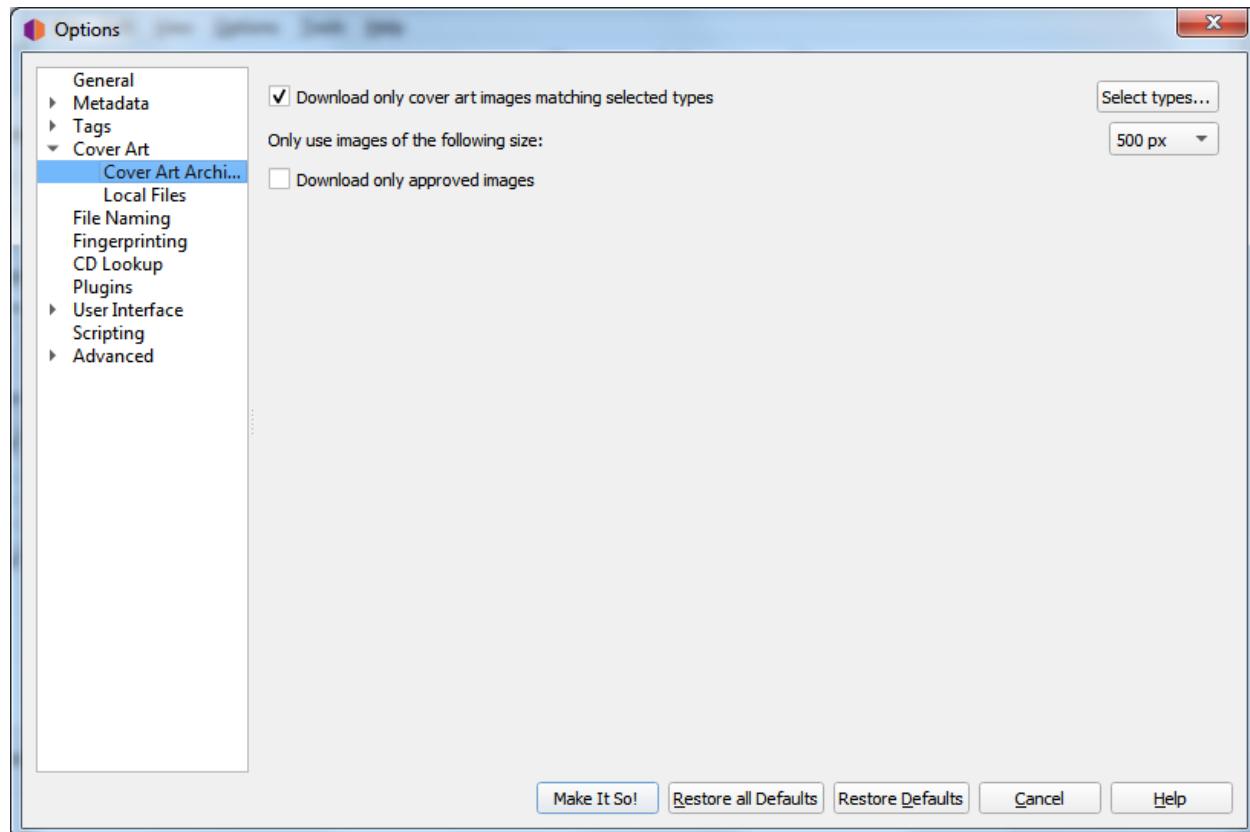
### Local Files

Load cover art from local files. The file names to load can be configured in the [Local Files](#) provider options.

In addition to the built-in cover art providers described above, additional cover art providers can be installed as [plugins](#).

- **Amazon:** Amazon often has cover art when other sites don't, however while this art is almost always for the correct Artist and Album, it may not be the absolute correct cover art for the specific Release with which you have tagged your music. *Note: The Amazon cover art provider was built-in in Picard 2.1.3 and earlier versions. For later versions it needs to be installed as a separate plugin.*
- **fanart.tv:** Uses cover art from [fanart.tv](#), which focuses on cover art with high visual quality. This provider provides cover art representative for the release group and not the individual release.
- **TheAudioDB:** Uses cover art from [TheAudioDB](#), which focuses on cover art with high visual quality. This provider provides cover art representative for the release group and not the individual release.

### Cover Art Archive



In this section you can decide which types of cover art you would like to download from the Cover Art Archive, and what quality (size) you want to download. Obviously, the

better the quality, the larger the size of the files.

### **Download only cover art images matching the selected types**

When selecting the cover art image types, you can select the types to both include and exclude from the download list. CAA images with an image type found in the “Include” list will be downloaded and used unless they also have an image type found in the “Exclude” list. Images with types found in the “Exclude” list will never be used. Image types not appearing in either the “Include” or “Exclude” lists will not be considered when determining whether or not to download and use a CAA image.

Most music players will display only one piece of cover art for the album, and most people select Front (cover) for that.

### **Only use images of the following size**

This identifies what size of image to download from the CAA. The options are 250px, 500px, 1200px and full size. The fixed sizes are generated automatically from the full size image, provided that it is greater than or equal to the fixed size being generated. The generated images are square and padded as required if the original image is not square.

### **Download only approved images**

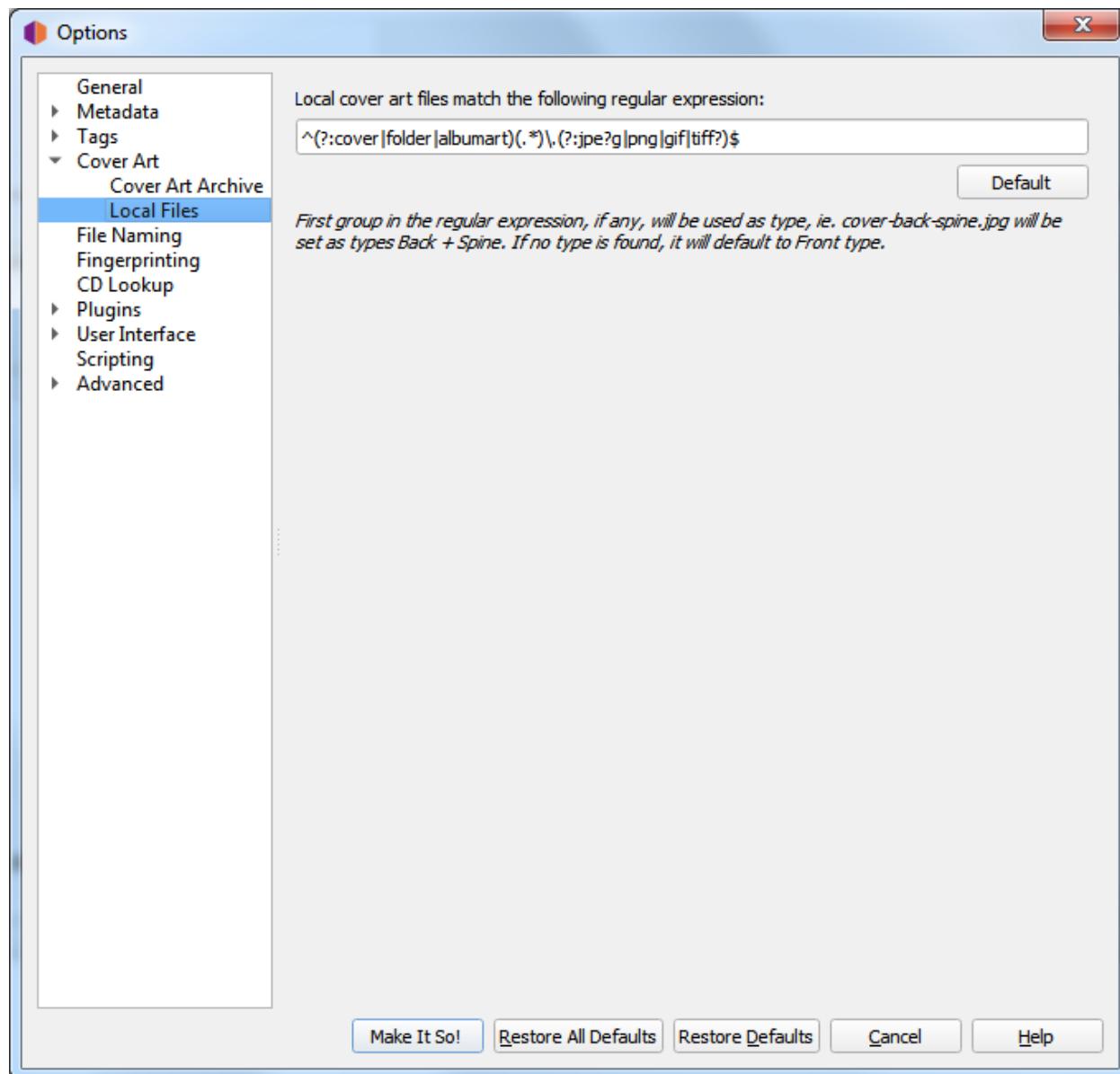
When checked, Picard will only download images that have been approved (i.e.: the edit to add the image has been accepted and applied). To allow using images from pending edits, leave this option unchecked.

---

**Note:** Since Picard 1.3, you can also decide whether or not to use the image from the release group (if any) if no front image is found for the release. In this case, the cover may not match the exact release you are tagging (eg.: a 1979 vinyl front cover may be used in place of the Deluxe 2010 CD reissue).

---

## Local Files



In this section you can configure the file names to be used by the Local Files cover art provider. If you are trying to collect more than one image, the naming is important.

The file names are defined using a regular expression. The default is `^(?:cover|folder|albumart)(.*)(?:jpe?g|png|gif|tiff?)$` which will load files with the name “cover”, “folder” or “albumart” and the file extension “jpg”, “png”, “gif” or “tiff” (e.g.: “folder.jpg” or “cover.png”).

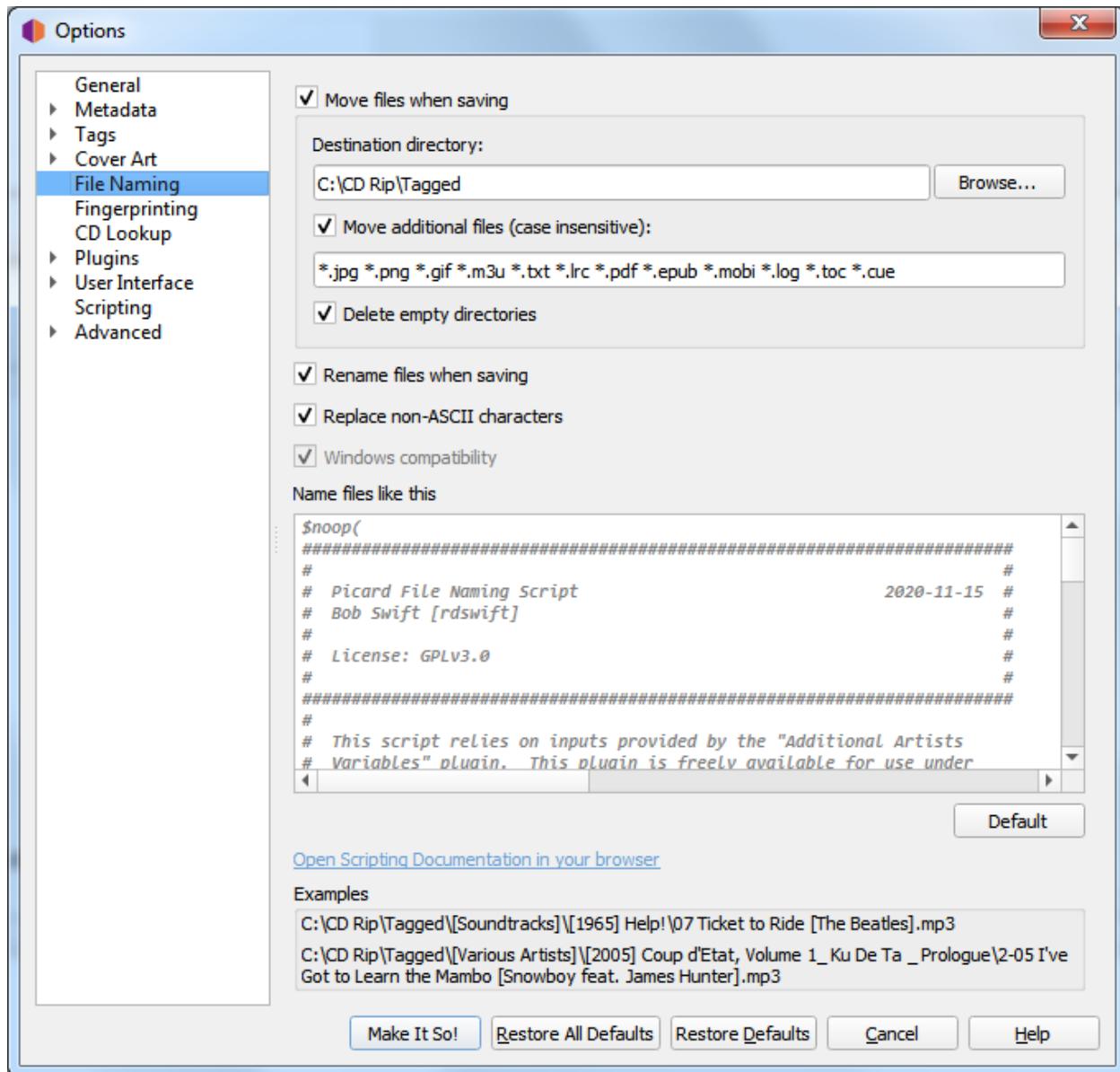
The first part of the regular expression is a non-capture group: `(?:cover|folder|albumart)`. Items listed in this group will not get captured and the default (Front) type will apply.

The second part of the regular expression is a group: `(.* )`. This is the real capture, so

if the file names match any of the cover art types, they will be tagged as such.

**Note:** A common mistake is to add all the types into the first (non-capture) group. This means that all the regular file names would be thrown into the Front type and cause unexpected results.

### 6.3.5 File Naming Options



These options determine how Picard handles files when they are saved with updated metadata.

#### Move files when saving

If selected, this option tells Picard to move your audio files to a new directory when it saves them. One use for this is to keep your work organized: all untagged files are under “Directory A”, and when Picard tags them it moves them to “Directory B”. When “Directory A” is empty, your tagging work is done.

If this option is left unchecked, then Picard will leave the files in the same directory when they are saved.

Note that the “Rename Files” and “Move Files” options are independent of one another. “Rename Files” refers to Picard changing file names, typically based on artist and track names. “Move Files” refers to Picard moving files to new directories, based on a specified parent directory and subdirectories, typically based on album artist name and release title. However, they both use the same “file naming string”. “Move files” uses the portion up until the last ‘/’. “Rename files” uses the portion after the last ‘/’.

### **Destination directory**

This specifies the destination parent directory to which files are moved when they are saved, if the “Move files when saving” option is selected. If you use the directory “.” the files will be moved relative to their current location. If they are already in some sort of directory structure, this will probably not do what you want!

### **Move additional files**

Enter patterns that match any other files you want Picard to move when saving music files (e.g.: “Folder.jpg”, “\*.png”, “\*.cue”, “\*.log”). Patterns are separated by spaces. When these additional files are moved they will end up in the release directory with your music files. In a pattern, the '\*' character matches zero or more characters. Other text, like “.jpg”, matches those exact characters. Thus “\*.jpg” matches “cover.jpg”, “liner.jpg”, “a.jpg”, and “.jpg”, but not “nomatch.jpg2”.

### **Delete empty directories**

When selected, Picard will remove directories that have become empty once a move is completed. Leave this unchecked if you want Picard to leave the source directory structure unchanged. Checking this box may be convenient if you are using the “move files” option to organize your work. An empty directory has no more work for you to do, and deleting the directory makes that clear.

### **Rename files when saving**

Select this option to let Picard change the file and directory names of your files when it saves them, in order to make the file and directory names consistent with the new metadata.

### **Replace non-ASCII characters**

Select this option to replace non-ASCII characters with their ASCII equivalent (e.g.: ‘á’, ‘ä’ and ‘ă’ with ‘a’; ‘é’, ‘ë’ and ‘ĕ’ with ‘e’; ‘æ’ with “ae”). More

information regarding ASCII characters can be found on [Wikipedia](#).

### Windows compatibility

This option tells Picard to replace all Windows-incompatible characters with an underscore. This is enabled by default on Windows systems, with no option to disable.

### Name files like this

An edit box that contains a formatting string that tells Picard what the new name of the file and its containing directories should be in terms of various metadata values. The formatting string is in *Picard's scripting language* where dark blue text starting with a '\$' is a *function name* and names in light blue within '%' signs are Picard's *tag and variable names*, and is generally referred to as a "file naming script". Note that the use of a '/' in the formatting string separates the output directory from the file name. The formatting string is allowed to contain any number of '/' characters. Everything before the last '/' is the directory location, and everything after the last '/' becomes the file's name.

There is only one file naming script defined in a user's settings, although it can vary from a simple one-line script such as %album%/%title% to a very complex script using different file naming formats based on different criteria. In all cases, the files will be saved using the text output by the script.

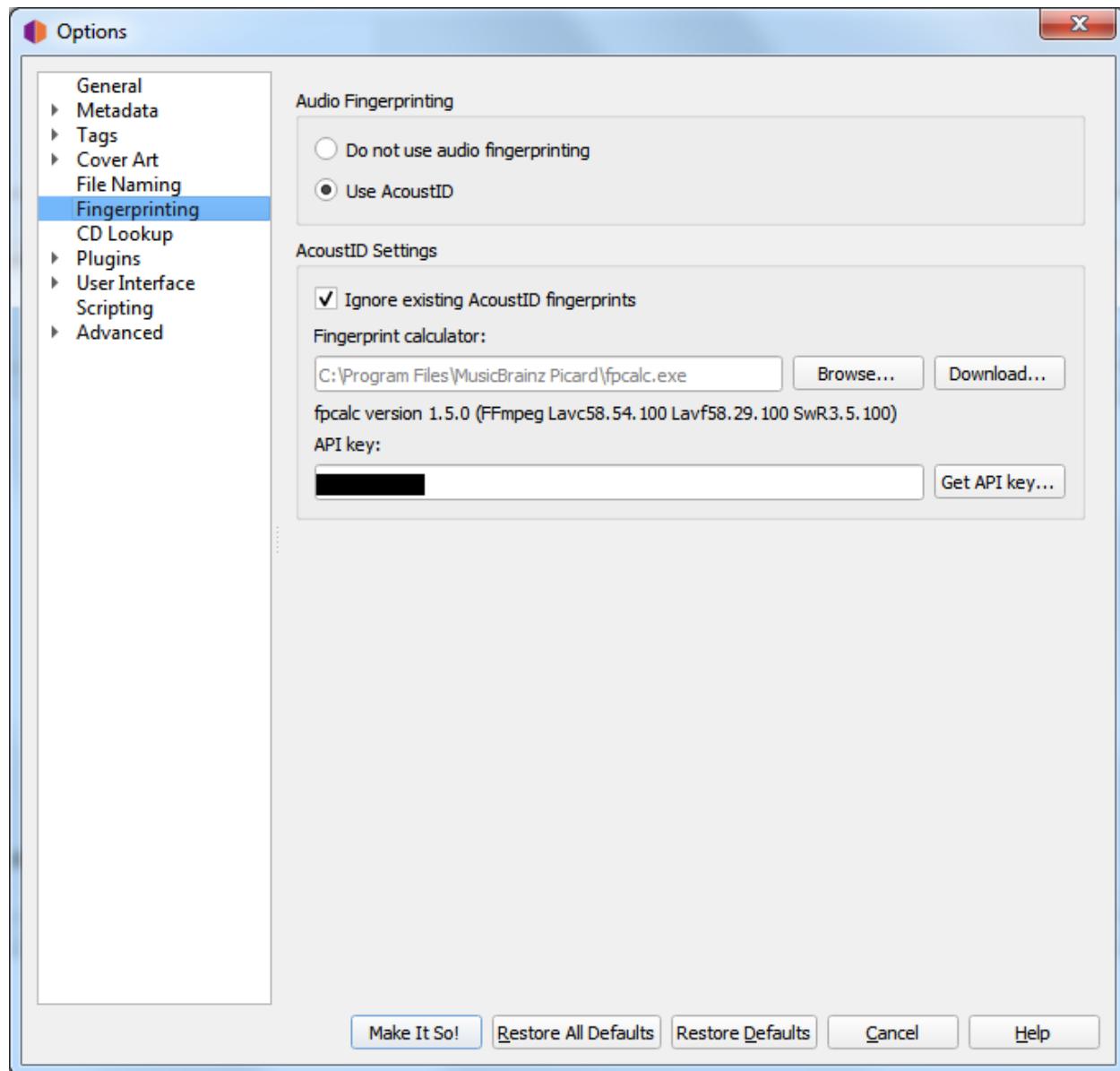
Scripts are often discussed in the [MetaBrainz Community Forum](#), and there is a thread specific to [file naming and script snippets](#).

---

**Note:** Any new tags set or tags modified by the file naming script will not be written to the output files' metadata.

---

### 6.3.6 Fingerprinting Options



If you select a file or cluster in the left-hand side of the Picard screen and select “Tools → Scan”, Picard will invoke a program to scan the files and produce a fingerprint for each that can then be used to look up the file on MusicBrainz.

MusicBrainz currently supports only [AcoustID](#) (an Open Source acoustic fingerprinting system created by [Lukáš Lalinský](#)) but has previously supported TRM and MusicID PUID.

#### Audio Fingerprinting

This allows you to select whether or not to enable acoustic fingerprinting within Picard. If acoustic fingerprinting is disabled then all remaining options in this tab will be locked and ignored.

#### Ignore existing AcoustID fingerprints

When checked, any existing AcoustID fingerprint information will not be used, and the files will be rescanned.

### **Fingerprint calculator**

This identifies the external program on your system that will be used to calculate the AcoustID fingerprints. By default, Picard uses the [Chromaprint \(fpcalc\)](#) utility which is included with the Picard installation.

Picard will auto-detect the path unless you have specifically overwritten it with something different than the detected path. “*Options → Fingerprinting*” will show the auto detected path as a placeholder hint in the text input, and also uses it for validating the executable. The user only needs to actually select something if auto detection does not work. If the user has selected a specific path this will be used.

### **API key**

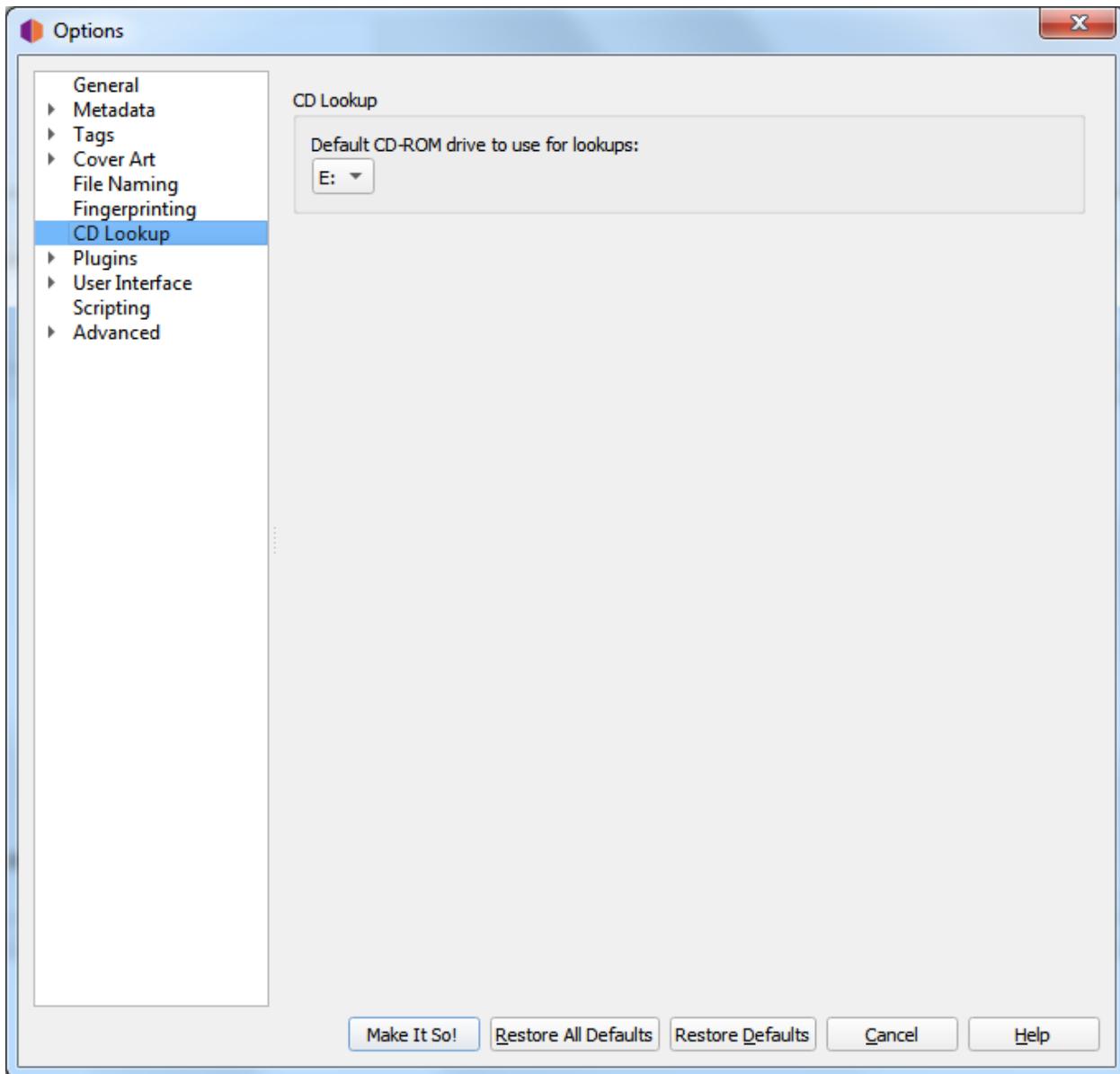
The key used to access the AcoustID API to lookup and submit AcoustID fingerprints. There is no cost to obtain an API key.

## **6.3.7 CD Lookup Options**

This section allows you to select which CD ROM device to use by default for looking up a CD.

On Windows and Linux systems, you can override this setting by clicking on “*Tools → Lookup CD...*” and selecting the desired device from the list of available devices.

### Windows



On Windows, Picard has a pulldown menu listing the various CD drives it has found. Pull down the menu and select the drive you want to use by default.

You can override this setting by clicking on “*Tools → Lookup CD...*” and selecting the desired device from the list of available devices.

## macOS

In macOS, the CD Lookup option is currently a text field. The device is usually `/dev/rdisk1`.

If that doesn't work, one way is to simply keep increasing the number (e.g. `/dev/rdisk2`) until it does work. A less trial and error method is to open "Terminal" and type `mount`. The output should include a line such as:

```
/dev/disk2 on /Volumes/Audio CD (local, nodev, nosuid, read-only)
```

You need to replace `/dev/disk` with `/dev/rdisk`, so if, for example, it says `/dev/disk2`, you should enter `/dev/rdisk2` in Picard's preferences.

## Linux

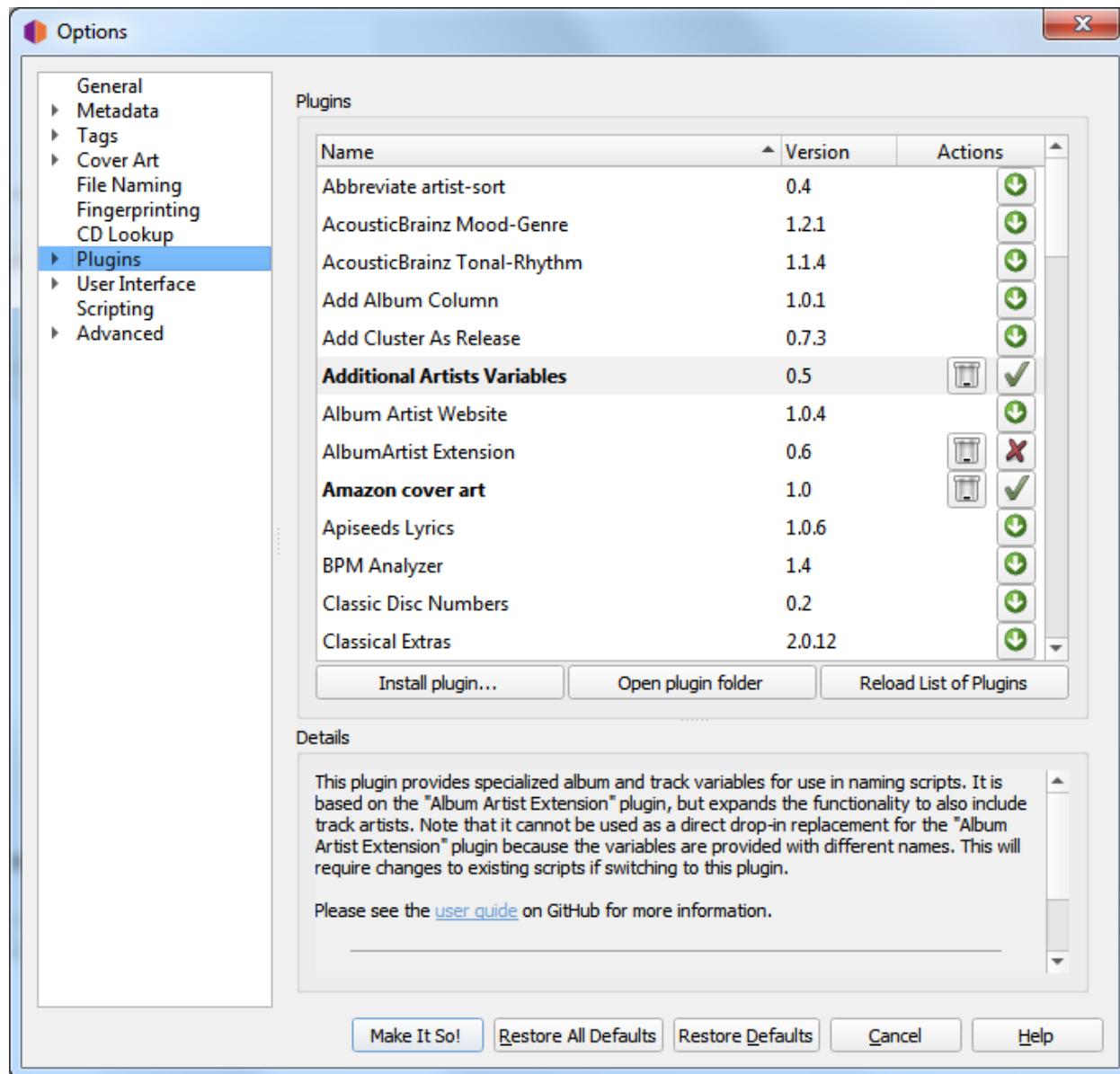
In Linux, Picard has a pulldown menu like in Windows for the CD Lookup option. If you're using an older version of Picard with a text field, you should enter the device name (typically `/dev/cdrom`).

You can override this setting by clicking on "*Tools → Lookup CD...*" and selecting the desired device from the list of available devices.

## Other platforms

On other platforms, the CD Lookup option is a text field and you should enter the path to the CD drive here.

### 6.3.8 Plugins Options



This section allows you to manage the plugins used by Picard. You can install new plugins or enable, disable or uninstall plugins that are currently installed. Picard provides a list of plugins that have been submitted to the project. A list of the standard plugins is available on the [plugins page](#) on the Picard website.

There are also a number of plugins available by third-party developers. Often these are discussed on the [Community Discussion Forum](#) so if you're looking for a particular enhancement or functionality, a search there might be useful. In addition, one of the MusicBrainz editors, [Colby Ray](#) maintains an unofficial list of available plugins on a wiki page. Instructions regarding installation of third-party plugins are included in the ["Installing Third-Party Plugins"](#) section below.

## Plugins List

The screen displays a list of the standard plugins and any others that have been installed. Each plugin is displayed on a separate line showing the version number and one or more status / action icons. The icons are:



This icon indicates that the plugin is not installed. Clicking the icon will download and install the plugin.



This icon indicates that a newer version of the plugin is available. Clicking the icon will download and install the updated version.



This icon indicates that the plugin is installed and currently enabled. Clicking the icon will disable the plugin, but it will still be installed.

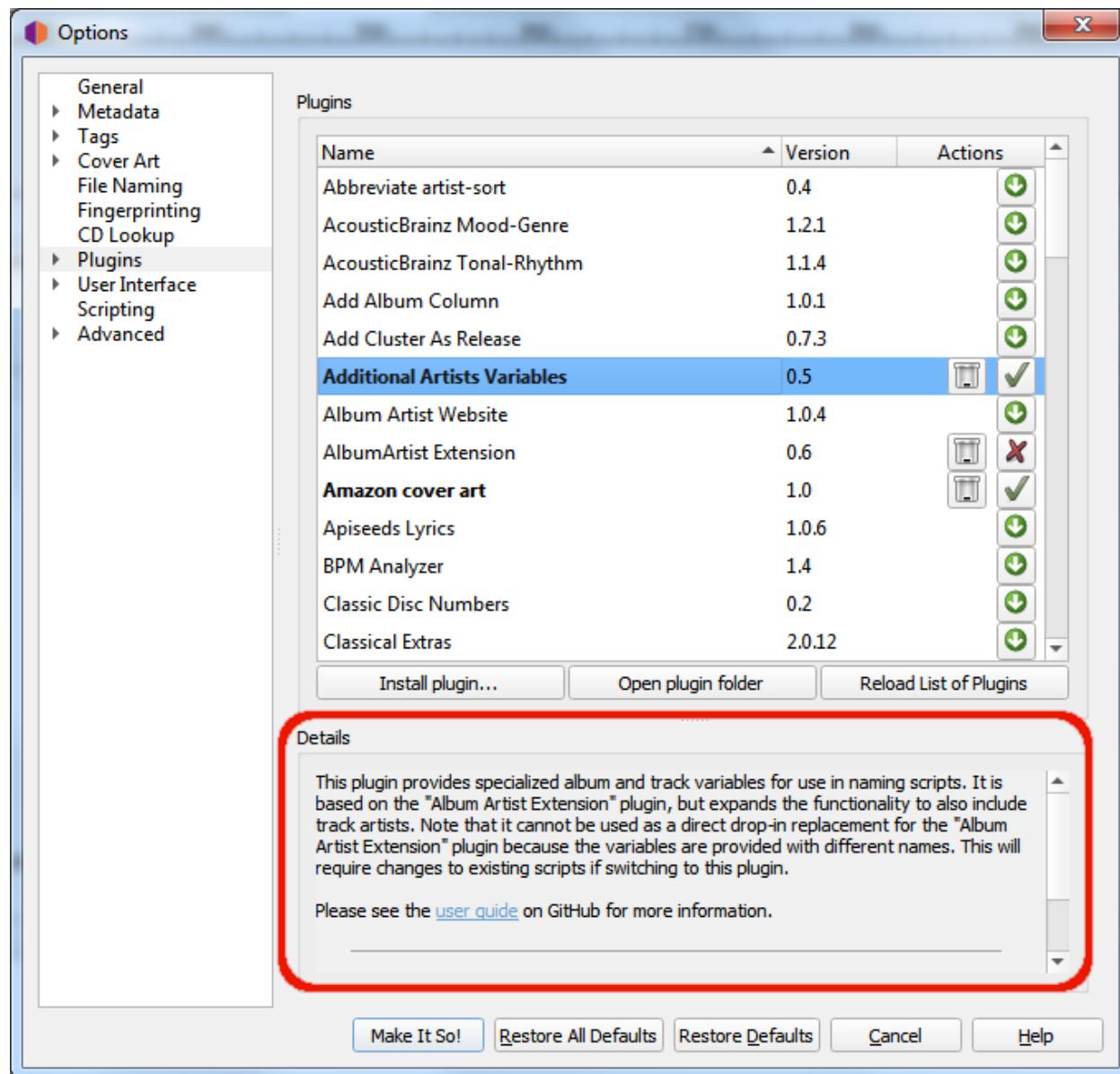


This icon indicates that the plugin is installed but currently disabled. Clicking the icon will enable the plugin.



This icon indicates that the plugin is currently installed. Clicking the icon will uninstall the plugin.

When a plugin in the list is selected (i.e.: highlighted), a brief description of the plugin will be shown in the “Details” section below the list.



---

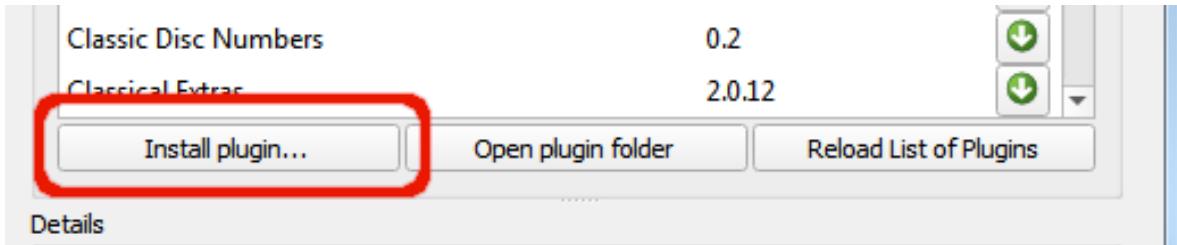
**Note:** Some plugins have their own option page which will typically appear under the "Plugins" section of the Options.

---

### **Installing Third-Party Plugins**

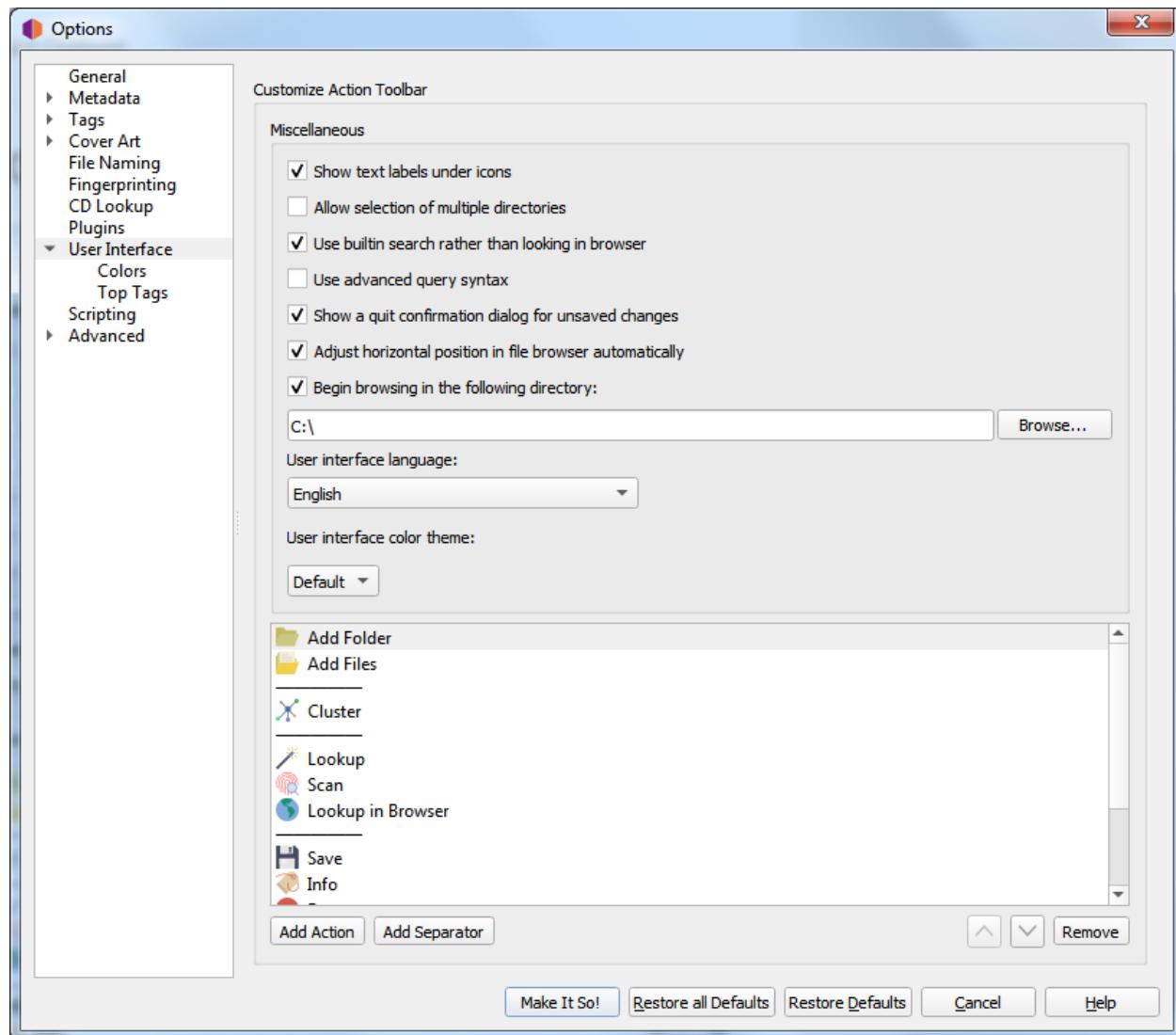
You can install a third-party plugin that does not appear in the plugins list, using the following steps:

1. Download the plugin and save it to a local drive.
2. Select the “Install plugin...” action, located just below the list of plugins.



3. Navigate to the file you downloaded in Step 1 and select it. The file will be copied to the plugin folder, and will appear in the list of plugins.
4. Enable the plugin if desired, and select the “Make It So!” action button at the bottom of the window.

### 6.3.9 User Interface Options



#### Show text labels under icon

If this option is disabled, the text labels under the icons in the toolbar will not be displayed, causing the toolbar to appear a little smaller.

#### Allow selection of multiple directories

Enabling this option will bypass the native directory selector and use Qt's file dialog. This may be desirable since the native directory selector generally doesn't allow you to select more than one directory. This applies to the "File → Add folder" dialog. The file browser always allows multiple directory selection.

#### Use built-in search rather than looking in browser

When this option is enabled the search for albums, artists or tracks will show the results in a dialog. By default this option is enabled. If this option is

disabled Picard will open a search on MusicBrainz.org in your default web browser.

### **Use advanced query syntax**

This will enable advanced query syntax parsing on your searches. This only applies to the search box at the top right of Picard, not the lookup buttons.

### **Show a quit confirmation dialog for unsaved changes**

When this is enabled, Picard will show a dialog when you try to quit the program with unsaved files loaded. This may help prevent accidentally losing tag changes you've made, but not yet saved.

### **Begin browsing in the following directory**

By default, Picard remembers the last directory used to load files. If you enable this option and provide a directory, Picard will always start in the directory provided.

### **User interface language**

By default, Picard will display in the language displayed by your operating system, however you can override this and select a different language if needed.

### **User interface color theme**

This option allows the user to select the color theme used by Picard. On macOS and Windows systems, the available choices are:

- Default - The default color scheme based on the operating system display settings.
- Light - A light display theme.
- Dark - A dark display theme.

On Linux and similar operating systems, the available choices are:

- Default - The default color scheme based on the operating system display settings.
- System - The Qt5 theme configured in the desktop environment.

---

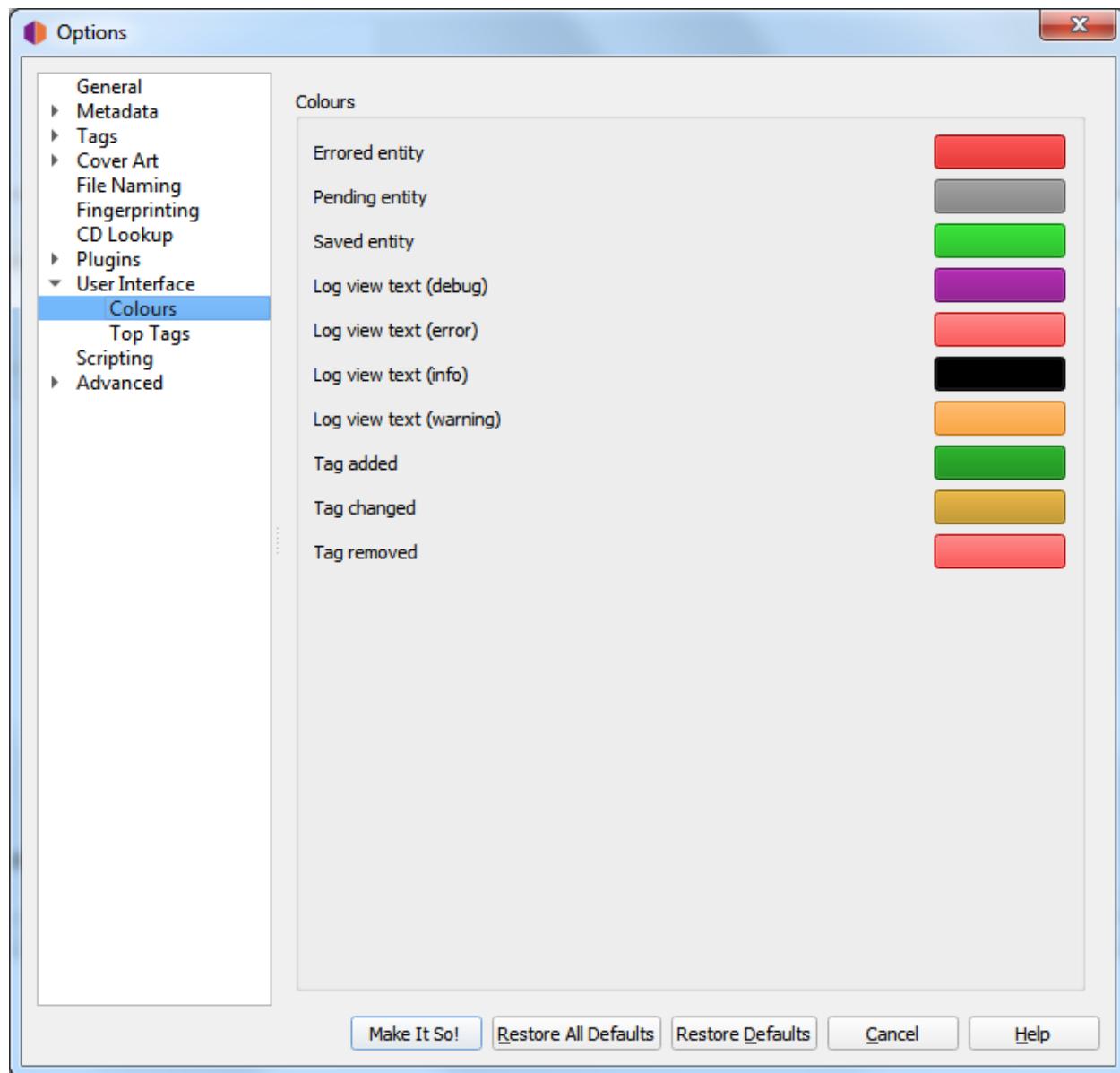
**Note:** The colors for the light and dark themes can be customized in the [Colors](#) section. Separate sets of color selections are maintained for the light and dark themes. The colors for the currently displayed theme are the ones displayed for editing.

---

### **Customize action toolbar**

This allows you to add, remove or rearrange the items displayed in the Action Toolbar.

## Colors



This section allows you to customize the various colors used in the Picard user interface. To change a color, simply click on the color block currently displayed for the desired text condition to bring up a selection dialog, then pick your desired color. The colors can be changed for the following text conditions:

- **Errored entity**: files and other elements with errors on loading or saving
- **Pending entity**: files and other elements queued up for processing
- **Saved entity**: successfully saved files
- **Log view text (debug)**: debug messages in the Error/Debug Log
- **Log view text (error)**: error messages in the Error/Debug Log

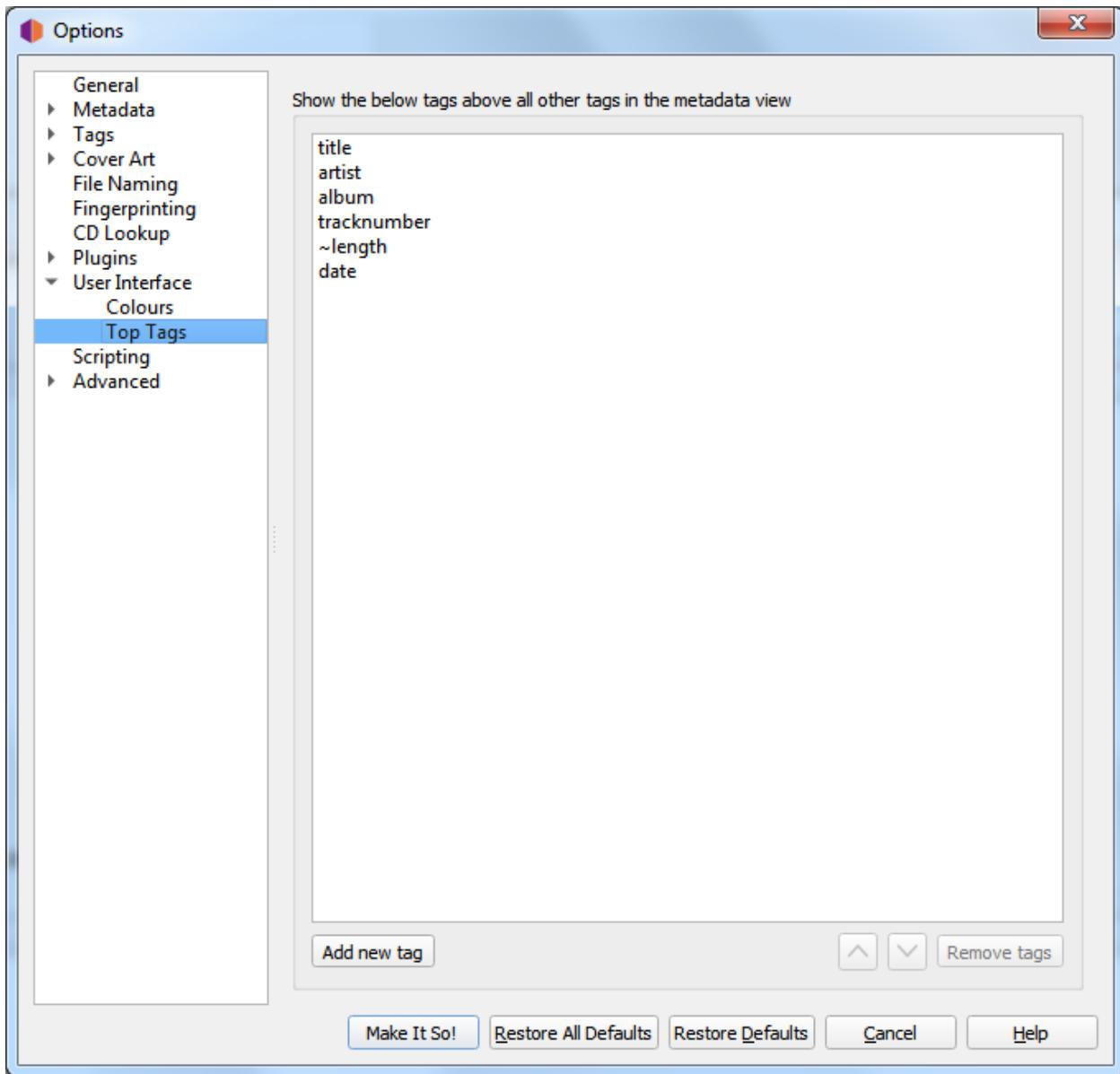
- **Log view text (info)**: informational messages in the Error/Debug Log
- **Log view text (warning)**: warning messages in the Error/Debug Log
- **Tag added**: newly added tags in the metadata pane
- **Tag changed**: changed tags in the metadata pane
- **Tag removed**: removed tags in the metadata pane

---

**Note:** Separate sets of color selections are maintained for the light and dark themes. The colors for the currently displayed theme are the ones displayed for editing.

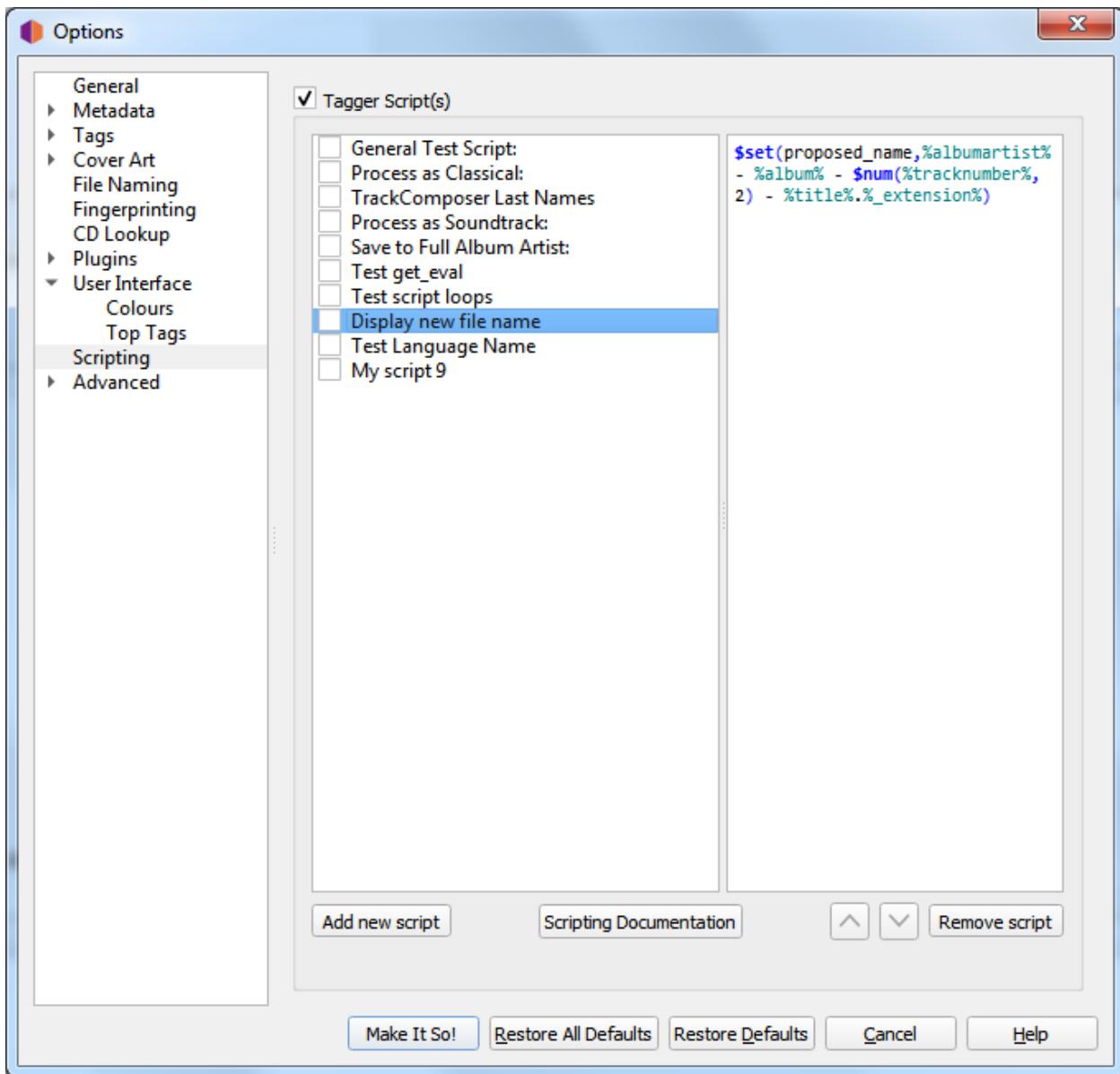
---

## Top Tags



The tags specified in this option setting will always be shown in the specified order at the top of the metadata pane (which shows the metadata of selected files or tracks). This allows you to have the most important tags always on top of the list. Tags not listed here will be shown in alphabetical order below the top tags.

### 6.3.10 Scripting Options



This section allows for the management of user-defined tagging scripts.

The “Tagger Script(s)” checkbox at the top of the page allows you to completely disable all tagging scripts. This can be useful when tracking down a problem with Picard’s configuration.

Below the checkbox are two columns showing the list of scripts in the left-hand column, with the content of the selected script shown in the right-hand column. This section allows you to add, remove and reorder the scripts, enable or disable individual scripts, as well as edit the currently selected script.

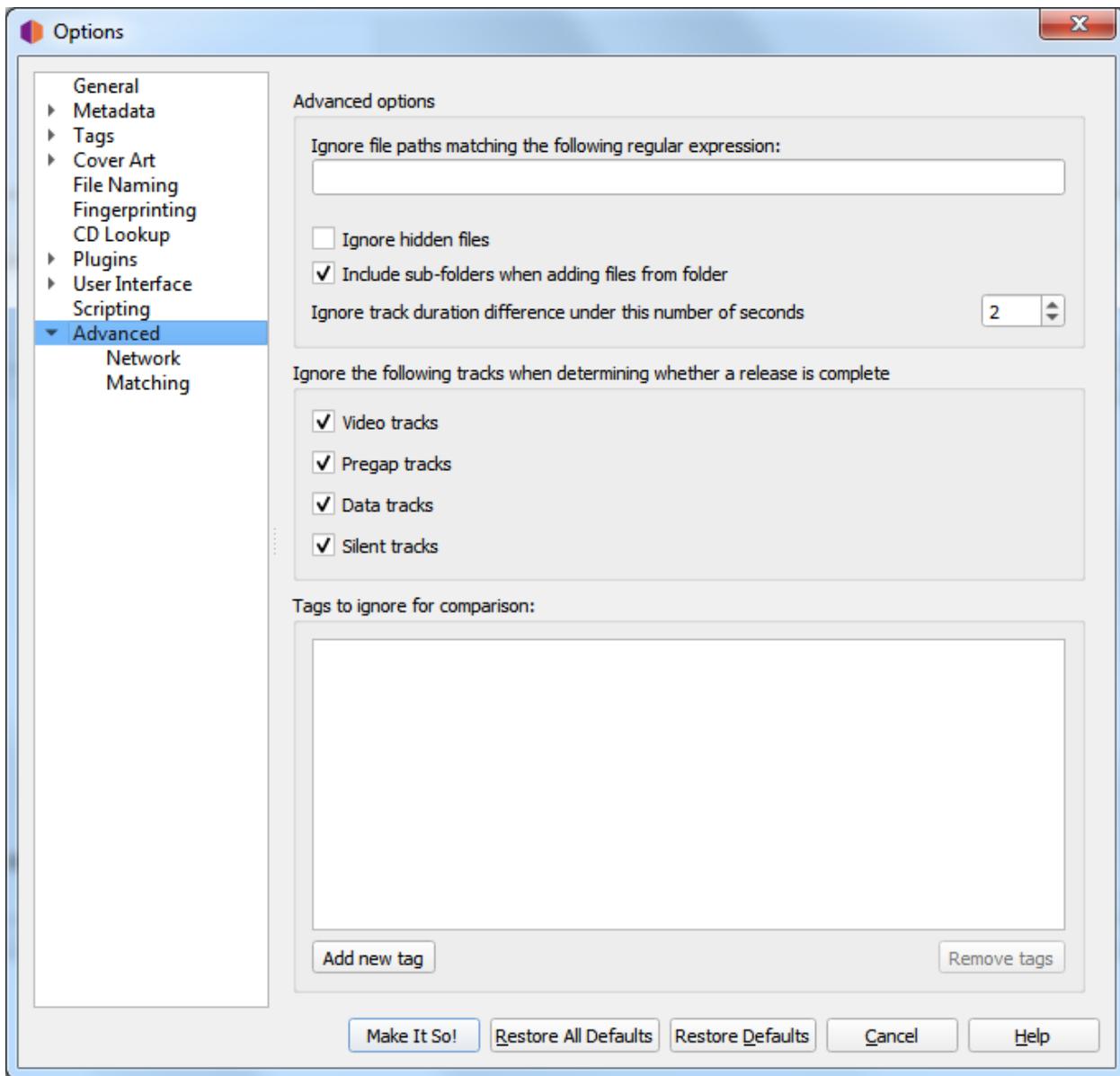
When the checkbox beside the script is checked, that script will be executed automatically, once for each track in the release, when Picard retrieves information for a release

from the MusicBrainz website. If the checkbox is left unchecked, then the script will not be executed automatically.

Regardless of whether or not the script is executed automatically, it can also be executed manually by right-clicking on an item in the clustering pane (middle pane) or the tagging pane (right-hand pane) and selecting it from the list displayed when “Run Scripts” is selected. If a cluster is selected in the middle pane or a release is selected in the right-hand pane, the script will be executed for each track in the selected cluster or release. If only a single track or file is selected, then the script will only be executed for that track or file.

For additional information about scripting please see the “*Scripts*” and “*Scripting*” sections, as well as “*Tags & Variables*”.

### 6.3.11 Advanced Options



#### **Ignore file paths matching the following regular expression**

You can specify patterns for files and directories that Picard should never load. For example, if you set this to the regular expression `\.bak$` any file ending in “.bak” will be ignored when loading files.

#### **Ignore hidden files**

If this option is enabled then hidden files and directories will not be loaded. This also includes any file or subdirectory inside a hidden directory.

#### **Include sub-folders when adding files from folders**

If this option is enabled Picard will load all audio files in the selected directory

and all its subdirectories. If disabled only audio files in the selected directory will be loaded.

**Ignore track duration difference under this number of seconds**

This specifies the number of seconds that a file can differ in length from the length in the MusicBrainz database and still be considered to be the same. The default value is 2 seconds.

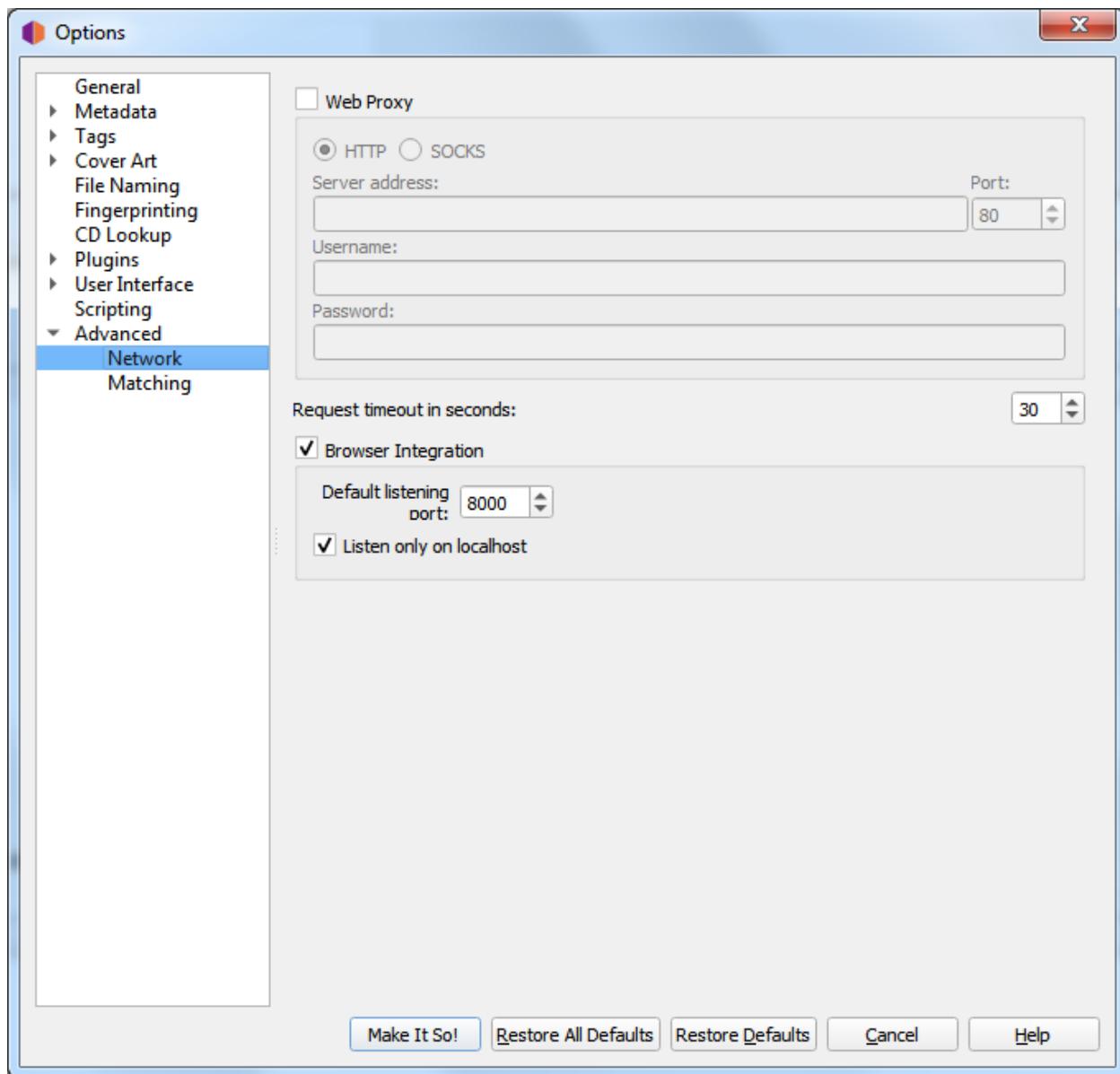
**Ignore the following tracks when determining whether a release is complete**

Missing tracks of the selected type (i.e.: video, pregap, data or silence) will be ignored when determining whether a release is considered to be complete. For example, if “video” is selected then a release with a bonus video will be marked as complete if it has all the audio tracks matched with a file even if the video file is missing.

**Tags to ignore for comparison**

Tags in this list will not be considered when comparing the existing file metadata to the data retrieved from MusicBrainz. If the only difference between the file’s metadata and the metadata retrieved from MusicBrainz is a tag listed in this ignore list then the file will be considered unmodified.

## Network



### Web Proxy

If you need a proxy to make an outside network connection you may specify one here. You can choose between HTTP and SOCKS proxy. The required settings are **Server Address** and **Port**. If the proxy requires authentication also enter **Username** and **Password**.

### Request timeout in seconds

By default Picard will abort running network requests after 30 seconds of inactivity. If needed you can change the timeout period here.

### Browser Integration

The browser integration allows you to load releases and recordings into Picard directly from the MusicBrainz website. Once you have opened musicbrainz.org in your browser from Picard, the website will show the green tagger button  next to releases and recordings. Clicking on this button will load the corresponding release or recording into Picard.

### Default listening port

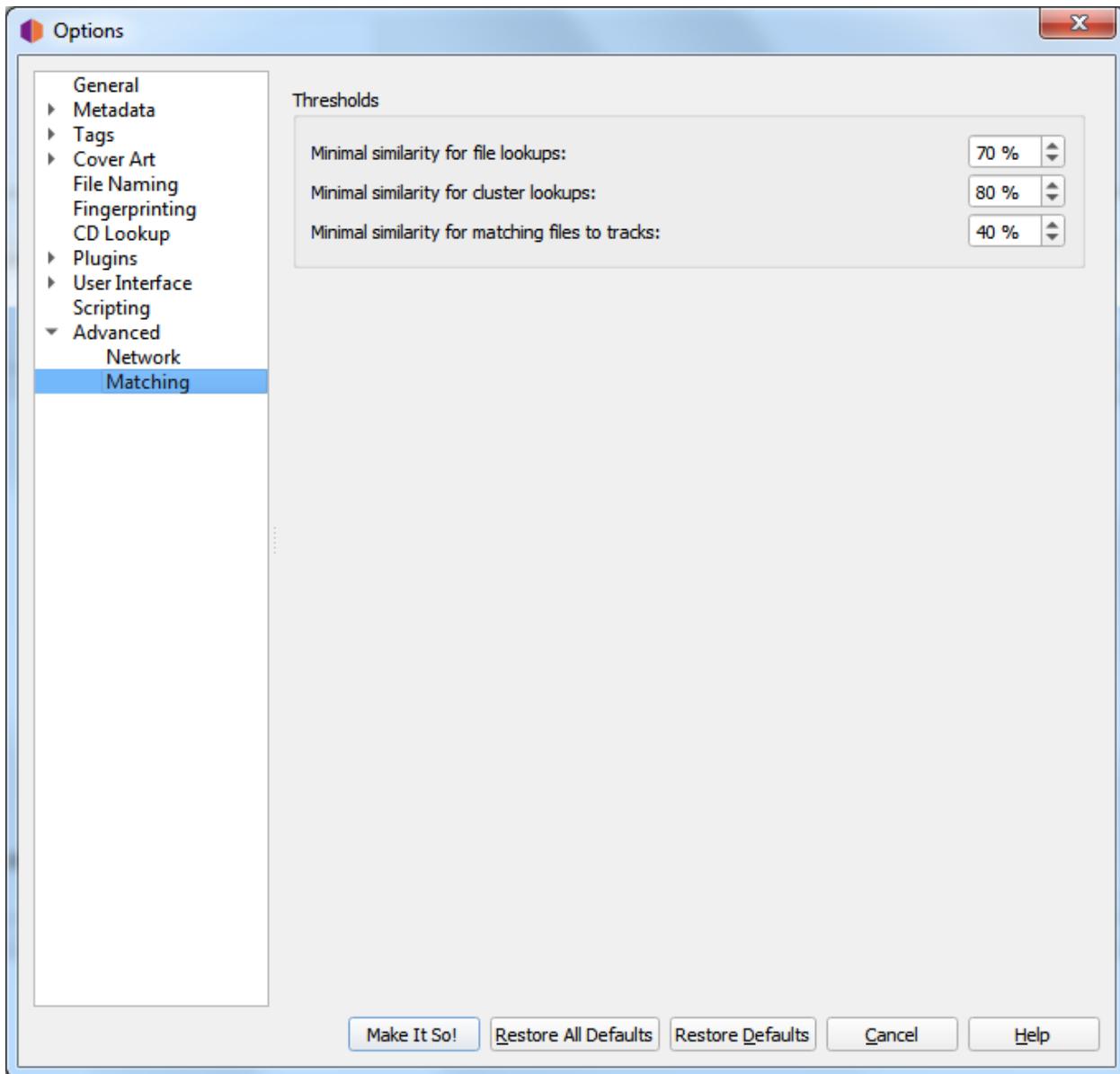
This identifies the default port Picard will listen on for the browser integration. If the port is not available Picard will try to increase the port number by one until it finds a free port.

### Listen only on localhost

By default Picard will limit access to the browser integration port to your local machine. Deactivating this option will expose the port on your network, allowing you to request Picard to load a specific release or recording via the network. For example, this would be used for the [Picard Barcode Scanner](#) Android app.

**Warning:** Only expose the port externally when you actually need it and only on networks you trust. Exposing application ports via the network can open potential security holes on your system.

## Matching



It is recommended for most users to leave these settings at their default values. For advanced users, these allow you to tune the way Picard matches your files and clusters to MusicBrainz releases and tracks.

### Minimal similarity for file lookups

The higher the percentage value, the more similar an individual file's metadata must be to the metadata from MusicBrainz for it to be matched to a release on the right-hand side.

### Minimal similarity for cluster lookups

The higher the percentage value, the more similar a cluster of files from the left-hand pane must be to a MusicBrainz release for the entire cluster to be

matched to a release on the right-hand side.

### **Minimal similarity for matching files to tracks**

The higher the percentage value, the more similar an individual file's metadata must be to the metadata from MusicBrainz for it to be matched to a release on the right-hand side.

If you have absolutely no metadata in your current files, and you are using "Scan" to match tracks, you may find that you need to lower the value of "Minimal similarity for matching files to tracks" in order for Picard to match the files within a release. Otherwise you may find that Picard matches the track to a release but then is not sure which track is correct; and leaves it in an "unmatched files" group within that release.

As a general rule, lowering the percentages may increase the chance of finding a match at the risk of false positives and incorrect matches.

---

## CHAPTER SEVEN

---

### TAGS & VARIABLES

This describes both Tags which are saved inside your music files and can be read by your music player, and Picard variables which can be used in Picard scripts for tagging, file renaming, and in several other more minor settings.

All tags are also available as variables, but additional variables which start with an underscore '\_' are not saved as Tags within your music files (e.g. \_my\_tag\_not\_saved).

Variables are used in scripts by wrapping the name between percent '%' characters (e.g. %title%).

Some variables can contain more than one value (e.g. musicbrainz\_artistid), and if you want to use only one of the values then you will need to use special script functions to access or set them. To access all the multiple values at once, use the variable normally and Picard will combine them into a single string separated by a semicolon and space (e.g.: "Item 1; Item 2; Item 3").

If a tag description indicates a later version of Picard than the current official version on the downloads page, then the tag is beta functionality which will be available in the next official release. A description of how to gain access to these beta versions for testing can be found on the [Picard downloads page](#) on the website.

### 7.1 Basic Tags

The following tags are populated from MusicBrainz data for most releases, without any special Picard settings.

All of these are also available as variables for use in Picard Scripts (for tagging, for file renaming and in several other more minor settings) by wrapping them between percent '%' symbols (e.g. %title%).

---

**Note:** Tags will not be created and will not be available as variables if there was no value retrieved for the tag from the MusicBrainz database.

---

---

**Note:** Some of these tags are only supported for certain file types or tag formats.

---

Please see the [Picard Tag Mapping](#) section for details.

---

### **acoustid\_fingerprint**

AcoustID Fingerprint for the track.

### **acoustid\_id**

AcoustID associated with the track.

### **album**

Title of the release.

### **albumartist**

Artist(s) primarily credited on the release.

### **albumartistsort**

Release Artist's Sort Name (e.g.: "Beatles, The").

### **albumsrt**

Release Title's Sort Name.

### **artist**

Track Artist Name(s). (string)

### **artists**

Track Artist Name(s). (multi-value) (*since Picard 1.3*)

### **artistsort**

Track Artist Sort Name.

### **asin**

Amazon Standard Identification Number - the number identifying the item on Amazon.

### **barcode**

Release Barcode - the barcode assigned to the release.

### **bpm**

Beats per minute of the track. Only available to the file naming script.

### **catalognumber**

The number(s) assigned to the release by the label(s), which can often be found on the spine or near the barcode. There may be more than one, especially when multiple labels are involved.

### **comment**

Disambiguation Comment - the comment entered to help distinguish one release from another (e.g.: Deluxe version with 2 bonus tracks).

**compilation**

(since Picard 1.3, compatible with iTunes) 1 for Various Artist albums, otherwise 0.

(Picard 1.2 or previous) 1 if multiple track artists (including featured artists), otherwise 0.

**copyright**

Contain copyright message for the copyright holder of the original sound, begin with a year and a space character.

**date**

Release Date (YYYY-MM-DD) - the date that the release was issued.

**director**

The director of a video track as provided by the Video Director relationship in MusicBrainz. (Since Picard 2.6)

**discid**

Disc ID is the code number which MusicBrainz uses to link a physical CD to a release listing. This is based on the table of contents (TOC) information read from the disc.

**discnumber**

Number of the disc in this release that contains this track.

**discsubtitle**

The Media Title given to a specific disc.

**encodedby**

Encoded by (person or organization). Only available to the file naming script.

**encodersettings**

Encoder Settings used. Only available to the file naming script.

**isrc**

International Standard Recording Code - an international standard code for uniquely identifying sound recordings and music video recordings. See [Wikipedia](#) for more information. (since Picard 0.12)

**key**

Key of the music.

**label**

Release Label Name(s).

**language**

Work lyric language as per ISO 639-3 if track relationships are enabled in Options and a related work exists. (since Picard 0.10)

### **lyrics**

Lyrics for the track.

### **media**

Release Format (e.g.: CD). See the [Release Format](#) page on the MusicBrainz website for more information.

### **musicbrainz\_albumartistid**

Release Artist's MusicBrainz Identifier.

### **musicbrainz\_albumid**

Release MusicBrainz Identifier.

### **musicbrainz\_artistid**

Track Artist's MusicBrainz Identifier.

### **musicbrainz\_discid**

Disc ID if the album was added using “Tools → Lookup CD”. (since Picard 0.12)

### **musicbrainz\_originalalbumid**

Original Release's MusicBrainz Identifier.

### **musicbrainz\_originalartistid**

Original Track Artist's MusicBrainz Identifier.

### **musicbrainz\_recordingid**

Recording's MusicBrainz Identifier.

### **musicbrainz\_releasegroupid**

Release Group's MusicBrainz Identifier.

### **musicbrainz\_releasetrackid**

Release Track MusicBrainz Identifier. (since Picard 1.3)

### **musicbrainz\_trackid**

MusicBrainz Identifier for the track.

### **musicbrainz\_workid**

MusicBrainz Identifier for the work.

### **originalalbum**

Release Title of the earliest release in the Release Group intended for the title of the original recording.

**originalartist**

Track Artist of the earliest release in the Release Group intended for the performer(s) of the original recording.

**originaldate**

The original release date in the format YYYY-MM-DD. By default this is set to the earliest release in the Release Group. This can provide, for example, the release date of the vinyl version of what you have on CD. (*Included as standard from Picard 0.15, and using the Original Release Date plugin if you are still using a non-NGS version earlier than Picard 0.15*)

---

**Note:** This is the same information provided in the `_releasegroup_firstreleasedate` variable, and is consistent across all tracks in the release. If you prefer to have this tag populated with the date of the earliest recording of the track in the database, which will likely be different for each track in the release, this can be achieved by enabling a one-line tagging script as `$set(originaldate,%_recording_firstreleasedate%)`. Be aware that setting this can cause a release to be scattered across multiple directories if you use `%originaldate%` as part of the path portion of your file naming script.

---

**Note:** If you are storing tags in MP3 files as ID3v2.3 (which is the Windows and iTunes compatible version) then the original date can only be stored as a year.

---

**originalyear**

The year of the original release date in the format YYYY. By default this is set to the earliest release in the Release Group. This can provide, for example, the release year of the vinyl version of what you have on CD.

**releasecountry**

Country in which the release was issued.

**releasestatus**

Release Status indicating the “official” status of the release. Possible values include official, promotional, bootleg, and pseudo-release.

**releasetype**

Release Group Type (see also `_primaryreleasetype` and `_secondaryreleasetype`)

**script**

The script used to write the release’s track list. The possible values are taken from the ISO 15924 standard. (since Picard 0.10)

### **subtitle**

Used for information directly related to the contents title.

### **title**

Track Title.

### **titlesort**

Track Title's Sort Name.

### **totaldiscs**

Total number of discs in this release

### **totaltracks**

Total tracks on this disc.

### **tracknumber**

Track number on the disc.

### **website**

Used for official artist website.

## 7.2 Advanced Tags

You can make additional tags available by enabling the *Advanced Relationships* and the *Use genres from MusicBrainz* settings in Picard.

---

**Note:** Tags will not be created and will not be available as variables if there was no value retrieved for the tag from the MusicBrainz database.

---

**Note:** Some of these tags are only supported for certain file types or tag formats. Please see the *Picard Tag Mapping* section for details.

---

### 7.2.1 Advanced Relationship Tags

If you enable tagging with Advanced Relationships, you get these extra tags:

#### **arranger**

Arranger Relationship Type (releases, recordings, works), Instrumentator Relationship Type, Orchestrator Relationship Type (*since Picard 0.10*)

#### **composer**

Composer Relationship Type

**composersort**

Composer Relationship Type's Sort Name

**conductor**

Conductor Relationship Type (releases, recordings), Chorus Master Relationship Type (releases, recordings)

**djmixer**

Mix-DJ Relationship Type (*since Picard 0.9*)

**engineer**

Engineer Relationship Type

**license**

License Relationship Type (releases, recordings) (*since Picard 1.0*)

**lyricist**

Lyricist Relationship Type

**mixer**

Engineer Relationship Type ("Mixed By") (*since Picard 0.9*)

**performer:<type>**

Performer Relationship Type (releases - vocals/instruments, recordings - vocals/instruments), <type> can be "vocal", "guest guitar", "solo violin", ...

Orchestra Relationship Type (releases, recordings), <type> is "orchestra"

Concertmaster Relationship Type (releases, recordings), <type> is "concertmaster"

**producer**

Producer Relationship Type

**remixer**

Remixer Relationship Type

**work**

Work Name (*since Picard 1.3*)

**writer**

Writer Relationship Type (*since Picard 1.0*). Not written to most file formats automatically. You can merge this with composers with a script like:

```
$copymerge(composer, writer)
```

### 7.2.2 Genre Tags

If you enable Use genres from MusicBrainz, you get:

#### **genre**

Genre information from MusicBrainz (*since Picard 2.1, earlier versions used folksonomy tags*)

## 7.3 Basic Variables

These variables are populated from MusicBrainz data for most releases, without any special Picard settings.

---

**Note:** Variables will not be created if there was no value retrieved for the variable from the MusicBrainz database.

---

#### **\_absolutetracknumber**

The absolute number of this track disregarding the disc number (i.e.: `%_absolutetracknumber%` of `%_totalalbumtracks%`). For example, this value would be 11 for the second track on disc 2 where disc 1 has 9 tracks. (*since Picard 1.3*)

#### **\_albumartists**

The Album's Artists' Name(s) (multi-value). (*since Picard 1.3*)

#### **\_albumartists\_sort**

The Album Artist's Sort Name(s) (multi-value). (*since Picard 1.3*)

#### **\_artists\_sort**

The Artist's Sort Name(s) (multi-value). (*since Picard 1.3*)

#### **\_datatrack**

Set to 1 if the track is a “[data track](#)”. (*since Picard 1.3.1*)

#### **\_discpregap**

Set to 1 if the disc the track is on has a “[pregap track](#)”. (*since Picard 1.4*)

#### **\_multiartist**

0 if tracks on the album all have the same primary artist, 1 otherwise. (*since Picard 1.3*)

#### **\_pregap**

Set to 1 if the track is a “[pregap track](#)”. (*since Picard 1.3.1*)

#### **\_primaryreleasetype**

Release Group Primary type (i.e.: album, single, ep, broadcast, or other).

**\_rating**

Rating 0-5 by MusicBrainz users.

**\_recording\_firstreleasedate**

The date of the earliest recording for a track in the format YYYY-MM-DD.  
(*Since Picard 2.6*)

**\_releaseannotation**

The annotation comment for the release. (*since Picard 2.6*)

**\_releasecomment**

Release disambiguation comment. (*since Picard 0.15*)

**\_releasecountries**

This provides the complete list of release countries for the release as a multi-value variable. (*since Picard 2.3.1*)

**\_releasegroup**

Release Group Title which is typically the same as the Album Title, but can be different.

**\_releasegroupcomment**

Release Group disambiguation comment.

**\_releasegroup\_firstreleasedate**

The date of the earliest release in the Release Group in the format YYYY-MM-DD. This is intended to provide, for example, the release date of the vinyl version of what you have on CD. (*Since Picard 2.6*)

---

**Note:** This is the same information provided by default in the `originaldate` tag.

---

**\_releaselanguage**

Release Language as per ISO 639-3. (*since Picard 0.10*)

**\_secondaryreleasetype**

Zero or more Release Group Secondary types (i.e.: audiobook, compilation, dj-mix, interview, live, mixtape/street, remix, soundtrack, or spokenword).

**\_totalalbumtracks**

The total number of tracks across all discs of this release.

## 7.4 File Variables

These variables are populated from MusicBrainz data for most releases, without any special Picard settings.

---

**Note:** Variables that rely on information from the files (e.g.: `_bitrate`) are only available for use on tracks with attached files, when running scripts manually on files or in the file naming script.

---

**Warning:** Prior to version 2.5 Picard did not support using file variables in tagging scripts.

### `_bitrate`

Approximate bitrate in kbps.

### `_bits_per_sample`

Bits of data per sample.

### `_channels`

Number of audio channels in the file.

### `_dirname`

The name of the directory containing the file at the point of being loaded into Picard. (*since Picard 1.1*)

### `_extension`

The file's extension. (*since Picard 0.9*)

### `_filename`

The name of the file without extension. (*since Picard 1.1*)

### `_format`

Media format of the file (e.g.: MPEG-1 Audio).

### `_length`

The length of the track in format mins:secs.

### `_sample_rate`

Number of digitizing samples per second (Hz).

## 7.5 Advanced Variables

If you enable tagging with [Advanced Relationships](#), you get these extra variables:

---

**Note:** Variables will not be created if there was no value retrieved for the variable from the MusicBrainz database.

---

### **\_performance\_attributes**

List of performance attributes for the work (e.g.: “live”, “cover”, “medley”). Use `$inmulti` to check for a specific type (i.e.: `$if($inmulti(%_performance_attributes%,medley), (Medley),))`). (*since Picard 1.3*)

### **\_recordingcomment**

Recording disambiguation comment. (*since Picard 0.15*)

### **\_recordingtitle**

Recording title - normally the same as the Track title, but can be different.

## 7.6 Classical Music Tags

With the help of plugins like “Classical Extras” or “Work & Movement” you can make use of the following tags for tagging your classical music.

### **movement**

Name of the movement (e.g.: “Andante con moto”).

### **movementnumber**

Movement number in Arabic numerals (e.g.: “2”). Players explicitly supporting this tag will often display it in Roman numerals (e.g.: “II”).

### **movementtotal**

Total number of movements in the work (e.g.: “4”).

### **showmovement**

Show Work & Movement: If this tag is set to “1” players supporting this tag, such as iTunes and MusicBee, will display the work, movement number and movement name instead of the track title. For example, the track will be displayed as “Symphony no. 5 in C minor, op. 67: II. Andante con moto” regardless of the value of the title tag.

### **work**

Work Name of the overall work (e.g.: “Symphony no. 5 in C minor, op. 67”).

---

**Note:** If you are using iTunes together with MP3 files you should activate the “Save iTunes compatible grouping and work” option in order for the work to be displayed correctly.

---

## 7.7 Tags from Plugins

Plugins from Picard *Plugins* can add more tags. Following are some examples.

### 7.7.1 Last.fm Plugin

#### genre

Pseudo-genre based on folksonomy tags.

### 7.7.2 Additional Artists Variables Plugin

#### Album Variables

##### **\_artists\_album\_primary\_id**

The ID of the primary / first album artist listed

##### **\_artists\_album\_primary\_std**

The primary / first album artist listed (standardized)

##### **\_artists\_album\_primary\_cred**

The primary / first album artist listed (as credited)

##### **\_artists\_album\_primary\_sort**

The primary / first album artist listed (sort name)

##### **\_artists\_album\_additional\_id**

The IDs of all album artists listed except for the primary / first artist, as a multi-value

##### **\_artists\_album\_additional\_std**

All album artists listed (standardized) except for the primary / first artist, separated by strings provided from the release entry

##### **\_artists\_album\_additional\_cred**

All album artists listed (as credited) except for the primary / first artist, separated by strings provided from the release entry

##### **\_artists\_album\_additional\_sort**

All album artists listed (sort names) except for the primary / first artist, separated by strings provided from the release entry

**\_artists\_album\_additional\_std\_multi**

All album artists listed (standardized) except for the primary / first artist, as a multi-value

**\_artists\_album\_additional\_cred\_multi**

All album artists listed (as credited) except for the primary / first artist, as a multi-value

**\_artists\_album\_all\_std**

All album artists listed (standardized), separated by strings provided from the release entry

**\_artists\_album\_all\_cred**

All album artists listed (as credited), separated by strings provided from the release entry

**\_artists\_album\_all\_sort**

All album artists listed (sort names), separated by strings provided from the release entry

**\_artists\_album\_all\_std\_multi**

All album artists listed (standardized), as a multi-value

**\_artists\_album\_all\_cred\_multi**

All album artists listed (as credited), as a multi-value

**\_artists\_album\_all\_sort\_primary**

The primary / first album artist listed (sort name) followed by all additional album artists (standardized), separated by strings provided from the release entry

**\_artists\_album\_all\_count**

The number of artists listed as album artists

**Track Variables****\_artists\_track\_primary\_id**

The ID of the primary / first track artist listed

**\_artists\_track\_primary\_std**

The primary / first track artist listed (standardized)

**\_artists\_track\_primary\_cred**

The primary / first track artist listed (as credited)

**\_artists\_track\_primary\_sort**

The primary / first track artist listed (sort name)

**\_artists\_track\_additional\_id**

The IDs of all track artists listed except for the primary / first artist, as a multi-value

**\_artists\_track\_additional\_std**

All track artists listed (standardized) except for the primary / first artist, separated by strings provided from the track entry

**\_artists\_track\_additional\_cred**

All track artists listed (as credited) except for the primary / first artist, separated by strings provided from the track entry

**\_artists\_track\_additional\_sort**

All track artists listed (sort names) except for the primary / first artist, separated by strings provided from the track entry

**\_artists\_track\_additional\_std\_multi**

All track artists listed (standardized) except for the primary / first artist, as a multi-value

**\_artists\_track\_additional\_cred\_multi**

All track artists listed (as credited) except for the primary / first artist, as a multi-value

**\_artists\_track\_all\_std**

All track artists listed (standardized), separated by strings provided from the track entry

**\_artists\_track\_all\_cred**

All track artists listed (as credited), separated by strings provided from the track entry

**\_artists\_track\_all\_sort**

All track artists listed (sort names), separated by strings provided from the track entry

**\_artists\_track\_all\_std\_multi**

All track artists listed (standardized), as a multi-value

**\_artists\_track\_all\_cred\_multi**

All track artists listed (as credited), as a multi-value

**\_artists\_track\_all\_sort\_primary**

The primary / first track artist listed (sort name) followed by all additional track artists (standardized), separated by strings provided from the track entry

### **\_artists\_track\_all\_count**

The number of artists listed as track artists

---

**Note:** Some plugins make a large number of web service calls to get additional track-specific data such as performer and work relationships, so loading a large number of albums and tracks could take a significant amount of time. The time concern can be partially addressed by operating a local MusicBrainz server with the rate limiting disabled. Please see the [MusicBrainz Server](#) project on GitHub for additional information.

---

## 7.8 Other Information

For technical details on how tags are written into files, see the [Picard Tag Mapping](#) section.

If you set variables that are not known to Picard, these will be saved as new tags in ID3, MP4, APEv2 and Vorbis based files. They will not be saved in ASF based files.

- For ID3 based files these tags will be saved to, and reloaded from, ID3 user defined text information (TXXX) frames.
- For MP4 files these tags will be saved with a prefix of ----:com.apple.iTunes:. This is widely understood by other tools to be used for custom tags.
- For Vorbis and APEv2 files these tags will be saved as given.

For ID3 based tags (i.e.: MP3 files), you can also set ID3 tags directly from your scripts by setting a special variable starting with `_id3:`, e.g. `%_id3:TXXX:mytag%`. Currently these tags are not loaded into variables when you reload the file into Picard (*since Picard 0.9*).

---

**Note:** Saving custom tags to MP4 files is supported since Picard 2.3. Earlier versions will neither save nor load custom tags in MP4 files.

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## CHAPTER EIGHT

---

## SCRIPTING

Scripts are used to control some aspects of the operation of Picard.

There are two types of scripts used in Picard: the file naming script and tagging scripts. These are managed from the “File Naming” and “Scripting” sections of the “*Options → Options...*” menu.

Scripts are often discussed in the [MetaBrainz Community Forum](#), and there is a thread specific to [file naming](#) and [script snippets](#).

### See also:

Please refer to the section on [Scripts](#) in [Extending Picard](#) for additional details about the two types of scripts, including how and when each of the scripts are executed.

## 8.1 Syntax

The syntax is derived from [Foobar2000's titleformat](#). There are three base elements: text, variable and function. Variables consist of alphanumeric characters enclosed in percent signs (e.g.: %artist%). Functions start with a dollar sign and end with an argument list enclosed in parentheses (e.g.: \$lower(...)).

---

**Note:** When entering input strings into Picard scripts you have to escape a backslash "\", dollar sign "\$", comma "," and the left and right parentheses "(" and ")" in order to force Picard to not interpret them as part of the script command. This is done by inserting a backslash before the character to be escaped. For example, to set a tag value to (\$1,000,000) it would have to be entered as \$set(test\_tag,\(\$1\,000\,000\)).

---

## 8.2 Metadata Variables

See [Tags & Variables](#) for the list of the variables provided by Picard.

Picard's variables can be either simple variables containing a single text string, or multi-value variables containing multiple text strings. In scripts, multi-value variables are automatically converted to a single text string by joining the values with a semi-colon “;”, except when used with special multi-value functions.

---

**Note:** The full list of available scripting functions is covered in the following chapter.

---

---

**CHAPTER  
NINE**

---

## **SCRIPTING FUNCTIONS**

The following is a list of the Picard scripting functions grouped by function type.

### **9.1 Assignment Functions**

These functions are used to assign (or unassign) a value to a tag or variable. The assignment scripting functions are:

#### **9.1.1 \$copy**

Usage: **\$copy(target,source)**

Category: assignment

Implemented: Picard 0.9

#### **Description:**

Copies metadata from variable source to target. The difference from \$set(target, %source%) is that \$copy(target,source) copies multi-value variables without flattening them.

Note that if the variable target already exists, it will be overwritten by source.

#### **Example:**

The following statements will yield the values for target as indicated:

```
$set(source,)  
$set(target,This will be overwritten)  
$copy(target,source)      ==>  ""  
  
$set(source,one)  
$copy(target,source)      ==>  "one"  
  
$setmulti(source,one)  
$copy(target,source)      ==>  "one"
```

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|  |                                |
|--|--------------------------------|
| <code>\$setmulti(source,one; two)</code> |                                |
| <code>\$copy(target,source)</code>       | <code>==&gt; "one; two"</code> |

## 9.1.2 \$copymerge

Usage: **\$copymerge(target,source)**

Category: assignment

Implemented: Picard 1.0

### Description:

Merges metadata from variable source into target, removing duplicates and appending to the end, so retaining the original ordering. Like [\\$copy](#), this will also copy multi-valued variables without flattening them. Following the operation, target will be a multi-value variable.

Note that the variable names for target and source are passed directly without enclosing them in percent signs '%'.

### Example:

The following statements will yield the values for target as indicated:

|  |   |
|--|---|
| <code>\$set(target,)</code>                |   |
| <code>\$set(source,one)</code>             |   |
| <code>\$copymerge(target,source)</code>    | <code>==&gt; "one"</code>                   |
| <br>                                       |   |
| <code>\$set(target,zero)</code>            |   |
| <code>\$set(source,one)</code>             |   |
| <code>\$copymerge(target,source)</code>    | <code>==&gt; "zero; one"</code>             |
| <br>                                       |   |
| <code>\$set(target,zero)</code>            |   |
| <code>\$setmulti(source,one; two)</code>   |   |
| <code>\$copymerge(target,source)</code>    | <code>==&gt; "zero; one; two"</code>        |
| <br>                                       |   |
| <code>\$setmulti(target,zero; two)</code>  |   |
| <code>\$setmulti(source,one; two)</code>   |   |
| <code>\$copymerge(target,source)</code>    | <code>==&gt; "zero; two; one"</code>        |
| <br>                                       |   |
| <code>\$set(target,zero; one; zero)</code> |   |
| <code>\$set(source,one; two; three)</code> |   |
| <code>\$copymerge(target,source)</code>    | <code>==&gt; "zero, one; two; three"</code> |

### 9.1.3 \$delete

Usage: **\$delete(name)**

Category: assignment

Implemented: Picard 2.1

#### Description:

Unsets the variable name and marks the tag for deletion.

This is similar to \$unset(name) but also marks the tag for deletion. For example, running \$delete(genre) will actually remove the “genre” tag from a file when saving.

#### Example:

The following statements will perform the actions indicated:

```
$delete(genre) ==> Remove the "genre" tag from a file when saving
```

### 9.1.4 \$set

Usage: **\$set(name,value)**

Category: assignment

#### Description:

Sets the variable name to value. The value of a variable is available to other script functions if it is enclosed between ‘%’ characters (e.g.: %name%). If name is another variable (e.g.: %indirect%) the value of the variable will be used as name. This allows the creation of dynamically named variables.

---

**Note:** To create a variable which can be used for the file naming string, but which will not be written as a tag in the file, prefix the variable name with an underscore. %something% will create a “something” tag; %\_something% will not.

---

#### Example:

The following statements will return the values indicated:

```
$set(comment,Testing) ==> "Testing" will be written to the "comment" tag
$set(_hidden,Testing) ==> "_hidden" variable will not be written

$set(_base,redirect)
$set(%_base%,Testing) ==> "Testing" will be written to the "redirect" tag
```

## 9.1.5 \$setmulti

Usage: **\$setmulti(name,value[,separator])**

Category: assignment

Implemented: Picard 1.0

### Description:

Sets the variable name to value, using the separator (or a semicolon followed by a space “;” if not passed) to coerce the value back into a proper multi-valued variable. This can be used to operate on multi-valued variables as a string, and then set them back as proper multi-valued variable.

### Example:

The following statements will return the values indicated:

|   |  |
|---|--|
| <code>\$setmulti(genre,\$lower(%genre%))</code> | <code>==&gt; all "genre" elements in lower case</code> |
| <code>\$setmulti(alpha,A; B; C)</code>          | <code>==&gt; 3 elements ("A", "B" and "C")</code>      |
| <code>\$setmulti(mixed,A:A; B:B,:)</code>       | <code>==&gt; 3 elements ("A", "A; B" and "B")</code>   |

## 9.1.6 \$unset

Usage: **\$unset(name)**

Category: assignment

### Description:

Unsets the variable name. The function allows for wildcards to unset certain tags (works with ‘performer:\*', ‘comment:\*', and ‘lyrics:'\*').

### Example:

The following would unset all performer tags:

|                                   |
|-----------------------------------|
| <code>\$unset(performer:*)</code> |
|-----------------------------------|

## 9.2 Text Functions

These functions are used to manage text (e.g.: extract, replace or format) in tags or variables. The text scripting functions are:

### 9.2.1 \$delprefix

Usage: **\$delprefix(text[,prefixes])**

Category: text

Implemented: Picard 1.3

#### Description:

Deletes the specified prefixes from the beginning of text. Any number of prefixes can be specified, separated by commas. If no prefix is specified “A” and “The” are used by default. Note that the matching is case-sensitive.

#### Example:

The following statements will return the values indicated:

```
$delprefix(The Beatles)      ==> "Beatles"  
$delprefix(The Beatles,)    ==> "The Beatles"  
$delprefix(THE Beatles)    ==> "THE Beatles"  
$delprefix(THE Beatles,THE) ==> "Beatles"  
$delprefix(The Beatles,A,An) ==> "The Beatles"
```

### 9.2.2 \$find

Usage: **\$find(haystack,needle)**

Category: text

Implemented: Picard 2.3

#### Description:

Returns the zero-based index of the first occurrence of needle in haystack, or an empty string if needle was not found. The comparisons are case-sensitive. If needle is blank, it will match the beginning of haystack and return “0”. The function does not support wildcards.

---

**Note:** Prior to Picard 2.3.2 \$find returned “-1” if needle was not found.

---

#### Example:

The following statements will return the values indicated:

```
$find(abcdef,a)      ==> "0"  
$find(abcdef,c)      ==> "2"  
$find(abcdef,cd)     ==> "2"  
$find(abcdef,g)      ==> ""  
$find(abcdef,B)      ==> ""
```

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|                              |                         |
|------------------------------|-------------------------|
| <code>\$find(,a)</code>      | <code>==&gt; "</code>   |
| <code>\$find(abcdef,)</code> | <code>==&gt; "1"</code> |

### 9.2.3 \$firstalphachar

Usage: **\$firstalphachar(text[,nonalpha])**

Category: text

Implemented: Picard 0.12

**Description:**

Returns the first character of text in upper case. If text does not begin with an alphabetic character, then nonalpha is returned instead. If nonalpha is not specified, the default value "#" will be used.

**Example:**

The following statements will return the values indicated:

|  |                                 |
|--|---------------------------------|
| <code>\$firstalphachar(abc)</code>           | <code>==&gt; "A"</code>         |
| <code>\$firstalphachar(123)</code>           | <code>==&gt; "#"</code>         |
| <code>\$firstalphachar(***)</code>           | <code>==&gt; "#"</code>         |
| <code>\$firstalphachar(***,)</code>          | <code>==&gt; ""</code>          |
| <code>\$firstalphachar(***,^)</code>         | <code>==&gt; "^"</code>         |
| <code>\$firstalphachar(***,non-alpha)</code> | <code>==&gt; "non-alpha"</code> |

### 9.2.4 \$firstwords

Usage: **\$firstwords(text,length)**

Category: text

Implemented: Picard 0.12

**Description:**

Truncate text to length, only returning the complete words from text which fit within length characters. If length is less than 0, then the value used is the number of characters in text plus length (e.g.: `$firstwords(one two three,-3)` is the same as `$firstwords(one two three,10)`). If length is missing or a negative number greater than the number of characters in text, the function will return an empty string.

**Example:**

The following statements will return the values indicated:

```
$firstwords(Once upon a time,)      ==> ""
$firstwords(Once upon a time,0)     ==> ""
$firstwords(Once upon a time,3)     ==> ""
$firstwords(Once upon a time,7)     ==> "Once"
$firstwords(Once upon a time,-3)    ==> "Once upon a"
$firstwords(Once upon a time,-30)   ==> ""
```

### 9.2.5 \$get

Usage: **\$get(name)**

Category: text

#### Description:

Returns the variable name (equivalent to %name%) or an empty string if name has not been set. If name is another variable (e.g. %indirect%) the value of the variable will be used as name. This allows the retrieval of dynamically named variables.

#### Example:

The following statements will return the values indicated:

```
$set(foo,This is foo)
$get(bar,foo)
$get(foo)           ==> "This is foo"
$get(bar)           ==> "foo"
$get(%bar%)        ==> "This is foo"
$get(baz)           ==> "" ('baz' has not been set to a value)
```

### 9.2.6 \$initials

Usage: **\$initials(text)**

Category: text

Implemented: Picard 0.12

#### Description:

Returns the first character of each word in text, if it is an alphabetic character.

#### Example:

The following statements will return the values indicated:

```
$set(foo,This is a test)
$initials(%foo%)          ==> "Tiat"
$initials(This is a test) ==> "Tiat"
$initials(This is a 123 test) ==> "Tiat"
```

## 9.2.7 \$left

Usage: **\$left(text,number)**

Category: text

### Description:

Returns the first number characters from text. If number is less than 0, then the value used is the number of characters in text plus number (e.g.: \$right(abcd,-1) is the same as \$right(abcd,3)). If number is missing or a negative number greater than the number of characters in text, the function will return an empty string.

### Example:

The following statements will return the values indicated:

```
$left(,)      ==>  ""
$left(ABC,)   ==>  ""
$left(ABC,0)   ==>  ""
$left(ABC,2)   ==>  "AB"
$left(ABC,4)   ==>  "ABC"
$left(ABC,-2)  ==>  "A"
$left(ABC,-4)  ==>  ""
```

## 9.2.8 \$len

Usage: **\$len(text)**

Category: text

### Description:

Returns the number of characters in text.

### Example:

The following statements will return the values indicated:

```
$set(foo, )
$len(%foo%)    ==>  "0"

$set(foo,ABC)
$len(%foo%)    ==>  "3"

$len()          ==>  "0"
$len(ABC)       ==>  "3"
```

## **9.2.9 \$lower**

Usage: **\$lower(text)**

Category: text

Implemented: Picard

### **Description:**

Returns text in lower case.

### **Example:**

The following statement will return the value indicated:

```
$title(tHe houR is upOn uS) ==> "the hour is upon us"
```

## **9.2.10 \$num**

Usage: **\$num(number,length)**

Category: text

### **Description:**

Returns number formatted to length digits, where number and length are integers and length cannot be greater than 20.

### **Example:**

The following statements will return the values indicated:

```
$num(,)      ==> ""
$num(,1)     ==> "0"
$num(a,)     ==> ""
$num(a,5)    ==> "00000"
$num(123,5)  ==> "00123"
$num(1.23,5) ==> "00000"
$num(123,)   ==> ""
$num(123,0)  ==> "123"
$num(123,1)  ==> "123"
$num(123,20) ==> "00000000000000000000123"
$num(123,50) ==> "00000000000000000000000000123"
$num(123,5.5) ==> ""
$num(1.23,10) ==> "0000000000"
```

## 9.2.11 \$pad

Usage: **\$pad(text,length,character)**

Category: text

### Description:

Pads the text to the length provided by adding as many copies of character as needed to the beginning of the string. For the padded length to be correct, character must be exactly one character in length. If length is less than the number of characters in text, the function will return text. If length is missing or is not a number, the function will return an empty string.

### Example:

The following statements will return the values indicated:

```
$pad(abc,5,+) ==> "++abc"
$pad(abc,0,+) ==> "abc"
$pad(abc,5,) ==> "abc"
$pad(abc,5,XY) ==> "XYXYabc"  (note final length is incorrect)
$pad(abc,,+) ==> ""
$pad(abc,x,+) ==> ""
```

## 9.2.12 \$replace

Usage: **\$replace(text,search,replace)**

Category: text

### Description:

Replaces occurrences of search in text with replace and returns the resulting string.

### Example:

The following statements will return the values indicated:

```
$set(foo,I like cats the best)
$replace(%foo%,cat,dog) ==> "I like dogs the best"

=set(foo,I like cats the best)
=set(bar,cat)
$replace(%foo%,%bar%,dog) ==> "I like dogs the best"

=set(foo,I like cats the best)
=set(bar,cat)
=set(baz,dog)
$replace(%foo%,%bar%,%baz%) ==> "I like dogs the best"
```

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```
$replace(I like cats the best,cat,dog) ==> "I like dogs the best"  
$replace(I like cats the best,pig,dog) ==> "I like cats the best"  
$replace(I like cats the best,cat,) ==> "I like s the best"  
$replace(Bad replace,,_) ==> "_B_a_d_ _r_e_p_l_a_c_e_"
```

### 9.2.13 \$reverse

Usage: **\$reverse(text)**

Category: text

#### Description:

Returns text in reverse order.

#### Example:

The following statements will return the values indicated:

```
$set(foo,abcde)  
$reverse(%foo%) ==> "edcba"  
  
$reverse(abcde) ==> "edcba"
```

### 9.2.14 \$right

Usage: **\$right(text,number)**

Category: text

#### Description:

Returns the last number characters from text. If number is less than 1, then the value used is the number of characters in text plus number (e.g.: \$right(abcd,0) is the same as \$right(abcd,4)). If number is missing or a negative number greater than the number of characters in text, the function will return an empty string.

#### Example:

The following statements will return the values indicated:

```
$right(abcd,2) ==> "cd"  
$right(abcd,0) ==> "cd"  
$right(abcd,-1) ==> "bcd"  
$right(abcd,) ==> ""  
$right(abcd,-5) ==> ""
```

## 9.2.15 \$rreplace

Usage: **\$rreplace(text, pattern, replace)**

Category: text

### Description:

Regular expression replace. This function will replace the matching group specified by pattern with replace in text. For more information about regular expressions, please see the [article on Wikipedia](#).

---

**Note:** When entering regular expressions into Picard scripts you have to escape a backslash "\", dollar sign "\$", comma "," and the left and right parentheses "(" and ")" in order to force Picard to not interpret them as part of the script command. This is done by inserting a backslash before the character to be escaped. For example, the regular expression `^\s*([0-9,\.]*$)` would have to be entered as `^\\s*\\([0-9\\,\\.]*)\\$`.

---

### Example:

The following statements will return the values indicated:

```
$rreplace(test \disc 1\),\\s\\\\disc \\d+\\,)   ==> "test"
$rreplace(test,[t,)                           ==> "test"
```

## 9.2.16 \$rsearch

Usage: **\$rsearch(text, pattern)**

Category: text

### Description:

Regular expression search. This function will return the first matching group specified by pattern from text. For more information about regular expressions, please see the [article on Wikipedia](#).

If a marked subexpression is defined using parentheses within the search pattern, only the pattern captured by the subexpression will be returned. If more than one marked subexpression is defined and matched, only the pattern captured by the first subexpression will be returned. If more than one marked subexpression is defined and not all are matched, an empty string will be returned. If no subexpression is specified, then the pattern captured by the whole search expression will be returned.

---

**Note:** When entering regular expressions into Picard scripts you have to escape a backslash "\", dollar sign "\$", comma "," and the left and right parentheses "(" and ")" in order to force Picard to not interpret them as part of the script command. This is done by inserting a backslash before the character to be escaped. For example, the regular expression `^\s*([0-9,\.]*$)` would have to be entered as `^\\s*\\([0-9\\,\\.]*)\\$`.

---

")" in order to force Picard to not interpret them as part of the script command. This is done by inserting a backslash before the character to be escaped. For example, the regular expression `^\s*([0-9,\. ]*)$` would have to be entered as `^\\s*\\([0-9\\,\\.]*)\\$`.

---

### Example:

The following statements will return the values indicated:

```
$rsearch(test, \disc 1\), \\(disc \\d+\\)) ==> "1"
$rsearch(test \disc 1\), \\(disc \\d+\\)) ==> "(disc 1)"
$rsearch(test,x) ==> ""
$rsearch(test,t) ==> "t"
$rsearch(test,s) ==> "s"
$rsearch(test,\\(e\\).*s) ==> "e"
$rsearch(test,\\(e\\).*(s\\)) ==> "e"
$rsearch(test,\\(e\\).*x) ==> ""
$rsearch(test,\\(e\\).*(x\\)) ==> ""
```

## 9.2.17 \$strip

Usage: **\$strip(text)**

Category: text

### Description:

Replaces all whitespace in text with a single space, and removes leading and trailing spaces. Whitespace characters include multiple consecutive spaces, and various other unicode characters. Characters such as newlines '\n', tabs '\t' and returns '\r' are treated as spaces.

### Example:

The following statements will each return "This text has been stripped.":

```
$strip(This text has been stripped.)
$strip(This text has been stripped. )
$strip( This text has been stripped. )
$strip( This text has been stripped.)
$strip( This text has been stripped. )
$strip(This text has been stripped.)
$strip(This text\rhas\nbeen\tstripped.)
```

## 9.2.18 \$substr

Usage: **\$substr(text,start,end)**

Category: text

Implemented: Picard 2.3

### Description:

Returns the substring of text beginning with the character at the start index, up to (but not including) the character at the end index. Indexes are zero-based. Negative numbers will be counted back from the end of the string. If the start or end indexes are left blank, they will default to the start and end of the string respectively. If the start index evaluates to a negative number (e.g.: text is “abc” and start is -10), it will default to the start of the string. Similarly, if end index is a number greater than the number of characters in the string, it will default to the end of the string. Invalid index values (e.g.: start greater than end) will return an empty string.

### Example:

The following statements will return the values indicated:

|                                |               |
|--------------------------------|---------------|
| <b>\$substr(abcdefg)</b>       | ==> "abcdefg" |
| <b>\$substr(abcdefg,3)</b>     | ==> "defg"    |
| <b>\$substr(abcdefg,,3)</b>    | ==> "abc"     |
| <b>\$substr(abcdefg,0,3)</b>   | ==> "abc"     |
| <b>\$substr(abcdefg,-3)</b>    | ==> "efg"     |
| <b>\$substr(abcdefg,-6,3)</b>  | ==> "bc"      |
| <b>\$substr(abcdefg,-10,3)</b> | ==> "abc"     |
| <b>\$substr(abcdefg,3,1)</b>   | ==> ""        |

## 9.2.19 \$swapprefix

Usage: **\$swapprefix(text[,prefixes])**

Category: text

Implemented: Picard 1.3 (*previously as a plugin since Picard 0.13*)

### Description:

Moves the specified prefixes from the beginning to the end of text. Any number of prefixes can be specified, separated by commas. If no prefix is specified “A” and “The” are used by default. Note that the matching is case-sensitive.

### Example:

If the albumartist is “Le Butcherettes”, the following statements will return the values indicated:

|   |                        |
|---|------------------------|
| \$swapprefix(%albumartist%)             | ==> "Le Butcherettes"  |
| \$swapprefix(%albumartist%,le)          | ==> "Le Butcherettes"  |
| \$swapprefix(%albumartist%,L)           | ==> "Le Butcherettes"  |
| \$swapprefix(%albumartist%,A,An,The,Le) | ==> "Butcherettes, Le" |

### 9.2.20 \$title

Usage: **\$title(text)**

Category: text

Implemented: Picard 2.1

#### Description:

Returns text with the first character in every word capitalized. Note that other characters in the words will not be modified, which allows the preservation of all upper-case acronyms such as "BBC". To only have the first character of each word capitalized you could first change the text to lower-case.

#### Examples:

The following statements will return the values indicated:

|  |   |
|--|---|
| \$set(foo,tHe houR is upOn uS)                             |   |
| \$title(%foo%)   | ==> "THe HouR Is UpOn US"                             |
| \$title(\$lower(%foo%))                                    | ==> "The Hour Is Upon Us"                             |
| <br>   |   |
| \$set(bar,THIS TEXT IS ALL CAPITALS)                       |   |
| \$title(%bar%)   | ==> "THIS TEXT IS ALL CAPITALS"                       |
| \$title(\$lower(%bar%))                                    | ==> "This Text Is All Capitals"                       |
| <br>   |   |
| \$set(baz,AC/DC recorded live at the BBC studio in London) |   |
| \$title(%baz%)   | ==> "AC/DC Recorded Live At The BBC Studio In London" |
| \$title(\$lower(%baz%))                                    | ==> "Ac/Dc Recorded Live At The Bbc Studio In London" |

### 9.2.21 \$trim

Usage: **\$trim(text[,character])**

Category: text

#### Description:

Trims all leading and trailing whitespaces from text. The optional second parameter character specifies the character to trim. If multiple characters are provided in character, each character will be applied separately to the function.

#### Examples:

The following statements will return the values indicated:

```
$trim( Trimmed )      ==> "Trimmed"
$trim(__Trimmed__,_) ==> "Trimmed"
$trim(x__Trimmed__y,_x) ==> "Trimmed__y"
```

## 9.2.22 \$truncate

Usage: **\$truncate(text,length)**

Category: text

Implemented: Picard 0.12

### Description:

Truncate text to length. If length is less than 0, then the value used is the number of characters in text plus length (e.g.: \$truncate(abcd,-1) is the same as \$truncate(abcd,3)). If length is missing or a negative number greater than the number of characters in text, the function will return an empty string.

### Example:

The following statements will return the values indicated:

```
$truncate(Once upon a time,)      ==> ""
$truncate(Once upon a time,0)    ==> ""
$truncate(Once upon a time,3)    ==> "0nc"
$truncate(Once upon a time,-3)   ==> "Once upon a t"
$truncate(Once upon a time,-30)  ==> ""
```

## 9.2.23 \$upper

Usage: **\$upper(text)**

Category: text

### Description:

Returns text in upper case.

### Example:

The following statement will return the value indicated:

```
$upper(This text is UPPER case) ==> "THIS TEXT IS UPPER CASE"
```

## 9.3 Multi-Value Functions

These functions are used to manage multi-value tags or variables. The multi-value scripting functions are:

### 9.3.1 \$getmulti

Usage: **\$getmulti(name,index[,separator])**

Category: multi-value

Implemented: Picard 2.3

#### Description:

Gets the element at index from the multi-value variable name. A literal value representing a multi-value can be substituted for name, using the separator (or a semicolon followed by a space “; ” if not passed) to coerce the value into a proper multi-value variable.

The index is zero based. If index is less than 0, then the value used is the number of elements in name plus index (e.g.: \$getmulti(%abcd%, -1) is the same as \$getmulti(%abcd%, 3) if %abcd% is a multi-value variable with four elements). If index is missing, not an integer, a number greater than or equal to the number of elements in name, or a negative number greater than the number of elements in name, then the function will return an empty string.

#### Example:

The following statements will return the values indicated:

```
$set(foo,A; B; C)
$getmulti(bar,A; B; C)
$set(baz,1)
$getmulti(%foo%,%baz%)      ==> ""
$getmulti(%foo%,0)          ==> "A; B; C"
$getmulti(%foo%,-1)         ==> "A; B; C"
$getmulti(%foo%,-%baz%)    ==> "A; B; C"
$getmulti(%bar%,%baz%)     ==> "B"
$getmulti(%bar%,0)          ==> "A"
$getmulti(%bar%,-1)         ==> "C"
$getmulti(%bar%,-%baz%)    ==> "C"

$getmulti(A:1; B:2; C:3,1)  ==> "B:2"
$getmulti(A:1; B:2; C:3,1,:) ==> "1; B"
$getmulti(A:1; B:2; C:3,10)  ==> ""
$getmulti(A:1; B:2; C:3,-10) ==> ""
$getmulti(A:1; B:2; C:3,1.5) ==> ""
$getmulti(A:1; B:2; C:3,a)  ==> ""
```

### 9.3.2 \$join

Usage: **\$join(name,[text],separator)**

Category: multi-value

Implemented: Picard 2.3

#### Description:

Joins all elements in the multi-value variable name, placing text between each element, and returns the result as a string. A literal value representing a multi-value can be substituted for name, using the separator (or a semicolon followed by a space ";" if not passed) to coerce the value into a proper multi-valued variable.

#### Example:

The following statements will return the values indicated:

|   |   |
|---|---|
| <code>\$set(foo,First:A; Second:B)</code>           |   |
| <code>\$join(%foo%, &gt;&gt; )</code>               | <code>==&gt; "First:A; Second:B"</code>                   |
| <code>\$join(%foo%, &gt;&gt; ,:)</code>             | <code>==&gt; "First &gt;&gt; A; Second &gt;&gt; B"</code> |
| <br>  |   |
| <code>\$setmulti(bar,First:A; Second:B)</code>      |   |
| <code>\$join(%bar%, &gt;&gt; )</code>               | <code>==&gt; "First:A &gt;&gt; Second:B"</code>           |
| <code>\$join(%bar%, &gt;&gt; ,:)</code>             | <code>==&gt; "First &gt;&gt; A; Second &gt;&gt; B"</code> |
| <br>  |   |
| <code>\$join(First:A; Second:B,)</code>             | <code>==&gt; "First:ASecond:B"</code>                     |
| <code>\$join(First:A; Second:B, &gt;&gt; )</code>   | <code>==&gt; "First:A &gt;&gt; Second:B"</code>           |
| <code>\$join(First:A; Second:B, &gt;&gt; ,:)</code> | <code>==&gt; "First &gt;&gt; A; Second &gt;&gt; B"</code> |

### 9.3.3 \$lenmulti

Usage: **\$lenmulti(name[,separator])**

Category: multi-value

#### Description:

Returns the number of elements in the multi-value variable name. A literal value representing a multi-value can be substituted for name, using the separator (or a semicolon followed by a space ";" if not passed) to coerce the value into a proper multi-valued variable. If name is missing \$lenmulti will return "0". If separator is specified but left blank (e.g. \$setmulti(A; B; C,)) the function will return "1".

#### Example:

The following statements will return the values indicated:

|                                |                         |
|--------------------------------|-------------------------|
| <code>\$set(foo,)</code>       |                         |
| <code>\$lenmulti(%foo%)</code> | <code>==&gt; "0"</code> |

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```
$set(foo,A; B; C)           ==> "1"  
$lenmulti(%foo%)  
  
$setmulti(foo,A; B; C)        ==> "3"  
$lenmulti(%foo%)  
  
$lenmulti(A; B; C)           ==> "3"  
$lenmulti(A:A; B:B; C:C,:)   ==> "4"  
$lenmulti(,)                 ==> "0"  
$lenmulti(, :)                ==> "0"  
$lenmulti(A; B; C,)           ==> "1"
```

### 9.3.4 \$map

Usage: **\$map(name,code[,separator])**

Category: multi-value

Implemented: Picard 2.3

#### Description:

Iterates over each element found in the multi-value variable name and updates the value of the element to the value returned by code, returning the updated multi-value variable. A literal value representing a multi-value can be substituted for name, using the separator (or a semicolon followed by a space “; ” if not passed) to coerce the value into a proper multi-valued variable.

For each loop, the element value is first stored in the variable `_loop_value` and the count is stored in the variable `_loop_count`. This allows the element or count value to be accessed within the code script.

Empty elements are automatically removed from the output.

---

**Note:** You cannot save the code to a variable and then pass the variable to the function as `%code%` because it will be evaluated when it is assigned to the variable rather than during the loop.

---

#### Example:

The following statements will return the values indicated:

```
$set(foo,First:A; Second:B)  
$map(%foo%,  
    $upper(%_loop_count%=%_loop_value%))    ==> "1=FIRST:A; SECOND:B"  
$map(%foo%,  
    $upper(%_loop_count%=%_loop_value%),:)  ==> "1=FIRST:2=A; SECOND:3=B"
```

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```
$setmulti(bar,First:A; Second:B)
$map(%bar%,
    $upper(%_loop_count%=%_loop_value%))    ==> "1=FIRST:A; 2=SECOND:B"
$map(%bar%,
    $upper(%_loop_count%=%_loop_value%),:) ==> "1=FIRST:2=A; SECOND:3=B"

$setmulti(baz,A; B; x; C)
$map(%baz%,$if($eq(%_loop_value%,x),,%_loop_count%=%_loop_value%))
==> "1=A; 2=B; 4=C"
$map(First:A; Second:B,
    $upper(%_loop_count%=%_loop_value%))    ==> "1=FIRST:A; 2=SECOND:B"
```

### 9.3.5 \$performer

Usage: **\$performer(pattern[,separator])**

Category: multi-value

Implemented: Picard 0.10

#### Description:

Returns the performers where the performance type matches pattern separated by separator (or a comma followed by a space “, ” if not passed). If pattern is blank, then all performers will be returned. Note that the pattern to be matched is case-sensitive.

#### Example:

With the performer tags as performer:guitar = “Ann”, performer:rhythm-guitar = “Bob” and performer:drums = “Cindy”, the following statements will return the values indicated:

```
$set(foo,guitar)
$performer(%foo%)      ==> "Ann, Bob"

$performer(guitar)     ==> "Ann, Bob"
$performer(Guitar)     ==> ""
$performer(rhythm-guitar) ==> "Bob"
$performer()           ==> "Ann, Bob, Cindy"
$performer(, / )       ==> "Ann / Bob / Cindy"
```

### 9.3.6 \$replacemulti

Usage: **\$replacemulti(name,search,replace[,separator])**

Category: multi-value

Implemented: Picard 2.6.1

#### Description:

Replaces occurrences of search with replace in the multi-value variable name and returns the resulting multi-value variable string with the elements separated by separator (or the default separator of a semicolon followed by a space ";" if not passed).

Empty elements are automatically removed from the output.

#### Example:

The following statements will return the values indicated:

```
$setmulti(foo,Electronic; Idm; Techno)
$replacemulti(%foo%,Idm,IDM)          ==> "Electronic; IDM; Techno"

$setmulti(foo,Electronic; Jungle; Bardcore)
$replacemulti(%foo%,Bardcore,Hardcore)    ==> "Electronic; Jungle; Hardcore
  ↵

$setmulti(foo,One; Two; Three)
$replacemulti(%foo%,Four,Five)           ==> "One; Two; Three"

$setmulti(foo,Four; Five; Six)
$replacemulti(%foo%,Five,)              ==> "Four; Six"
```

### 9.3.7 \$reversemulti

Usage: **\$reversemulti(name[,separator])**

Category: multi-value

Implemented: Picard 2.3.1

#### Description:

Returns a copy of the multi-value variable name with the elements in reverse order. A literal value representing a multi-value can be substituted for name, using the separator (or a semicolon followed by a space ";" if not passed) to coerce the value into a proper multi-valued variable.

This function can be used in conjunction with the [\\$sortmulti](#) function to sort in descending order.

#### Example:

The following statements will return the values indicated:

```
$set(foo,A; B; C; D; E)           ==> "A; B; C; D; E"
$reversemulti(%foo%)              ==> "A; B; C; D; E"

$setmulti(bar,A; B; C; D; E)       ==> "E; D; C; B; A"
$reversemulti(%bar%)              ==> "E; D; C; B; A"

$setmulti(baz,A:A; B:B; C:C,:)    ==> "C; B; C; A; B; A"
$reversemulti(%baz%)              ==> "C; B; C; A; B; A"

$reversemulti(A; B; C; D; E)       ==> "E; D; C; B; A"
$reversemulti(A:A; B:B; C:C,:)    ==> "C:B; C:A; B:A"
```

### 9.3.8 \$slice

Usage: **\$slice(name,start,end[,separator])**

Category: multi-value

Implemented: Picard 2.3

#### Description:

Returns a multi-value variable containing the elements from the start index up to but not including the end index from the multi-value variable name. A literal value representing a multi-value can be substituted for name, using the separator (or a semicolon followed by a space ";" if not passed) to coerce the value into a proper multi-valued variable.

Indexes are zero based. Negative numbers will be counted back from the number of elements in the list. If the start or end indexes are left blank, they will default to 0 and the number of elements in the list respectively.

A typical use might be to create a multi-value variable with all artists in %artists% except the first, which can be used to create a “feat.” list. This would look something like \$setmulti(supporting\_artists,\$slice(%artists%,1,)).

#### Example:

The following statements will return the values indicated:

```
$set(foo,A; B; C; D; E)           ==> ""
$slice(%foo%,1)                  ==> ""

$setmulti(foo,A; B; C; D; E)       ==> "B; C; D; E"
$slice(%foo%,1)                  ==> "B; C; D; E"

$slice(A; B; C; D; E,1)           ==> "B; C; D; E"
$slice(A; B; C; D; E,1,3)         ==> "B; C"
$slice(A; B; C; D; E,,3)          ==> "A; B; C"
$slice(A; B; C; D; E,1,3)         ==> "B; C"
```

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|   |                                 |
|---|---------------------------------|
| <code>\$slice(A; B; C; D; E,1,-1)</code>            | <code>==&gt; "B; C; D"</code>   |
| <code>\$slice(A; B; C; D; E,-4,4)</code>            | <code>==&gt; "B; C; D"</code>   |
| <code>\$slice(A:A; B:B; C:C; D:D; E:E,,1,:)</code>  | <code>==&gt; "A"</code>         |
| <code>\$slice(A:A; B:B; C:C; D:D; E:E,-2,,:)</code> | <code>==&gt; "D; E:E"</code>    |
| <code>\$slice(A:A; B:B; C:C; D:D; E:E,2,4,:)</code> | <code>==&gt; "B; C:C; D"</code> |

### 9.3.9 \$sortmulti

Usage: **\$sortmulti(name[,separator])**

Category: multi-value

Implemented: Picard 2.3.1

**Description:**

Returns a copy of the multi-value variable name with the elements sorted in ascending order. A literal value representing a multi-value can be substituted for name, using the separator (or a semicolon followed by a space “; ” if not passed) to coerce the value into a proper multi-valued variable. If name is missing \$sortmulti will return an empty string.

**Example:**

The following statements will return the values indicated:

|  |  |
|--|--|
| <code>\$set(foo,B; C; E; D; A)</code>                | <code>==&gt; "B; C; E; D; A"</code>            |
| <code>\$setmulti(foo,B; C; E; D; A)</code>           | <code>==&gt; "A; B; C; D; E"</code>            |
| <code>\$sortmulti(B; D; E; A; C)</code>              | <code>==&gt; "A; B; C; D; E"</code>            |
| <code>\$sortmulti(B:AB; D:C; E:D; A:A; C:X,:)</code> | <code>==&gt; "A; C:AB; D:B:C; E:D; A:X"</code> |
| <code>\$sortmulti(,)</code>                          | <code>==&gt; ""</code>                         |
| <code>\$sortmulti(,,:)</code>                        | <code>==&gt; ""</code>                         |

### 9.3.10 \$unique

Usage: **\$unique(name[,case\_sensitive[,separator]])**

Category: multi-value

Implemented: Picard 2.6.1

**Description:**

Returns a sorted copy of the multi-value variable name with duplicate elements removed. By default, the comparison ignores the case of the elements; however, this

can be changed by setting `case_sensitive` to a non-empty value. A literal value representing a multi-value can be substituted for `name`, using the separator (or a semicolon followed by a space “;” if not passed) to coerce the value into a proper multi-valued variable. If `name` is missing `$unique` will return an empty string.

---

**Note:** When performing a (default) case-insensitive comparison, the last matching element will be used in the result. For example, if the multi-value variable contained ‘abc’, ‘Abc’, ‘ABc’ and ‘ABC’ in that order, then the element ‘ABC’ would be included in the output.

---

### Example:

The following statements will return the values indicated:

```
$setmulti(foo,a; A; B; b; cd; Cd; cD; CD; a; A; b)
$set(bar,a; A; B; b; cd; Cd; cD; CD; a; A; b)

$unique(%foo%)      ==> "A; CD; b"
$unique(%bar%)      ==> "a; A; B; b; cd; Cd; cD; CD; a; A; b"
$unique(%foo%,1)    ==> "A; B; CD; Cd; a; b; cD; cd"

$unique(a; A; B; b; cd; Cd; cD; CD; a; A; b) ==> "A; CD; b"
```

## 9.4 Mathematical Functions

These functions are used to perform arithmetic operations on tags or variables. The mathematical scripting functions are:

### 9.4.1 \$add

Usage: **\$add(x,y,\*args)**

Category: mathematical

#### Description:

Adds `y` to `x`. Can be used with an arbitrary number of arguments (i.e.: `$add(x,y,z) = (x + y) + z`). Returns an empty string if an argument is missing or not an integer.

#### Example:

The following statements will return the values indicated:

```
$add(20,15)      ==> "35"
$add(20,-15)     ==> "5"
$add(20,14,1)    ==> "35"
$add(20,10,3,2)  ==> "35"
```

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```
$add(20,10,3,)    ==>  ""
$add(20,10,3,a) ==>  ""
$add(20,10,3.5) ==>  ""
```

## 9.4.2 \$div

Usage: **\$div(x,y,\*args)**

Category: mathematical

### Description:

Divides x by y and returns the integer value (rounded down). Can be used with an arbitrary number of arguments (i.e.:  $\$div(x,y,z) = (x / y) / z$ ). If an argument is empty or not an integer, the function will return an empty string. If the second or any subsequent argument is zero, the function will return an empty string.

### Example:

The following statements will return the values indicated:

```
$div(10,3)        ==> "3"
$div(10,-3)       ==> "-4"
$div(-10,3)       ==> "-4"
$div(10,3,2)      ==> "1"
$div(10,-3,-2)   ==> "2"
$div(10,2,1.5)   ==> ""
$div(10,2,0)      ==> ""
$div(10,2,x)      ==> ""
$div(10,2,)        ==> ""
```

## 9.4.3 \$mod

Usage: **\$mod(x,y,\*args)**

Category: mathematical

### Description:

Returns the remainder of x divided by y. Can be used with an arbitrary number of arguments (i.e.:  $\$mod(x,y,z) = (x \% y) \% z$ ). If an argument is empty or not an integer, the function will return an empty string. If the second or any subsequent argument is zero, the function will return an empty string.

### Example:

The following statements will return the values indicated:

```
$mod(0,3)      ==> "0"
$mod(10,3)     ==> "1"
$mod(10,-3)    ==> "-2"
$mod(-13,10)   ==> "7"
$mod(13,-10)   ==> "-7"
$mod(10,3,1)   ==> "0"
$mod(50,17,9)  ==> "7"
$mod(51,3,0)   ==> ""
$mod(51,a)     ==> ""
$mod(a,10)     ==> ""
$mod(,10)       ==> ""
$mod(10,)       ==> ""
$mod(10,3.5)   ==> ""
```

#### 9.4.4 \$mul

Usage: **\$mul(x,y,\*args)**

Category: mathematical

**Description:**

Multiplies x by y. Can be used with an arbitrary number of arguments (i.e.:  $\$mul(x,y,z) = (x * y) * z$ ). If an argument is empty or not an integer, the function will return an empty string.

**Example:**

The following statements will return the values indicated:

```
$mul(1,2)      ==> "2"
$mul(1,2,3)    ==> "6"
$mul(1,2,0)    ==> "0"
$mul(1,-2,3)   ==> "-6"
$mul(-1,2,-3)  ==> "6"
$mul(1,2,)      ==> ""
$mul(1,2,x)    ==> ""
$mul(1,2,5)    ==> ""
```

#### 9.4.5 \$sub

Usage: **\$sub(x,y,\*args)**

Category: mathematical

**Description:**

Subtracts y from x. Can be used with an arbitrary number of arguments (i.e.:  $\$sub(x,y,z) = (x - y) - z$ ). Returns an empty string if an argument is missing or not an integer.

**Example:**

The following statements will return the values indicated:

```
$sub(20,15)      ==> "5"
$sub(20,-15)     ==> "35"
$sub(20,14,1)    ==> "5"
$sub(20,10,3,2)  ==> "5"
$sub(20,10,3,)   ==> ""
$sub(20,10,3,a) ==> ""
$sub(20,10,3,5)  ==> ""
```

## 9.5 Conditional Functions

These functions are used to test for various conditions and take appropriate actions depending on the results of the test. The conditional scripting functions are:

### 9.5.1 \$and

Usage: **\$and(x,y,\*args)**

Category: conditional

**Description:**

Returns true if both x and y are not empty. Can be used with an arbitrary number of arguments. The result is true if **ALL** of the arguments are not empty.

**Example:**

The following statements will return the values indicated:

```
$set(test,x)
$and(%test%,)      ==> "" (False)
$and(%test%,1)     ==> "1" (True)
$and(%test%,A)     ==> "1" (True)
$and(%test%,$gt(4,5)) ==> "" (False)
$and(%test%,$lt(4,5)) ==> "1" (True)
$and(%test%,,,)    ==> "" (False)
$and(%test%,,0)    ==> "" (False)
$and(%test%,,,)   ==> "" (False)
$and(%test%,, ,)  ==> "1" (True)
```

## 9.5.2 \$endswith

Usage: **\$endswith(text,suffix)**

Category: conditional

Implemented: Picard 1.4

### Description:

Returns true if text ends with suffix. Note that the comparison is case-sensitive.

### Example:

The statements below return the values indicated:

```
$endswith(The time is now,is now) ==> "1" (True)
$endswith(The time is now,is NOW) ==> "" (False)
$endswith(The time is now,)      ==> "1" (True)
$endswith(,)                   ==> "1" (True)
$endswith(,now)                ==> "" (False)
```

## 9.5.3 \$eq

Usage: **\$eq(x,y)**

Category: conditional

Implemented: Picard

### Description:

Returns true if x equals y. Note that comparisons are case-sensitive.

### Example:

The following statements will return the values indicated:

```
$eq(,a)    ==> "" (False)
$eq(a,)    ==> "" (False)
$eq(a,A)   ==> "" (False)
$eq(a,a)   ==> "1" (True)
```

## 9.5.4 \$eq\_all

Usage: **\$eq\_all(x,a1,a2,\*args)**

Category: conditional

### Description:

Returns true if x equals a1 and a2, etc. Can be used with an arbitrary number of arguments. Note that comparisons are case-sensitive.

Functionally equivalent to `$and($eq(x,a1),$eq(x,a2) ...)`.

### Example:

The following statements will return the values indicated:

```
$eq_all(A,A,B,C)    ==>  ""  (False)
$eq_all(A,a,A,A)    ==>  ""  (False)
$eq_all(A,A,A,A)    ==>  "1"  (True)
$eq_all(,,,)         ==>  "1"  (True)
$eq_all(,a,)         ==>  ""  (False)
```

## 9.5.5 \$eq\_any

Usage: **\$eq\_any(x,a1,a2,\*args)**

Category: conditional

### Description:

Returns true if x equals a1 or a2, etc. Can be used with an arbitrary number of arguments. Note that comparisons are case-sensitive.

Functionally equivalent to `$or($eq(x,a1),$eq(x,a2) ...)`.

### Example:

The following statements will return the values indicated:

```
$eq_any(A,A,B,C)   ==>  "1"  (True)
$eq_any(A,a,A,A)   ==>  "1"  (True)
$eq_any(A,a,b,c)   ==>  ""   (False)
$eq_any(,,,)        ==>  "1"  (True)
$eq_any(,a,b,c)     ==>  ""   (False)
```

## 9.5.6 \$gt

Usage: **\$gt(x,y)**

Category: conditional

Implemented: Picard

### Description:

Returns true if x is greater than y. If an argument is missing or is not an integer, the function will return an empty string.

### Example:

The following statements will return the values indicated:

```
$gt(-1,0)  ==> ""  (False)
$gt(0,0)  ==> ""  (False)
$gt(1,0)  ==> "1" (True)
$gt(,)    ==> ""  (False)
$gt(,0)   ==> ""  (False)
$gt(0,)   ==> ""  (False)
$gt(a,1)  ==> ""  (False)
$gt(1,a)  ==> ""  (False)
$gt(1,1.5) ==> ""  (False)
```

## 9.5.7 \$gte

Usage: **\$gte(x,y)**

Category: conditional

Implemented: Picard

### Description:

Returns true if x is greater than or equal to y. If an argument is missing or is not an integer, the function will return an empty string.

### Example:

The following statements will return the values indicated:

```
$gte(-1,0)  ==> ""  (False)
$gte(0,0)  ==> "1" (True)
$gte(1,0)  ==> "1" (True)
$gte(,)    ==> ""  (False)
$gte(,0)   ==> ""  (False)
$gte(0,)   ==> ""  (False)
$gte(a,1)  ==> ""  (False)
$gte(1,a)  ==> ""  (False)
$gte(1,1.5) ==> ""  (False)
```

### 9.5.8 \$if

Usage: **\$if(condition,then[,else])**

Category: conditional

#### Description:

If condition is not empty it returns then, otherwise it returns else. If else is not provided, it will be assumed to be an empty string. In addition to (or instead of) returning values, then and else can be used to conditionally execute other functions.

#### Example:

The following statements will return the values indicated:

```
$set(foo,This is foo)
$set(bar,)
$if(%foo%,%foo%,No foo)           ==> "This is foo"
$if(%bar%,%bar%,No bar)           ==> "No bar"
$if(%bar%,This is bar,No bar)     ==> "No bar"
$if(%bar%,This is bar,)           ==> ""
$if(%bar%,This is bar)            ==> ""
$if(,True,False)                  ==> "False"
$if( ,True,False)                 ==> "True"
$if(,$set(value,True),$set(value,False)) ==> Sets "value" to "False"
$set(value,$if(%bar%,True,False)) ==> Sets "value" to "False"
```

### 9.5.9 \$if2

Usage: **\$if2(a1,a2,a3,...)**

Category: conditional

#### Description:

Returns the first non empty argument. Can be used with an arbitrary number of arguments.

#### Example:

The following statements will return the values indicated:

```
$set(foo, )
$set(bar,Something)
$if2(%foo%,%bar%,Three)    ==> "Something"
$if2(,%bar%,Three)         ==> "Something"
$if2(,%foo%,%bar%,Three)   ==> "Something"
$if2(%foo%, ,%bar%,Three)  ==> " "
$if2(%foo%.,%bar%,Three)   ==> ". "
```

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|                                   |                             |
|-----------------------------------|-----------------------------|
| <code>\$if2(%foo%, ,Three)</code> | <code>==&gt; "Three"</code> |
| <code>\$if2(%foo%,,,)</code>      | <code>==&gt; ""</code>      |

## 9.5.10 \$in

Usage: `$in(x,y)`

Category: conditional

Implemented: Picard

### Description:

Returns true, if x contains y. Note that comparisons are case-sensitive.

### Example:

The following statements will return the values indicated:

|  |
|--|
| <code>\$set(foo,ABCDEFG)</code>                  |
| <code>\$set(bar,CDE)</code>                      |
| <code>\$in(%foo%,%bar%) ==&gt; "1" (True)</code> |
| <code>\$in(ABCDE,CDE) ==&gt; "1" (True)</code>   |
| <code>\$in(ABCDE,CE) ==&gt; "" (False)</code>    |
| <code>\$in(ABCDE,cde) ==&gt; "" (False)</code>   |
| <code>\$in(ABCDE,) ==&gt; "1" (True)</code>      |
| <code>\$in(, ) ==&gt; "1" (True)</code>          |

## 9.5.11 \$inmulti

Usage: `$inmulti(%x%,y)`

Category: conditional

Implemented: Picard 1.0

### Description:

Returns true if multi-value variable x contains exactly y as one of its values. Note that comparisons are case-sensitive.

### Example:

The following statements will return the values indicated:

|   |
|---|
| <code>\$setmulti(foo,One; Two; Three)</code>          |
| <code>\$set(bar,Two)</code>                           |
| <code>\$inmulti(%foo%,%bar%) ==&gt; "1" (True)</code> |
| <code>\$inmulti(%foo%,Two) ==&gt; "1" (True)</code>   |
| <code>\$inmulti(%foo%,two) ==&gt; "" (False)</code>   |

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```
$inmulti(%foo%,Once) ==> "" (False)
$inmulti(%foo%,W) ==> "" (False)
$inmulti(%foo%,) ==> "" (False)
```

### 9.5.12 \$is\_audio

Usage: **\$is\_audio()**

Category: conditional

Implemented: Picard 2.2

#### Description:

Returns true, if the track being processed is not shown as being a video.

#### Example:

The following statements will return the values indicated:

```
$is_audio() ==> "1" (True, if the track is not a video)
$is_audio() ==> "" (False, if the track is a video)
```

### 9.5.13 \$is\_complete

Usage: **\$is\_complete()**

Category: conditional

#### Description:

Returns true if every track in the album is matched to a single file.

---

**Note:** This function only works in File Naming scripts.

---

#### Example:

The following statements will return the values indicated:

```
$is_complete() ==> "1" (True, if all tracks have been matched)
$is_complete() ==> "" (False, if not all tracks have been matched)
```

## 9.5.14 \$is\_video

Usage: **\$is\_video()**

Category: conditional

Implemented: Picard 2.2

### Description:

Returns true, if the track being processed is shown as being a video.

### Example:

The following statements will return the values indicated:

|                     |                         |                                      |
|---------------------|-------------------------|--------------------------------------|
| <b>\$is_video()</b> | <code>==&gt; "1"</code> | (True, if the track is a video)      |
| <b>\$is_video()</b> | <code>==&gt; ""</code>  | (False, if the track is not a video) |

## 9.5.15 \$lt

Usage: **\$lt(x,y)**

Category: conditional

### Description:

Returns true if x is less than y. If an argument is missing or is not an integer, the function will return an empty string.

### Example:

The following statements will return the values indicated:

|                     |                         |         |
|---------------------|-------------------------|---------|
| <b>\$lte(-1,0)</b>  | <code>==&gt; "1"</code> | (True)  |
| <b>\$lte(0,0)</b>   | <code>==&gt; ""</code>  | (False) |
| <b>\$lte(1,0)</b>   | <code>==&gt; ""</code>  | (False) |
| <b>\$lte(,)</b>     | <code>==&gt; ""</code>  | (False) |
| <b>\$lte(,0)</b>    | <code>==&gt; ""</code>  | (False) |
| <b>\$lte(0,)</b>    | <code>==&gt; ""</code>  | (False) |
| <b>\$lte(a,1)</b>   | <code>==&gt; ""</code>  | (False) |
| <b>\$lte(1,a)</b>   | <code>==&gt; ""</code>  | (False) |
| <b>\$lte(1,1.5)</b> | <code>==&gt; ""</code>  | (False) |

## 9.5.16 \$lte

Usage: **\$lte(x,y)**

Category: conditional

### Description:

Returns true if x is less than or equal to y. If an argument is missing or is not an integer, the function will return an empty string.

### Example:

The following statements will return the values indicated:

```
$lte(-1,0)  ==> "1"  (True)
$lte(0,0)   ==> "1"  (True)
$lte(1,0)   ==> ""   (False)
$lte(,0)    ==> ""   (False)
$lte(,0)    ==> ""   (False)
$lte(0,)    ==> ""   (False)
$lte(a,1)   ==> ""   (False)
$lte(1,a)   ==> ""   (False)
$lte(1,1.5) ==> ""   (False)
```

## 9.5.17 \$ne

Usage: **\$ne(x,y)**

Category: conditional

### Description:

Returns true if x does not equal y. Note that comparisons are case-sensitive.

### Example:

The following statements will return the values indicated:

```
$ne(,a)    ==> "1"  (True)
$ne(a,)    ==> "1"  (True)
$ne(a,A)   ==> "1"  (True)
$ne(a,a)   ==> ""   (False)
```

## 9.5.18 \$ne\_all

Usage: **\$ne\_all(x,a1,a2,\*args)**

Category: conditional

### Description:

Returns true if x does not equal a1 and a2, etc. Can be used with an arbitrary number of arguments. Note that comparisons are case-sensitive.

Functionally equivalent to `$and($ne(x,a1),$ne(x,a2) ...)`.

### Example:

The following statements will return the values indicated:

|                                |                         |         |
|--------------------------------|-------------------------|---------|
| <code>\$ne_all(A,A,B,C)</code> | <code>==&gt; " "</code> | (False) |
| <code>\$ne_all(A,a,A,A)</code> | <code>==&gt; " "</code> | (False) |
| <code>\$ne_all(A,a,a,a)</code> | <code>==&gt; "1"</code> | (True)  |
| <code>\$ne_all(,,,)</code>     | <code>==&gt; " "</code> | (False) |
| <code>\$ne_all(,a,a)</code>    | <code>==&gt; "1"</code> | (True)  |

## 9.5.19 \$ne\_any

Usage: **\$ne\_any(x,a1,a2,\*args)**

Category: conditional

### Description:

Returns true if x does not equal a1 or a2, etc. Can be used with an arbitrary number of arguments. Note that comparisons are case-sensitive.

Functionally equivalent to `$or($ne(x,a1),$ne(x,a2) ...)`.

### Example:

The following statements will return the values indicated:

|                                |                         |         |
|--------------------------------|-------------------------|---------|
| <code>\$ne_any(A,A,B,C)</code> | <code>==&gt; "1"</code> | (True)  |
| <code>\$ne_any(A,a,A,A)</code> | <code>==&gt; "1"</code> | (True)  |
| <code>\$ne_any(A,A,A,A)</code> | <code>==&gt; " "</code> | (False) |
| <code>\$ne_any(,,,)</code>     | <code>==&gt; " "</code> | (False) |
| <code>\$ne_any(,a,,)</code>    | <code>==&gt; "1"</code> | (True)  |

## 9.5.20 \$not

Usage: **\$not(x)**

Category: conditional

### Description:

Returns true if x is empty.

### Example:

The following statements will return the values indicated:

```
$set(foo,)  
$not(%foo%) ==> "1" (False)  
  
$not(x) ==> "" (True)  
$not( ) ==> "" (True)  
$not() ==> Error
```

## 9.5.21 \$or

Usage: **\$or(x,y,\*args)**

Category: conditional

### Description:

Returns true if either x or y is not empty. Can be used with an arbitrary number of arguments. The result is true if **ANY** of the arguments is not empty.

### Example:

The following statements will return the values indicated:

```
$or(,) ==> "" (False)  
$or(,1) ==> "1" (True)  
$or(,A) ==> "1" (True)  
$or(,$gt(4,5)) ==> "" (False)  
$or(,$lt(4,5)) ==> "1" (True)  
$or(,,) ==> "" (False)  
$or(,,0) ==> "1" (True)  
$or(,, ) ==> "1" (True)
```

## 9.5.22 \$startswith

Usage: **\$startswith(text,prefix)**

Category: conditional

Implemented: Picard 1.4

### Description:

Returns true if text starts with prefix. Note that the comparison is case-sensitive.

### Example:

The statements below return the values indicated:

```
$startswith(The time is now.,The time)  ==> "1"  (True)
$startswith(The time is now.,The TIME)  ==> ""   (False)
$startswith(The time is now.,)          ==> "1"  (True)
$startswith(,The)                     ==> ""   (False)
$startswith(,)                       ==> "1"  (True)
```

## 9.6 Information Functions

These functions provide additional system or data information. The information scripting functions are:

### 9.6.1 \$datetime

Usage: **\$datetime([format])**

Category: information

Implemented: Picard 2.3

### Description:

Returns the current date and time in the specified format, which is based on the standard Python strftime [format codes](#). If no format is specified the date and time will be returned in the form '2020-02-15 14:26:32'. Note that any special characters such as '%', '\$', '(', ')' and '\' will need to be escaped as shown in the examples below.

**Warning:** Platform-specific formatting codes should be avoided to help ensure the portability of scripts across the different platforms. These codes include: remove zero-padding (e.g.: %-d and %-m on Linux or macOS, and their equivalent %#d and %#m on Windows); element length specifiers (e.g.: %3Y); and hanging '%' at the end of the format string.

### Example:

The following statements will return the values indicated:

|  |   |
|--|---|
| <code>\$datetime()</code>                        | <code>==&gt; "2020-02-15 14:26:32"</code> |
| <code>\$datetime(\%Y-\%m-\%d \%H:\%M:\%S)</code> | <code>==&gt; "2020-02-15 14:26:32"</code> |
| <code>\$datetime(\%Y-\%m-\%d)</code>             | <code>==&gt; "2020-02-15"</code>          |
| <code>\$datetime(\%H:\%M:\%S)</code>             | <code>==&gt; "14:26:32"</code>            |
| <code>\$datetime(\%B \%d, \%Y)</code>            | <code>==&gt; "February 15, 2020"</code>   |

## 9.6.2 \$matchedtracks

Usage: `$matchedtracks()`

Category: information

Implemented: Picard 0.12

### Description:

Returns the number of matched tracks within a release.

---

**Note:** This function only works in File Naming scripts.

---

### Example:

The following statements will return the values indicated:

|                                |   |
|--------------------------------|---|
| <code>\$matchedtracks()</code> | <code>==&gt; "3" (if three of the tracks were matched)</code> |
|--------------------------------|---|

## 9.7 Loop Functions

These functions provide the ability to repeat actions based on the contents of a multi-value variable or the result of a conditional test. The loop scripting functions are:

### 9.7.1 \$foreach

Usage: `$foreach(name,code,separator="; ")`

Category: loop

Implemented: Picard 2.3

### Description:

Iterates over each element found in the multi-value variable name, executing code during each iteration. Before each iteration, the element value is first stored in the

variable \_loop\_value and the count is stored in the variable \_loop\_count. This allows the element or count value to be accessed within the code script.

A literal value representing a multi-value can be substituted for name, using the separator (or a semicolon followed by a space ";" if not passed) to coerce the value into a proper multi-valued variable.

#### **Example:**

The following statements will perform the processing indicated:

```
$noop( Mark all listed tags for deletion from the files. )
$foreach(genre; comment; year,$delete(%_loop_value%))

$noop( Create an 'artist_count' tag with a count of all artists
      listed for the track. )
$foreach(%artists%, $set(artist_count, %_loop_count%))

$noop( Create a separate tag for each artist listed for the
      track as 'artist_1', 'artist_2', etc. )
$foreach(%artists%, $set(artist_%_loop_count%, %_loop_value%))
```

### **9.7.2 \$while**

Usage: **\$while(condition,code)**

Category: loop

Implemented: Picard 2.3

#### **Description:**

Executes code repeatedly until condition no longer evaluates to True. For each loop, the count is stored in the variable \_loop\_count. This allows the count value to be accessed within the code script.

---

**Note:** The function limits the maximum number of iterations to 1000 as a safeguard against accidentally creating an infinite loop.

---

#### **Example:**

The following statement will set return to "Echo... echo... echo...":

```
$set(return,Echo...) $while($lt(%_loop_count%,2), $set(return,%return% echo...))
```

## 9.8 Miscellaneous Functions

The miscellaneous scripting functions are:

### 9.8.1 \$noop

Usage: **\$noop(...)**

Category: miscellaneous

#### Description:

Does nothing and always returns an empty string. This is useful for comments or disabling a block of code.

#### Example:

The following statements will return the values indicated:

```
$noop( A comment. )      ==> ""
$noop($set(foo,Testing...)) ==> "" (and "foo" is not set)
```

---

## CHAPTER TEN

---

## USING PICARD

There are four stages to using Picard to process your audio files:

### 10.1 Retrieving Album information

This stage identifies the album on MusicBrainz that will provide the information used for tagging the files, and retrieves the metadata from the MusicBrainz database. There are a few different methods available, depending on the information currently available on your system (e.g.: metadata existing in the files, or having the source CD available).

There are basically four main methods used to retrieve album information from the MusicBrainz database.

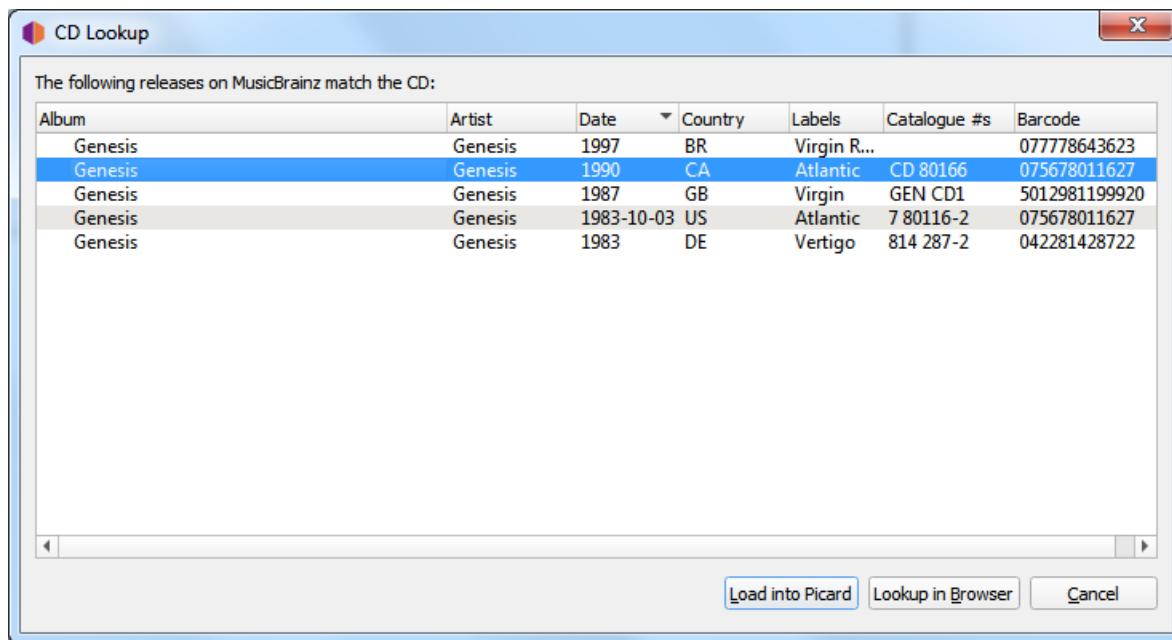
#### 10.1.1 Lookup CD

This is the preferred method of automatically identifying the album to retrieve, and should be used when you have the CD available. Typically this would be used right after ripping the audio files from the CD. When initiated, the table of contents (toc) is read from the CD and a request is sent to MusicBrainz to return a list of the releases that match the toc. If there are any matches, then they will be listed for you to select the one to use. If there are no matches or none of the matches are correct, you can search the database manually for the matching album, and are given the option of attaching the toc from your CD to the selected release for future lookup.

The steps to follow to lookup a CD are:

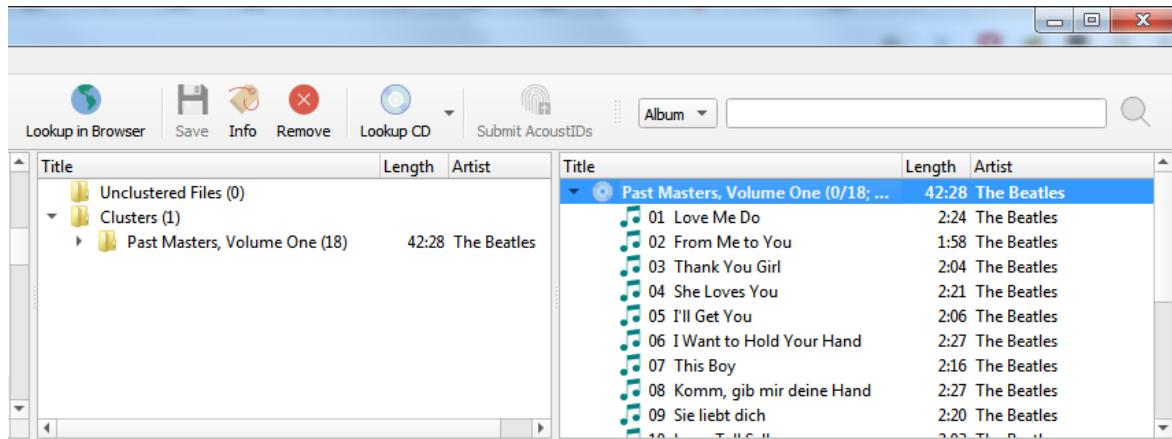
1. Make sure the CD is inserted in the drive, and select “*Tools → Lookup CD... → (drive to use)*”. The CD toc will be calculated and sent to MusicBrainz, and a list of matching releases will be displayed.

## MusicBrainz Picard, Release v2.6.3



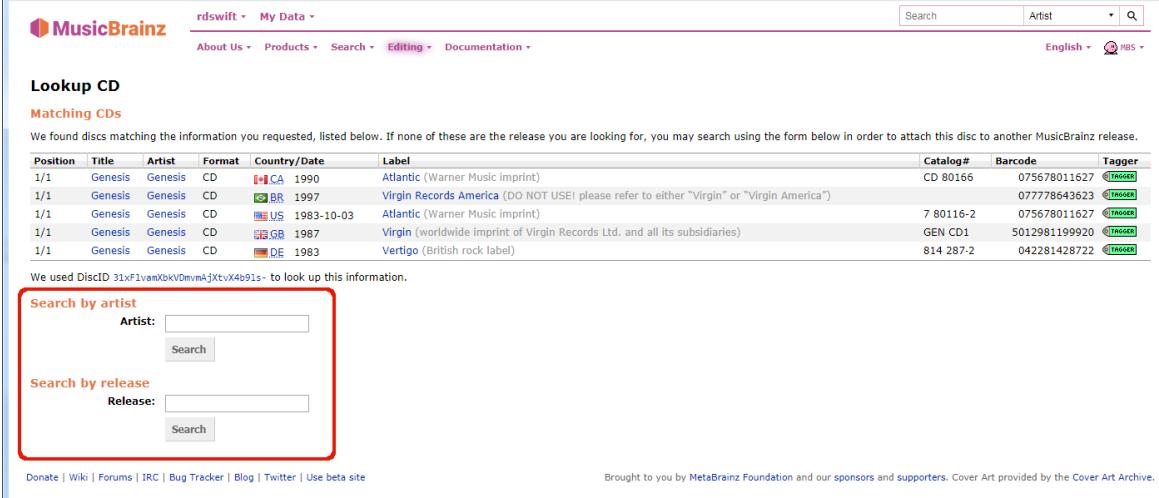
2. Select the correct release from the list. This will load the information for the release into Picard.

A music symbol in front of a track number in the right-hand pane indicates that there has been no file assigned to the track.



3. If there are no matches or none of the matches are correct, use the "Lookup in Browser" option to locate the correct release. Enter the release title or artist and

initiate the search. You will be provided with a list of the releases that match your search criterion and have the same number of tracks as your CD toc.



**Lookup CD**

**Matching CDs**

We found discs matching the information you requested, listed below. If none of these are the release you are looking for, you may search using the form below in order to attach this disc to another MusicBrainz release.

| Position | Title   | Artist  | Format | Country/Date  | Label  | Catalog#  | Barcode       | Tagger |
|----------|---------|---------|--------|---------------|--|-----------|---------------|--------|
| 1/1      | Genesis | Genesis | CD     | CA 1990       | Atlantic (Warner Music imprint)  | CD 80166  | 075678011627  |        |
| 1/1      | Genesis | Genesis | CD     | BR 1997       | Virgin Records America (DO NOT USE! please refer to either "Virgin" or "Virgin America") |           | 077778643623  |        |
| 1/1      | Genesis | Genesis | CD     | US 1983-10-03 | Atlantic (Warner Music imprint)  | 7 80116-2 | 075678011627  |        |
| 1/1      | Genesis | Genesis | CD     | GB 1987       | Virgin (worldwide Imprint of Virgin Records Ltd. and all its subsidiaries)               | GEN CD1   | 5012981199920 |        |
| 1/1      | Genesis | Genesis | CD     | DE 1983       | Vertigo (British rock label)   | 814 287-2 | 042281428722  |        |

We used DiscID 31xflvamXkVdmvaJxtX4b91s- to look up this information.

**Search by artist**  
Artist:

**Search by release**  
Release:

[Donate](#) | [Wiki](#) | [Forums](#) | [IRC](#) | [Bug Tracker](#) | [Blog](#) | [Twitter](#) | [Use beta site](#)

Brought to you by [MetaBrainz Foundation](#) and our [sponsors](#) and [supporters](#). Cover Art provided by the [Cover Art Archive](#).

4. Use the green arrow to load the information for a release into Picard. In addition, you can select the release and attach the toc.



|  |         |               |   |                        |               |  |
|--|---------|---------------|---|------------------------|---------------|--|
| <input type="radio"/> CD 1 (show tracklist)<br>Genesis                   | Genesis | JP 1985-06-01 | Vertigo (British rock label)  | 32PD-17                | 4988011303999 |  |
| <input type="radio"/> CD 1 (show tracklist)<br>Genesis                   | Genesis | NL 1983-10-03 | Mercury Records (or just "Mercury". A UMG imprint, do not use it for ©/© credits) | 832 178-1              | 042281428715  |  |
| <input checked="" type="radio"/> 12" Vinyl 1 (show tracklist)<br>Genesis | Genesis | CA 1990       | Atlantic (Warner Music imprint)   | CD 80166               | 075678011627  |  |
| <input type="radio"/> CD 1 (show tracklist)<br>Genesis (made in Japan)   | Genesis | XE -          | Atlantic (Warner Music imprint)   | 7 80116-2,<br>814287-2 | [none]        |  |
| <input type="radio"/> CD 1 (show tracklist)                              |         |               |   |                        |               |  |

5. If none of the releases displayed are correct, you have the option to add a new release (with some information automatically included).

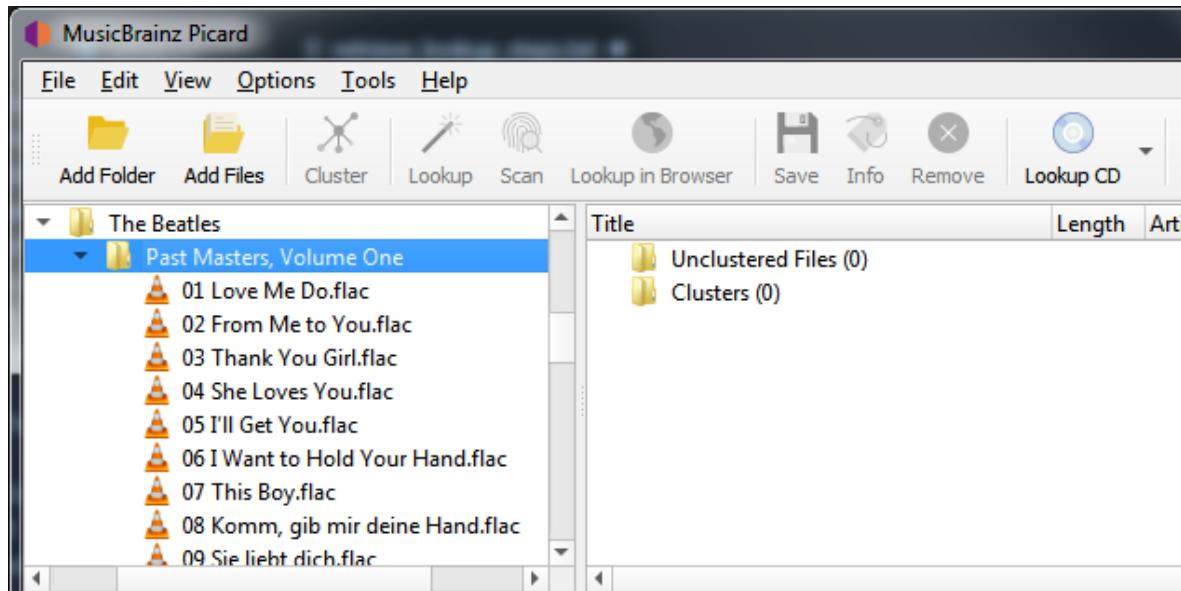
The screenshot shows the MusicBrainz Picard website. At the top, there's a navigation bar with links for 'CD 1 (show tracklist)', 'Attach CD TOC', and 'Add a new release'. Below this, a section titled 'Add a new release' contains the text: 'If you don't see the release you are looking for, you can still add a new one, using this CD TOC:' followed by a button labeled 'Add a new release'. At the bottom of the page, there are links for 'Donate | Wiki | Forums | IRC | Bug Tracker | Blog | Twitter | Use beta site'.

### 10.1.2 Lookup Files

If you don't have the CD available, and your files are grouped by album, this is the preferred method of automatically identifying the album to retrieve. This is done by grouping the files into album clusters in Picard and then perform the lookup. Picard will try to match the entire set of clustered files to the same release.

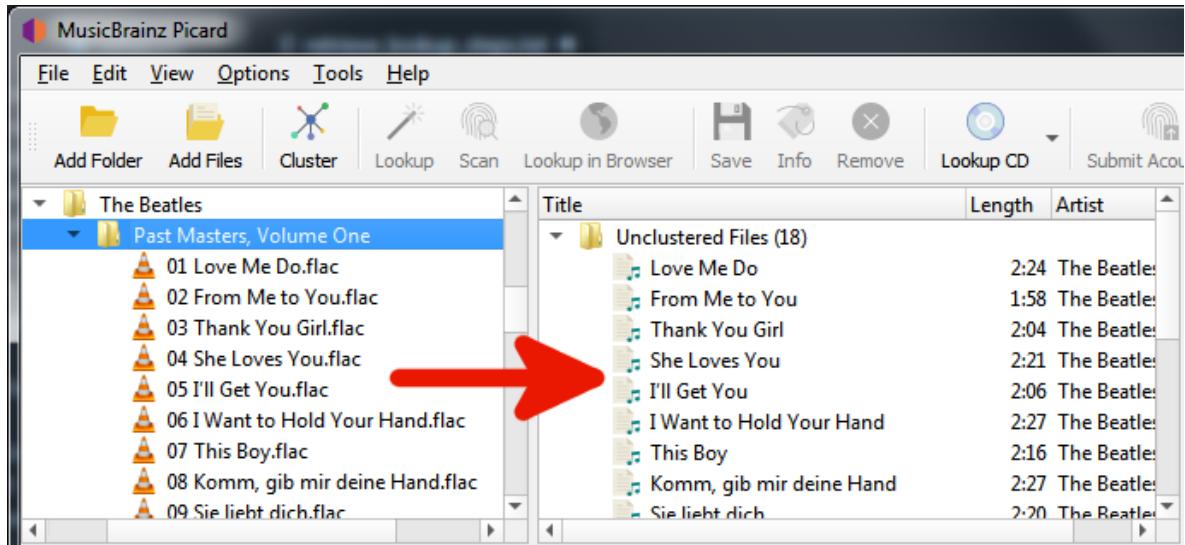
The steps to follow to lookup files are:

1. Add your files using “*Files → Add Files...*” or “*Files → Add Folder...*”. For ease of use it is recommended to use the internal File Browser to manage file system interactions. This is enabled from “*View → File Browser*”.

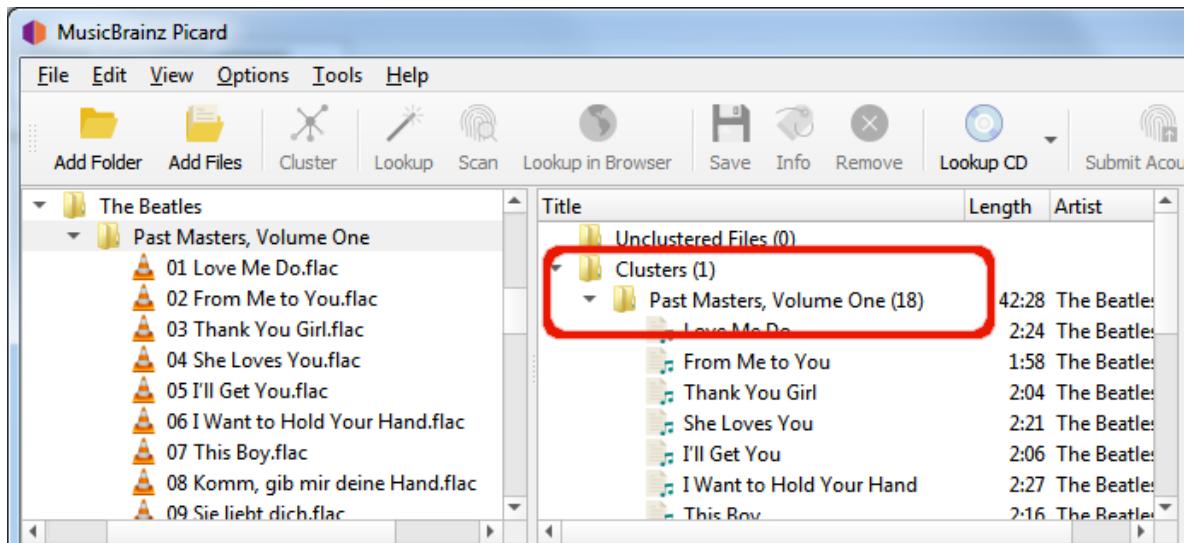


2. Drag the selected directory or files to the “Unclustered Files” folder, and wait for

Picard to process the files - the names will turn from grey to black.

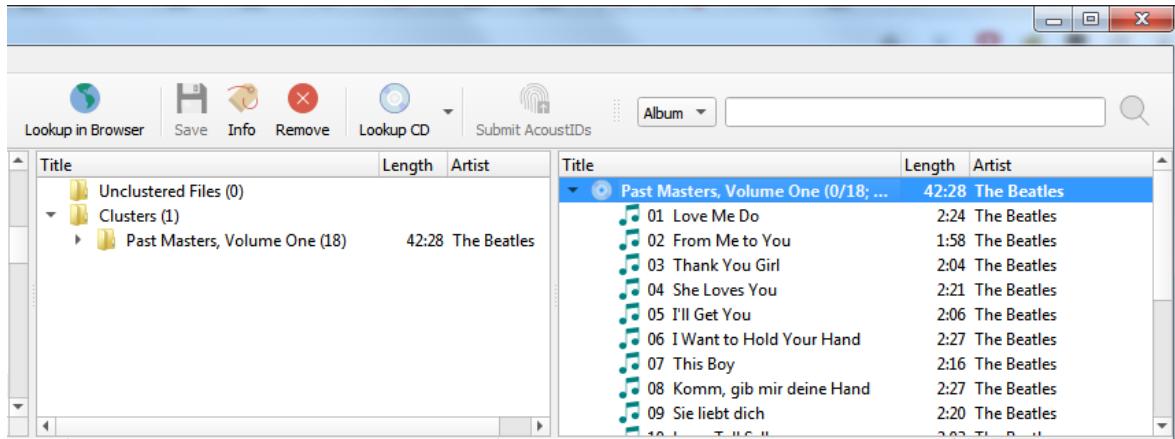


3. Use “Tools → Cluster” to group the files into album clusters.



4. Select a clustered album and use “Tools → Lookup” to lookup the cluster. Depending on your previous metadata, the album will show up in the right-hand pane.

A music symbol in front of a track number in the right-hand pane indicates that there has been no file assigned to the track.



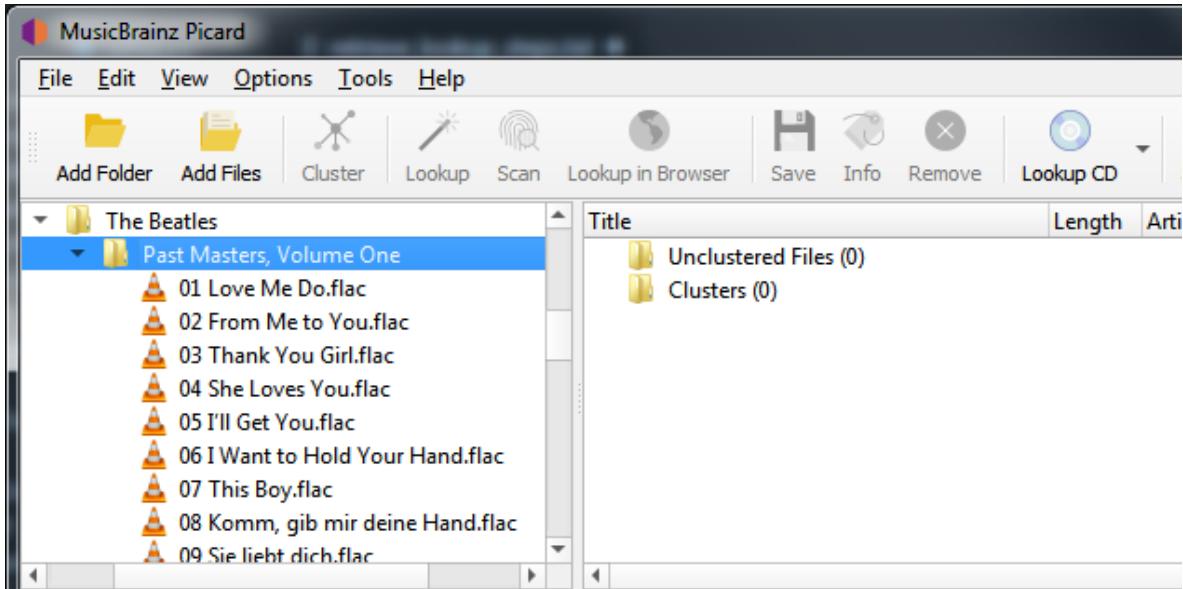
If no album was retrieved, or if the album retrieved was incorrect, you may have to try a different method such as scanning the files or a manual lookup.

### 10.1.3 Scan Files

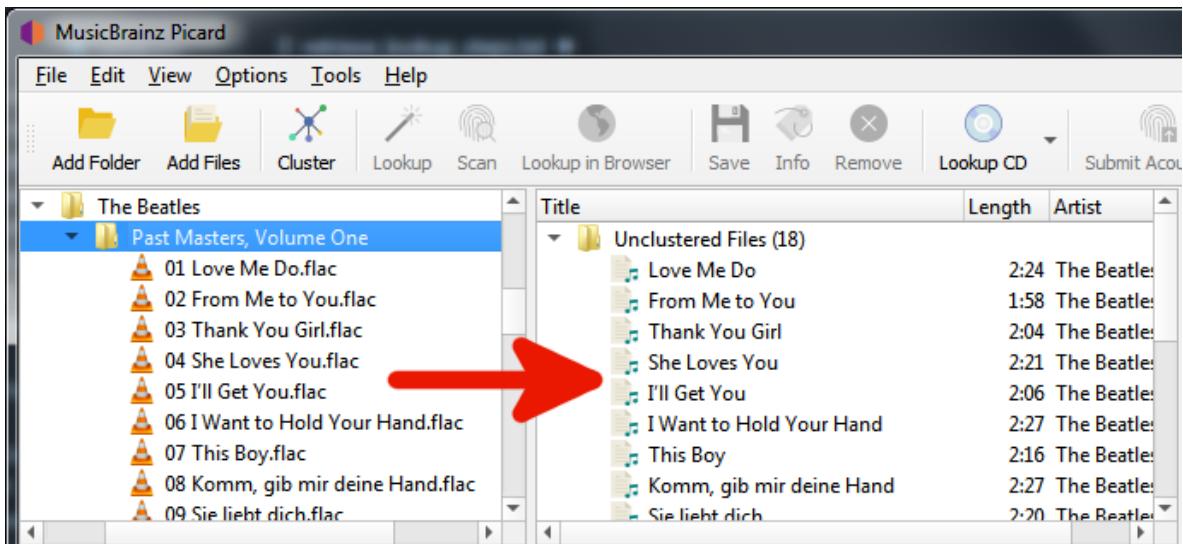
If your files are not grouped into albums and you don't have the CD available, this is the only remaining method of automatically identifying the album to retrieve. This is done by scanning the files to obtain their AcoustID fingerprints and then perform the lookup for the individual files by fingerprint. The album(s) matching the files will show up in the right-hand pane based on a "best match" using the Preferred Releases settings in the Metadata options.

The steps to follow to scan and lookup files are:

1. Add your files using “*Files → Add Files...*” or “*Files → Add Folder...*”. For ease of use it is recommended to use the internal File Browser to manage file system interactions. This is enabled from “*View → File Browser*”.



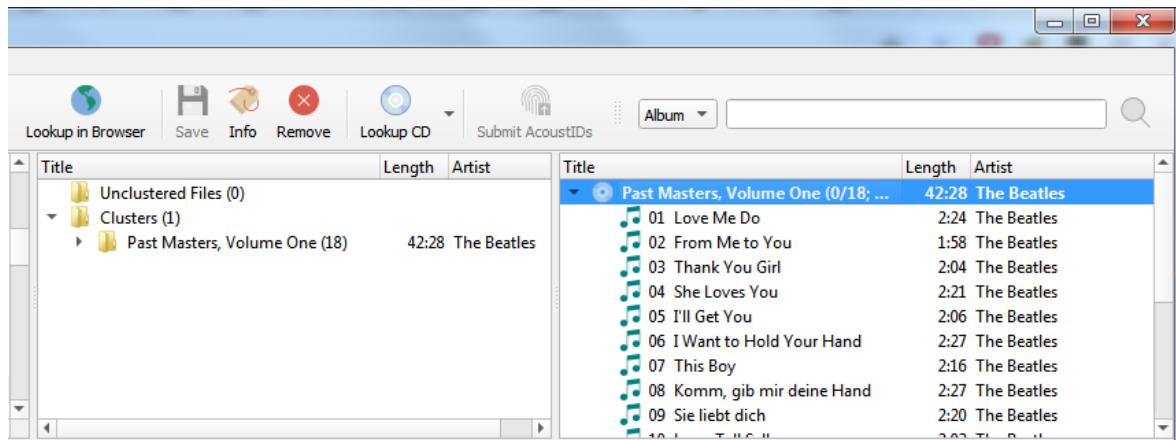
2. Drag the selected directory or files to the “Unclustered Files” folder, and wait for Picard to process the files - the names will turn from grey to black.



3. Select the desired files and use “Tools → Scan” to scan the files to determine their AcoustID fingerprints and lookup using this information. The album(s) matching the files will show up in the right-hand pane based on a “best match” using the

Preferred Releases settings in the Metadata options.

A music symbol in front of a track number in the right-hand pane indicates that there has been no file assigned to the track.



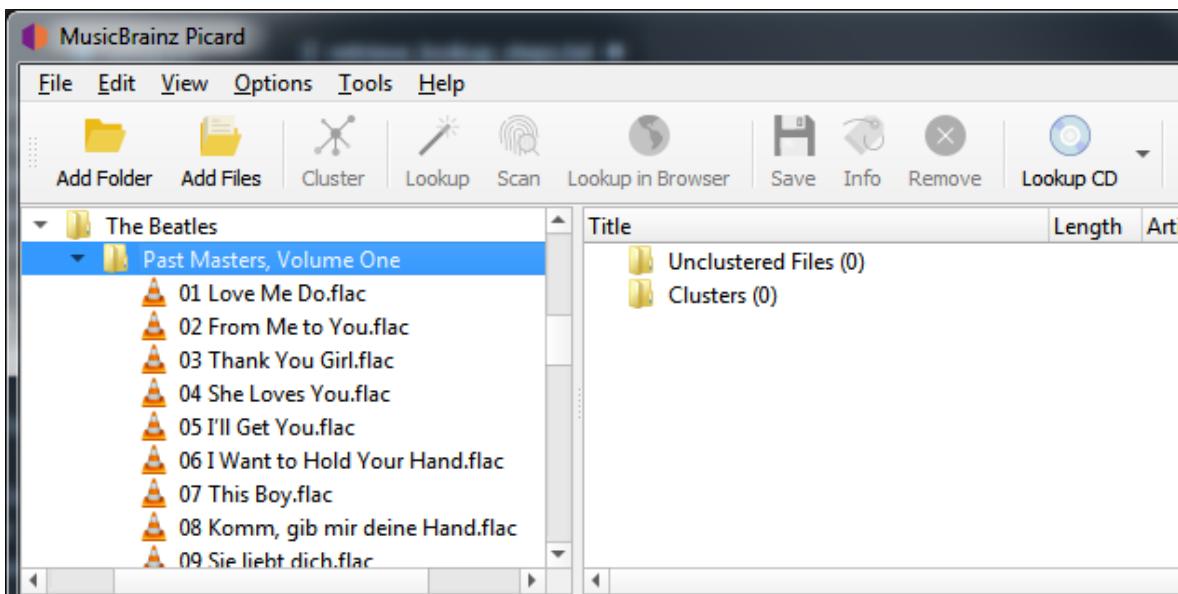
If no album was retrieved, or if the album retrieved was incorrect, you may have to try a different method such as clustering the files or a browser lookup.

### 10.1.4 Lookup in Browser

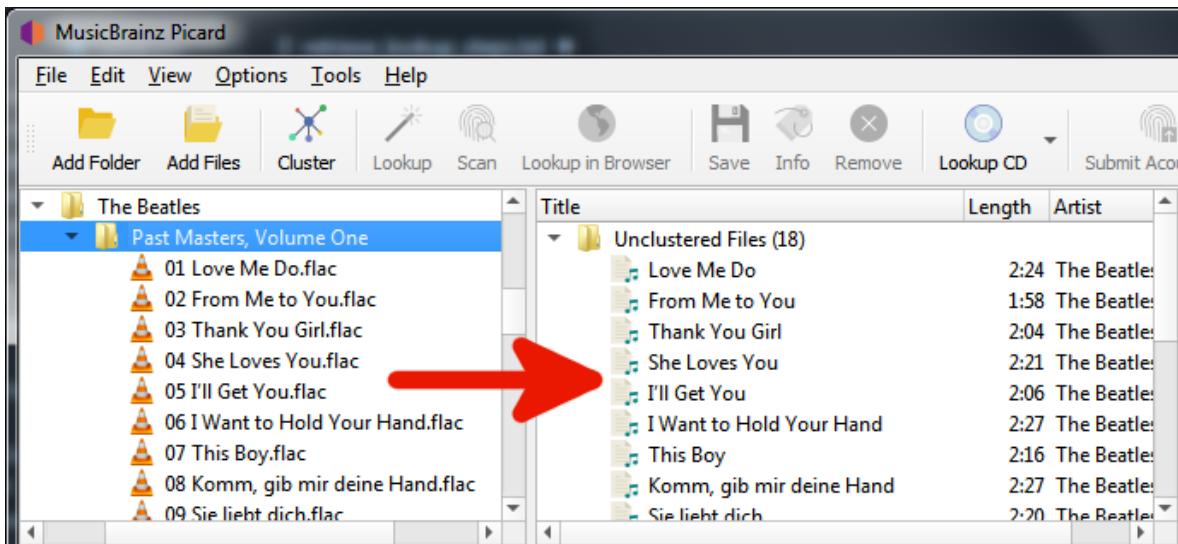
If none of the automated methods are available, or don't produce the desired results, you have the option of retrieving the album information by having Picard initiate a search on the MusicBrainz website using your web browser. There are two methods of initiating this search. The first method searches based on the tag information from the selected files.

The steps to follow to manually lookup an album on MusicBrainz are:

1. Add your files using “*Files → Add Files...*” or “*Files → Add Folder...*”. For ease of use it is recommended to use the internal File Browser to manage file system interactions. This is enabled from “*View → File Browser*”.

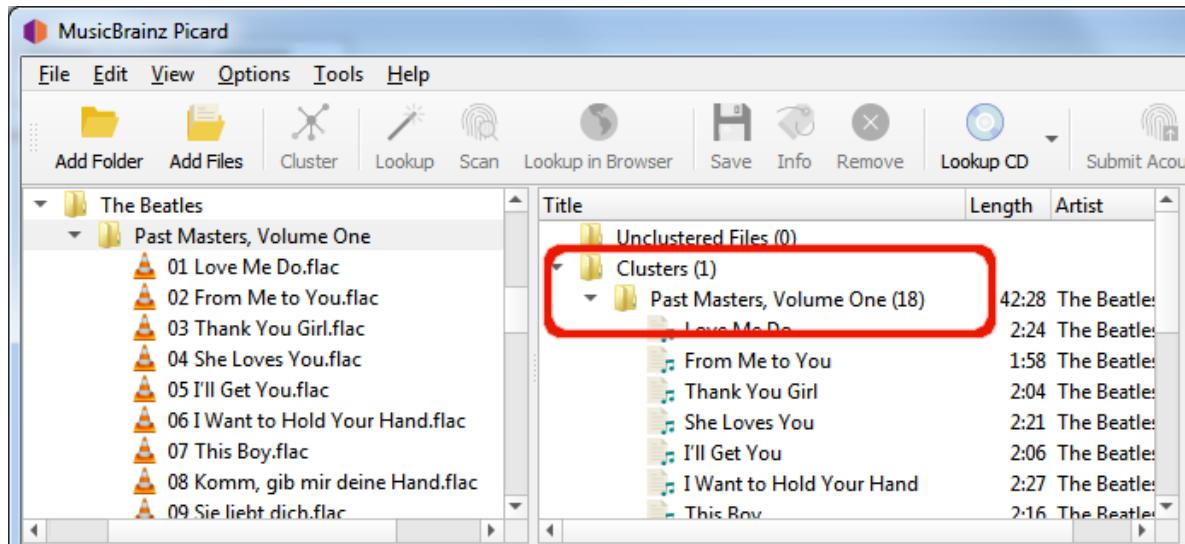


2. Drag the selected directory or files to the “Unclustered Files” folder, and wait for Picard to process the files - the names will turn from grey to black.



3. Use “Tools → Cluster” to group the files into album clusters if you want lookup a cluster.

## MusicBrainz Picard, Release v2.6.3



4. Select a file or clustered album and use “Tools → Lookup in Browser” to initiate the search in your browser using the currently available metadata.

The screenshot shows the MusicBrainz Tag Lookup Results page. At the top, there's a navigation bar with links for 'About Us', 'Products', 'Search', 'Editing', and 'Documentation'. Below that is a search bar with fields for 'Search', 'Artist', and a 'Trigger' button. The main area is titled 'Tag Lookup Results' and shows a table of 2,321 results. The table has columns for Name, Artist, Format, Tracks, Country/Date, Label, Catalog#, Barcode, Language, Type, Status, and Tagger. The first few rows show various entries for 'Past Masters, Volume One' by 'The Beatles' in different formats and from different years and countries.

| Name                     | Artist      | Format | Tracks | Country/Date  | Label                          | Catalog#                | Barcode       | Language   | Type                | Status   | Tagger  |
|--------------------------|-------------|--------|--------|---------------|--------------------------------|-------------------------|---------------|------------|---------------------|----------|---------|
| Past Masters, Volume One | The Beatles | CD     | 18     | XE 1988       | Parlophone                     | CD-BPM 1, CDP 7 90043 2 | 077779004324  | eng / Latn | Album + Compilation | Official | TRIGGER |
| Past Masters, Volume One | The Beatles | CD     | 18     | US 1988-03-08 | Capitol Records, Parlophone    | CDP 7 90043 2           | 077779004324  | eng / Latn | Album + Compilation | Official | TRIGGER |
| Past Masters, Volume One | The Beatles | CD     | 18     | CA 1988       | Apple Records, Parlophone      | C2 90043                | 077779004324  | eng / Latn | Album + Compilation | Official | TRIGGER |
| Past Masters, Volume One | The Beatles | CD     | 18     | JP -          | EMI, Odeon                     | TOCP-8515, CP32-5601    |               | eng / Latn | Album + Compilation | Official | TRIGGER |
| Past Masters, Volume One | The Beatles | CD     | 18     | GB 1988-03-07 | Parlophone                     | CD-BPM1, CDP 7 90043 2  | 077779004324  | eng / Latn | Album + Compilation | Official | TRIGGER |
| Past Masters, Volume One | The Beatles | CD     | 18     | JP 1998-03-11 | EMI, Parlophone, Apple Records | TOCP-51125              | 4988006740082 | eng / Latn | Album + Compilation | Official | TRIGGER |
| Past Masters, Volume One | The Beatles | CD     | 18     | CA 1988       | Parlophone                     | CDP 7 90043 2           | 077779004324  | eng / Latn | Album + Compilation | Official | TRIGGER |

5. If you want to revise or refine your search criteria, make the desired changes at the bottom of the web page and click the “Search” button to re-initiate the search.

The screenshot shows a list of releases from The Beatles. The first release is "All You Need Is Love". Below the list is a search form with fields for Artist, Release, Track number, Track, Duration, and Filename, all enclosed in a red box. At the bottom of the page, there is a footer with links to Donate, Wiki, Forums, IRC, Bug Tracker, Blog, Twitter, and Use beta site.

6. Use the green arrow to load the information for a release into Picard.

The screenshot shows a list of 2,321 results for "Past Masters, Volume One". The results are filtered by artist "The Beatles" and format "CD". The first result is highlighted with a pink background. A red box highlights the "Tagger" column for the second result, which has a music symbol icon in front of the track number.

7. A music symbol in front of a track number in the right-hand pane indicates that there has been no file assigned to the track.

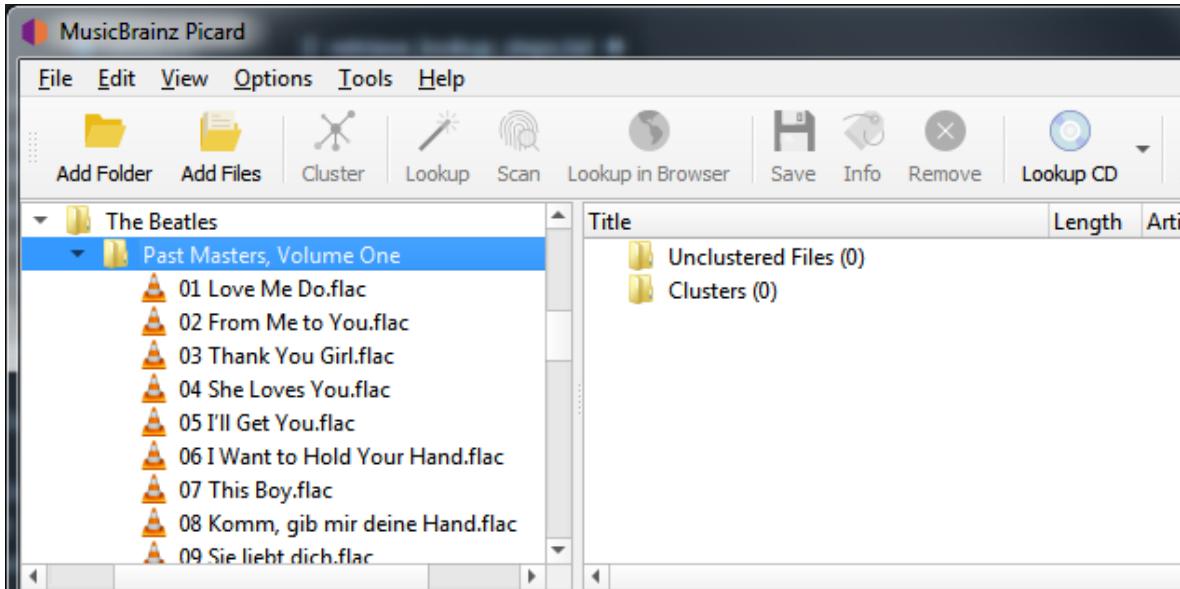
The screenshot shows the Picard application's "Tag Lookups" window. On the left, there is a tree view showing "Unclustered Files (0)", "Clusters (1)", and "Past Masters, Volume One (18)". On the right, a detailed view of the "Past Masters, Volume One" cluster is shown, listing 18 tracks. The first track, "Love Me Do", has a small blue musical note icon to its left, indicating it has not been assigned a file yet.

### 10.1.5 Manual Lookup

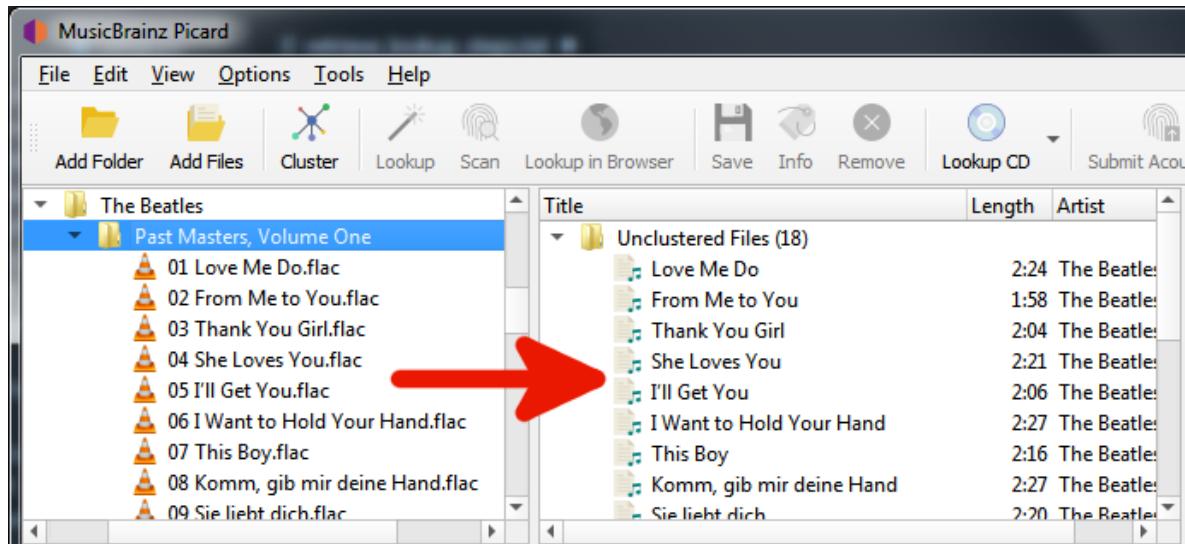
The second browser search method uses manually entered information as the search criterion.

The steps to follow to manually lookup an album on MusicBrainz are:

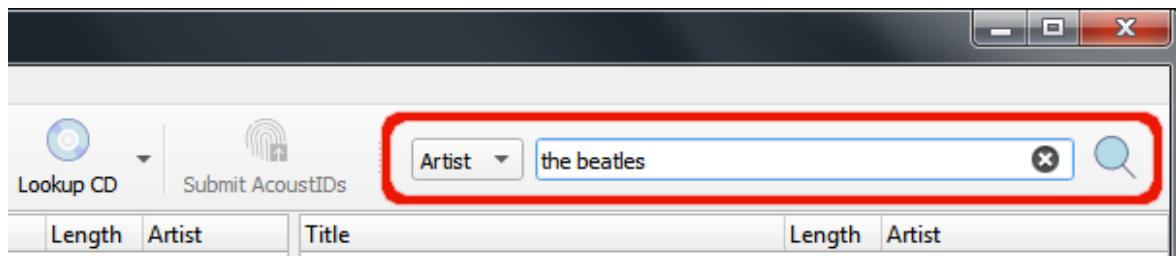
1. Add your files using “*Files → Add Files...*” or “*Files → Add Folder...*”. For ease of use it is recommended to use the internal File Browser to manage file system interactions. This is enabled from “*View → File Browser*”.



2. Drag the selected directory or files to the “Unclustered Files” folder, and wait for Picard to process the files - the names will turn from grey to black.



3. Enter your search information into the search box and select the type of records to search, then click the magnifying glass symbol to initiate the search. This will open the [MusicBrainz website](#) in your browser.



4. Continue to drill down by clicking on the appropriate links until you get to the release that you want to retrieve.

## MusicBrainz Picard, Release v2.6.3

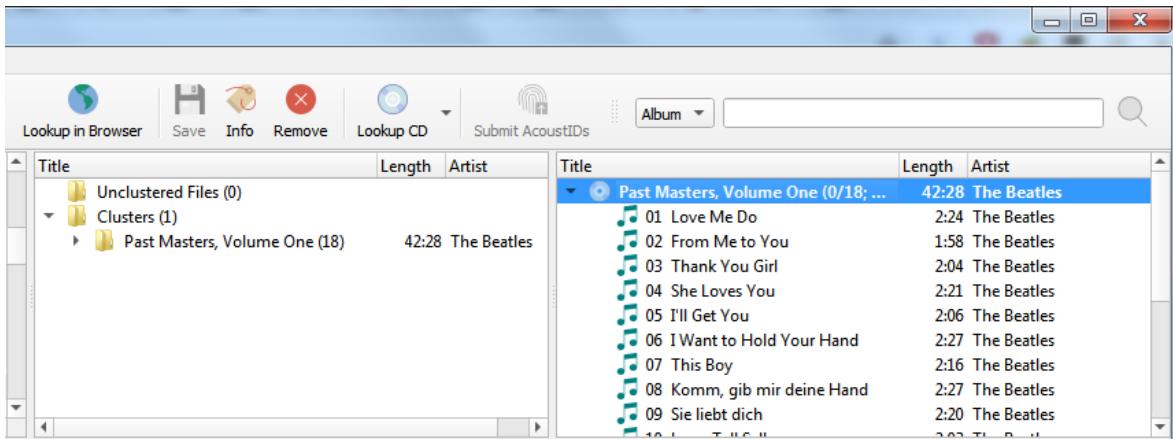
The screenshot shows the MusicBrainz search results for the query "beatles". The results table has columns for Name, Sort Name, Type, Gender, Area, Begin, Begin Area, End, and End Area. The first result, "The Beatles", is highlighted with a red box.

| Name   | Sort Name           | Type  | Gender | Area           | Begin   | Begin Area | End        | End Area |
|--|---------------------|-------|--------|----------------|---------|------------|------------|----------|
| The Beatles                                    | Beatles, The        | Group |        | United Kingdom | 1957-03 | Liverpool  | 1970-04-10 |          |
| The Tape-beatles (US multimedia group)         | Tape-beatles, The   | Group |        | United States  | 1986-12 | Iowa City  |            |          |
| Sex Beatles (Brazilian rock band)              | Sex Beatles         | Group |        |                |         |            |            |          |
| Blues Beatles (blues rock, Brazil)             | Blues Beatles       | Group |        | Brazil         |         |            |            |          |
| Tokyo Beatles (Japanese)                       | Tokyo Beatles       |       |        | Japan          |         | Tokyo      |            |          |
| Beatles Chillout                               | Beatles Chillout    |       |        |                |         |            |            |          |
| Beatles Back2Back (The Beatles tribute band)   | Beatles Back2Back   | Group |        | Australia      | 2011    |            |            |          |
| Counterfeit Beatles (The Beatles tribute band) | Counterfeit Beatles | Group |        | United Kingdom |         |            |            |          |

5. Use the green arrow TAGGER to load the information for a release into Picard.

The screenshot shows the release group page for "Past Masters, Volume One". The right-hand pane displays "Release group information" for The Beatles, including the artist's name, type, and a link to their Wikipedia page. It also shows the album's rating (★★★★★) and genres (rock). Below this, there are sections for "Other tags" (60s), "External links" (links to AllMusic, Discogs, Musik-Sammler, Rateyourmusic, and Wikidata), and "Editing" (links to log in and open edits).

6. A music symbol in front of a track number in the right-hand pane indicates that there has been no file assigned to the track.

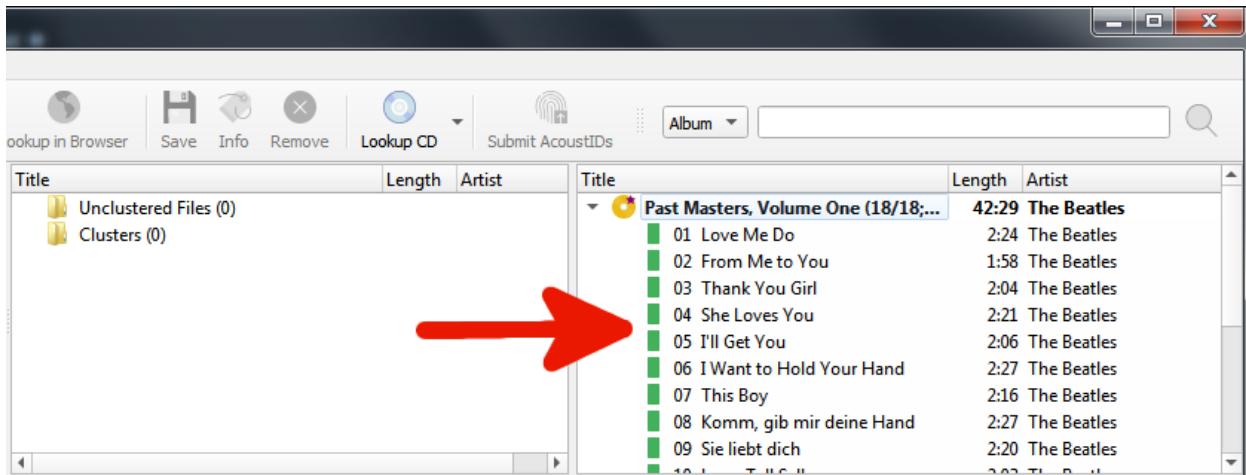


**Note:** If you enter a link to the desired entry (e.g.: <https://musicbrainz.org/release/9383a6f5-9607-4a36-9c68-8663aad3592b>) in the search box in Picard, the entry will be loaded directly without opening a browser window.

## 10.2 Matching Files to Tracks

This stage is where individual files are matched to specific tracks in the information retrieved from the MusicBrainz database.

Once you have retrieved the desired album information into the right-hand pane, the next step is to match the files from the left-hand pane to the corresponding track in the right-hand pane. A music symbol in front of a track number in the right-hand pane indicates that there has been no file assigned to the track. In some cases, Picard may have already tried to do the matching for you. If the matching wasn't done automatically, drag the appropriate files onto the appropriate album and track.

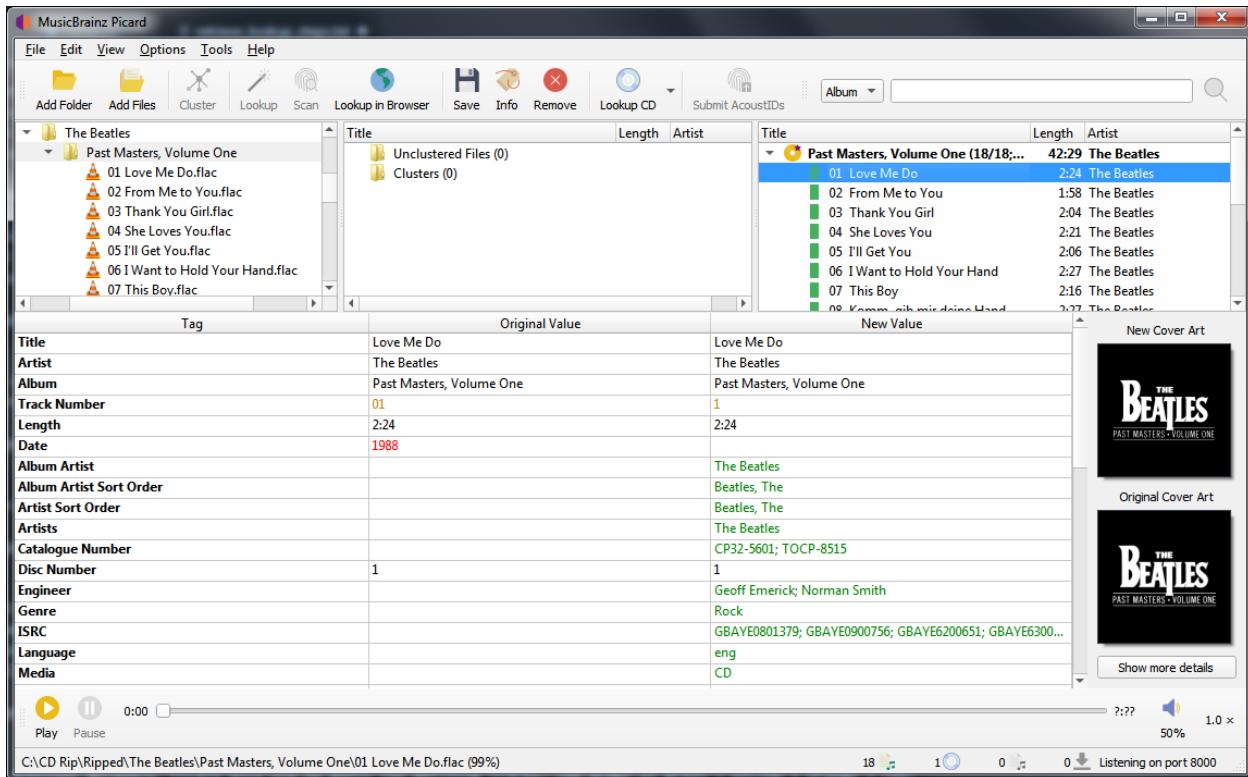


**Note:** If you drag and drop multiple files onto a specific track the first selected file will be matched to the track on which you dropped the files. The rest of the selected files will be matched to the following tracks in order. This allows you to quickly match multiple files to a sequence of tracks. If you want to match all files to a single track instead you can hold the Alt key while dropping the files.

If you drop multiple files onto an album Picard will try to match the files to the tracks based on the metadata.

---

Depending on your previous metadata, Picard will try to guess the matching tracks. The order is green > yellow > orange > red, where green is the best match. If you are seeing a lot of red and orange, it could mean that Picard has guessed incorrectly, or that your files didn't have a lot of previous metadata to work with. If this is the case, it's recommended to select a track and compare the "Original Values" and "New Values" in the metadata pane. If there is an incorrect match, simply drag the track to its correct spot in the right-hand pane.



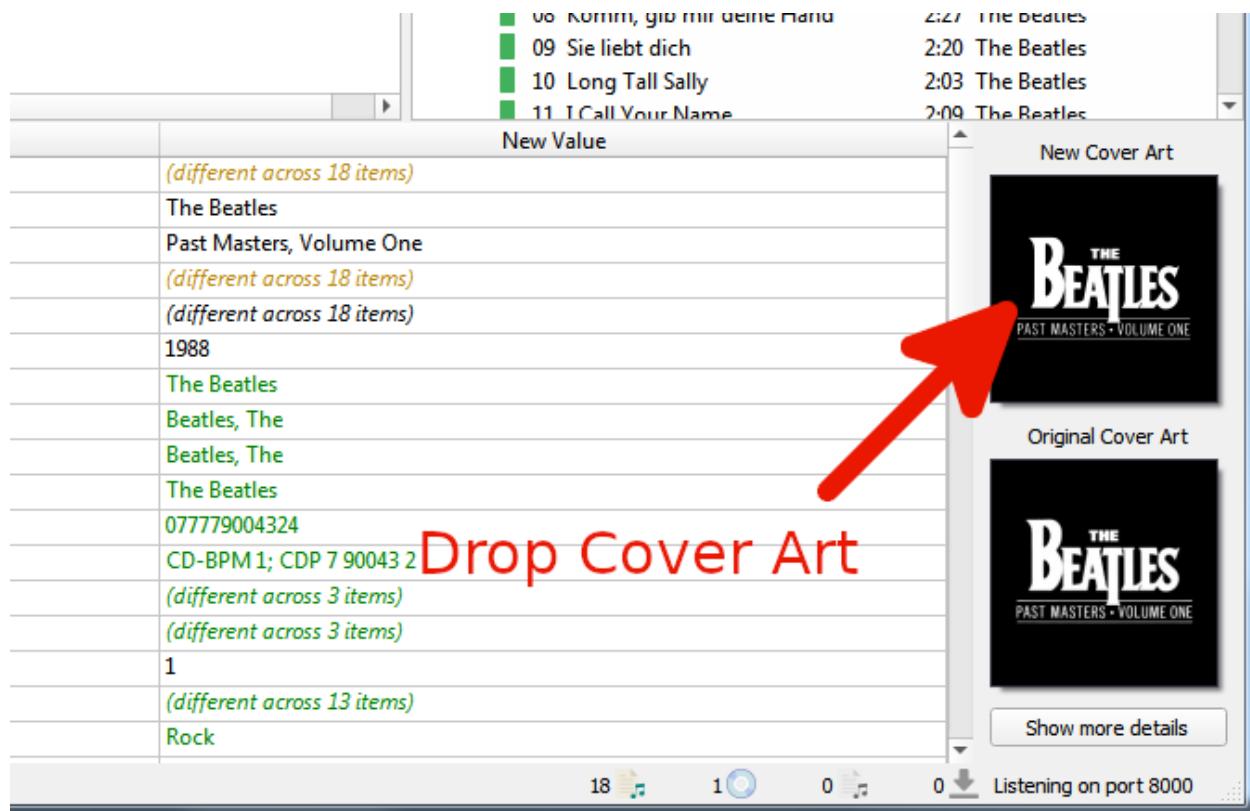
Right-clicking an item in the track list brings up a menu of commands, including "Info", "Open in Player", "Open Containing Folder", "Search for similar tracks", "Lookup in Browser", "Generate AcoustID Fingerprints", "Save" and "Remove". In addition, you can re-run any associated plugins or scripts against only the selected item. Right-clicking an items in the left-hand pane will bring up a similar menu of commands.

When you select an item in the right-hand pane, the original and new metadata for the item is displayed. Right-clicking a line in the tag list brings up a menu of commands, including "Edit", "Add to 'Preserved Tags' List", "Remove" and "Add New Tag", along with an option to display the changed tags first.

## 10.3 Setting the Cover Art

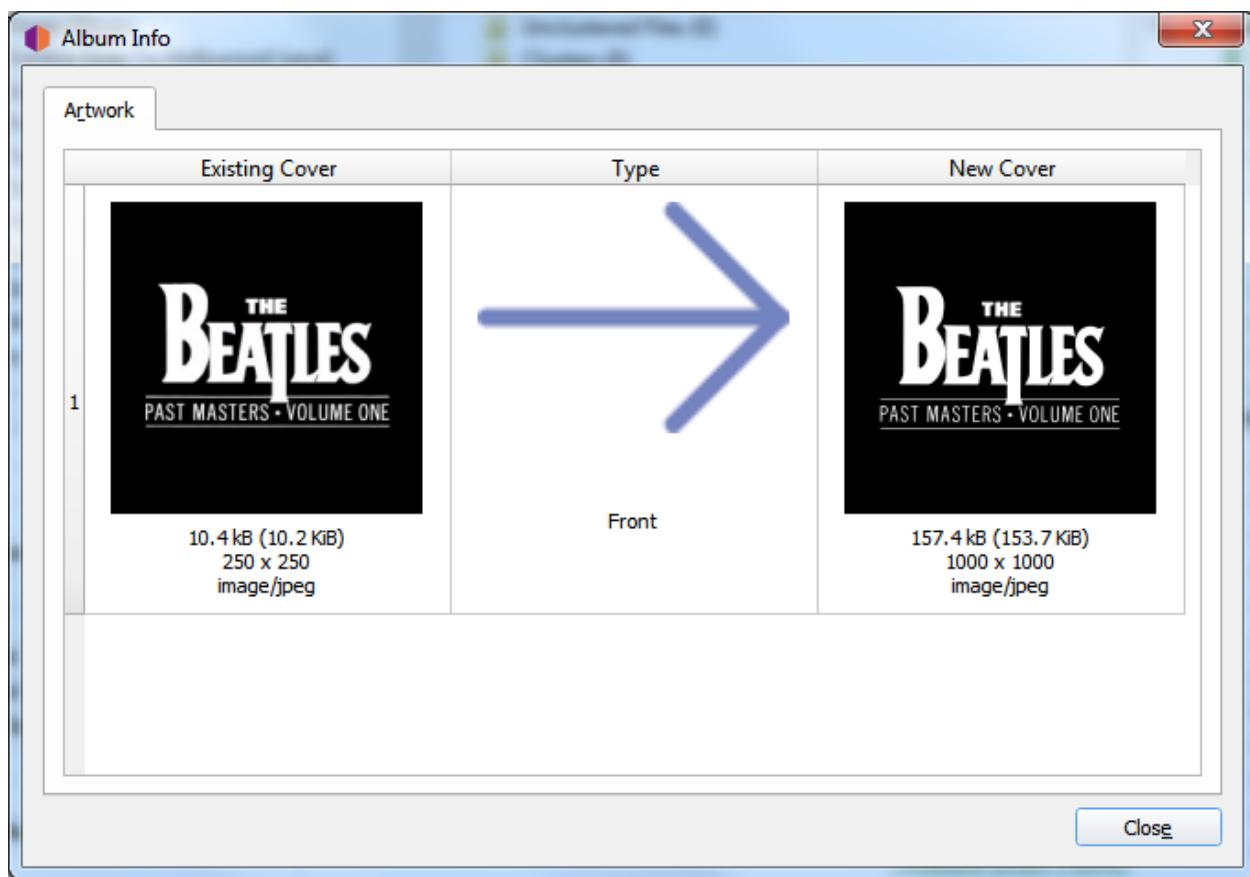
Depending on the option settings, you can change or confirm the cover art to save with a track or album.

Once the release information has been downloaded, selecting an album or track in the right-hand pane will display both the original and new coverart for the selected item. You can easily replace the coverart image used for the selected item by dragging the image from the file browser and dropping it on the New Cover Art image.



You can also choose a local file as cover art by right clicking on the image and selecting “Choose local file...” from the menu.

The menu also provides additional options including “Show more details”, “Keep original cover art”, and options for the way that images dropped onto the selection are processed. Selecting “Show more details” will bring up a new window as:



Double-clicking an image will open the image file in the system default program for the image type.

## 10.4 Saving Updated Files

This stage is where Picard updates the matched files with the metadata retrieved in the first stage, based on the settings configured in the Options. This may also include renaming the files and placing them in a different directory.

When you are satisfied that your files have been properly matched to tracks in the right-hand pane, select the album you want to save in the right-hand pane and use “*File → Save*” to save the files. A green check mark means the file was saved to its proper location.

| Title                                  | Length | Artist      |
|--|--------|-------------|
| • Past Masters, Volume One (18/18;...) | 42:28  | The Beatles |
| ✓ 01 Love Me Do                        | 2:24   | The Beatles |
| ✓ 02 From Me to You                    | 1:58   | The Beatles |
| ✓ 03 Thank You Girl                    | 2:04   | The Beatles |
| ✓ 04 She Loves You                     | 2:21   | The Beatles |
| ✓ 05 I'll Get You                      | 2:06   | The Beatles |
| ✓ 06 I Want to Hold Your Hand          | 2:27   | The Beatles |
| ✓ 07 This Boy                          | 2:16   | The Beatles |
| ✓ 08 Komm, gib mir deine Hand          | 2:27   | The Beatles |
| ✓ 09 Sie liebt dich                    | 2:20   | The Beatles |
| ✓ 10 I ... TLC II                      | 2:07   | The Beatles |

Once the files have been saved successfully, you can remove the album from the right-hand pane by selecting it and using “Edit → Remove”. Note that this only removes the album from Picard and does not remove the files themselves.

## WORK FLOW RECOMMENDATIONS

This section provides some recommended workflows for various tagging scenarios. These workflows are based on what are believed to be best practices.

The scenarios covered include:

1. *When the CD is available*
2. *When files are grouped by album*
3. *When files are not grouped but have some metadata*
4. *When files are not grouped and have little or no existing metadata*

---

**Note:** Regardless of whether or not it's one of the the workflows listed, it is **strongly** recommended that you make a backup copy of the files being processed and initially process a copy of your music files. This will help to ensure that Picard is properly configured (e.g.: settings, scripts, and plugins) and produces the expected and desired results.

---

### 11.1 When the CD is available

This is perhaps the best case scenario, because it provides the greatest chance of tagging your music files with the most accurate match from the MusicBrainz database. It is also one of the easier methods for looking up the release.

#### 1. Rip the CD to music files

Extract the music filed from the CD using your favorite ripping program (e.g.: [Exact Audio Copy](#) for Windows or [Whipper](#) for Linux). The format for the output files depends on your personal preference and the formats supported by your player. A popular format is FLAC, which is a compressed lossless format.

#### 2. Lookup the CD on MusicBrainz

With the CD in the drive, it can be looked up automatically using the “*Tools → Lookup CD*” command. See the *Lookup CD* section for detailed instructions.

### 3. Select the correct release

If there is only one release that matches the disc id for your disc, it will be loaded automatically. Before proceeding, please check to ensure that it properly matches your CD (e.g.: release country, date and label, catalog number, barcode, media type, and cover art). This is especially important if you are going to submit any information such as disc id or AcoustID fingerprints.

### 4. Load the files

Drag the files or folder from the browser to the “Unclustered Files” section in the left-hand pane. You do not need to scan or cluster them.

### 5. Match the files to the tracks on the release

Drag the files from the left-hand pane and drop them on the release in the right-hand pane. Check that each track on the release is associated with only one file. The release icon should turn gold. See the [Matching Files to Tracks](#) section for details.

### 6. Verify the metadata and cover art

Check that the metadata and cover art image for the release and tracks are what you want. Adjust if required. See the [Setting the Cover Art](#) section for details.

### 7. Save the files

Save the files using the “File → Save” command. See the [Saving Updated Files](#) section for details.

### 8. Calculate and submit AcoustID fingerprints

This step is optional, but appreciated because it will help identify the files for others to look up for tagging.

Select the album entry in the right-hand pane and calculate the AcoustID fingerprints using “Tools → Generate AcoustID Fingerprints”. Once the fingerprints have been calculated, submit them using “Files → Submit AcoustIDs”.

---

**Note:** AcoustID fingerprints should only be submitted after the files have been tagged with MusicBrainz metadata, and you have verified that the files have been matched to the correct track on the proper release.

---

## 11.2 When files are grouped by album

If the music files to be processed are already grouped into folders by album, then the process of looking up the release in the MusicBrainz database is greatly simplified because Picard works best when processing one album at a time.

### 1. Load the files

Drag the files or folder from the browser to the “Unclustered Files” section in the left-hand pane.

### 2. Cluster and lookup the files

Select the files in the left-hand pane and combine them into an album cluster using the “*Tools → Cluster*” command. Select the cluster in the left-hand pane and initiate the lookup using the “*Tools → Lookup*” command. See the *Lookup Files* section for details.

### 3. Select the correct release

If there is only one release that matches the lookup, it will be loaded automatically. Before proceeding, please check to ensure that it properly matches your album (e.g.: release country, date and label, catalog number, barcode, media type, and cover art). This is especially important if you are going to submit any information such as AcoustID fingerprints.

### 4. Match the files to the tracks on the release

Drag the files from the left-hand pane and drop them on the release in the right-hand pane. Check that each track on the release is associated with only one file. The release icon should turn gold. See the *Matching Files to Tracks* section for details.

### 5. Verify the metadata and cover art

Check that the metadata and cover art image for the release and tracks are what you want. Adjust if required. See the *Setting the Cover Art* section for details.

### 6. Save the files

Save the files using the “*File → Save*” command. See the *Saving Updated Files* section for details.

### 7. Calculate and submit AcoustID fingerprints

This step is optional, but appreciated because it will help identify the files for others to look up for tagging.

Select the album entry in the right-hand pane and calculate the AcoustID fingerprints using “*Tools → Generate AcoustID Fingerprints*”. Once the fingerprints have been calculated, submit them using “*Files → Submit AcoustIDs*”.

---

**Note:** AcoustID fingerprints should only be submitted after the files have

been tagged with MusicBrainz metadata, and you have verified that the files have been matched to the correct track on the proper release.

---

## 11.3 When files are not grouped but have some metadata

In this situation, you will need to feed batches of files to Picard to process. In order to minimize the performance impact, it is recommended to keep the batches relatively small (i.e.: approximately 200 files at most in a single batch). Picard will try to group them into clusters based on the metadata currently existing in the files.

---

**Note:** This workflow will likely only partially match the files to a release in each batch processed. This means that an album may not be fully matched, tagged and renamed until multiple batches have been processed.

---

### 1. Load the files

Drag the batch of files to process from the browser to the “Unclustered Files” section in the left-hand pane.

### 2. Cluster and lookup the files

Select the files in the left-hand pane and combine them into album clusters using the “*Tools → Cluster*” command. Picard will attempt to cluster the files based on their existing metadata. Select the desired cluster(s) in the left-hand pane and initiate the lookup using the “*Tools → Lookup*” command. See the *Lookup Files* section for details.

### 3. Match the files to the tracks on the release

Drag the files from the left-hand pane and drop them on the release in the right-hand pane. Check that each track on the release is associated with only one file. The release icon will likely remain silver, indicating that not all tracks have been matched to files. See the *Matching Files to Tracks* section for details.

### 4. Verify the metadata and cover art

Check that the metadata and cover art image for the release and tracks are what you want. Adjust if required. See the *Setting the Cover Art* section for details.

### 5. Save the files

Save the files using the “*File → Save*” command. See the *Saving Updated Files* section for details.

---

**Note:** It is not recommended to submit AcoustID fingerprints for files matched in this way, because it is virtually impossible to verify that your files actually match the

recordings being matched.

---

## 11.4 When files are not grouped and have little or no existing metadata

This is perhaps the worst case scenario, because it provides the greatest chance of tagging your music files with an incorrect match from the MusicBrainz database.

In this situation, you will need to feed batches of files to Picard to process. In order to minimize the performance impact, it is recommended to keep the batches relatively small (i.e.: approximately 200 files at most in a single batch). Picard will try to group them into clusters based on their AcoustID fingerprints.

---

**Note:** This workflow will likely only partially match the files to a release in each batch processed. This means that an album may not be fully matched, tagged and renamed until multiple batches have been processed.

---

### 1. Load the files

Drag the batch of files to process from the browser to the “Unclustered Files” section in the left-hand pane.

### 2. Scan the files

Select the files in the left-hand pane and scan them using the “Tools → Scan” command. Picard will attempt to calculate the AcoustID fingerprint for each of the files and then retrieve releases with matching recordings. See the *Scan Files* section for details.

### 3. Match the files to the tracks on the release

Drag the files from the left-hand pane and drop them on the release in the right-hand pane. Check that each track on the release is associated with only one file. The release icon will likely remain silver, indicating that not all tracks have been matched to files. See the *Matching Files to Tracks* section for details.

### 4. Verify the metadata and cover art

Check that the metadata and cover art image for the release and tracks are what you want. Adjust if required. See the *Setting the Cover Art* section for details.

### 5. Save the files

Save the files using the “File → Save” command. See the *Saving Updated Files* section for details.

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**CHAPTER  
TWELVE**

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## **OTHER PICARD TASKS**

In addition to the general functionality of Picard tagging and organizing your audio files, there are some other tasks that it can perform:

### **12.1 Attaching a Disc ID to a Release**

Disc IDs are very useful for identifying CDs and allowing MusicBrainz to know the length of tracks on a CD. Thus, it is very valuable to add them when submitting a new CD release or when you have a CD release that does not have a Disc ID attached.

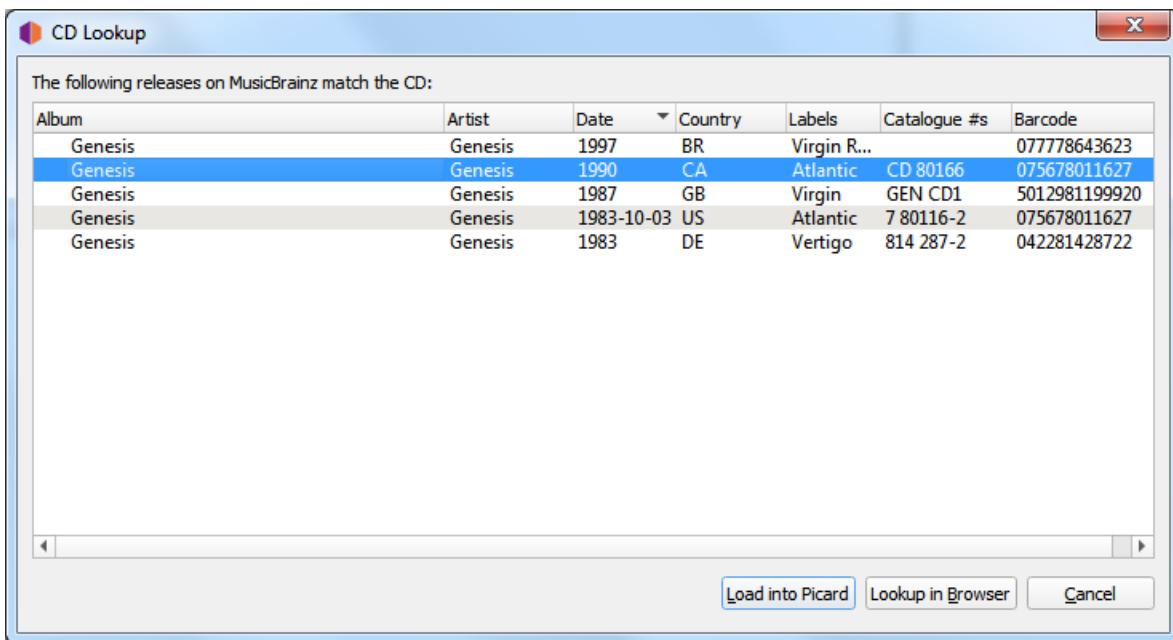
---

**Note:** Please do not add DiscIDs from CDs that are burned at home.

---

The steps to follow to submit a disc id are:

1. Make sure the CD is inserted in the drive, and select “*Tools → Lookup CD... → (drive to use)*”. The CD toc will be calculated and sent to MusicBrainz, and a list of matching releases will be displayed.



2. If the target release appears in this list, the disc id has already been attached and you do not need to do anything further. If there are no matches found or the desired target release does not appear in the list, use the “Submit disc ID” option to locate the correct release. Enter the release title or artist and initiate the search. You will be provided with a list of the releases that match your search criterion and have the same number of tracks as your CD toc.

We found discs matching the information you requested, listed below. If none of these are the release you are looking for, you may search using the form below in order to attach this disc to another MusicBrainz release.

| Position | Title   | Artist  | Format | Country/Date  | Label  | Catalog# | Barcode      | Tagger |
|----------|---------|---------|--------|---------------|--|----------|--------------|--------|
| 1/1      | Genesis | Genesis | CD     | CA 1990       | Atlantic (Warner Music imprint)  | CD 80166 | 075678011627 | Tagged |
| 1/1      | Genesis | Genesis | CD     | BR 1997       | Virgin Records America (DO NOT USE! please refer to either "Virgin" or "Virgin America") |          | 077778643623 | Tagged |
| 1/1      | Genesis | Genesis | CD     | US 1983-10-03 | Atlantic (Warner Music imprint)  |          | 7 80116-2    | Tagged |
| 1/1      | Genesis | Genesis | CD     | GB 1987       | Virgin (worldwide imprint of Virgin Records Ltd. and all its subsidiaries)               |          | GEN CD1      | Tagged |
| 1/1      | Genesis | Genesis | CD     | DE 1983       | Vertigo (British rock label)   |          | 814 287-2    | Tagged |

We used DiscID 31xF1vam0kV0mvnA3XtvX4b91s- to look up this information.

**Search by artist**  
 Artist:

**Search by release**  
 Release:

[Donate](#) | [Wiki](#) | [Forums](#) | [IRC](#) | [Bug Tracker](#) | [Blog](#) | [Twitter](#) | [Use beta site](#)
Brought to you by [MetaBrainz Foundation](#) and our sponsors and [supporters](#). Cover Art provided by the [Cover Art Archive](#).

**Note:** If you search by artist, use the radio button next to the artist's name to select the desired artist. If you click on the artist's name link, you will not be allowed to attach the disc id to any of the releases displayed.

3. Select the desired target release from the list displayed by clicking the radio button next to the release, and then click the "Attach CD TOC" button below the list of releases. This will prepare an edit to attach the disc id to the release. You then need to add an appropriate edit note, and submit the edit.

| Release Group: Splendid Genesis  |                         |  |            |  |                     |               |
|--|-------------------------|--|------------|--|---------------------|---------------|
| Splendid Genesis   | Abstract Reason         |  | 2015-01-24 |  | [none]              |               |
| <input type="radio"/> Digital Media 1 ( <a href="#">show tracklist</a> ) |                         |  |            |  |                     |               |
| Release Group: Genesis   |                         |  |            |  |                     |               |
| Genesis  | Genesis                 |  | 1983       | Charisma   | GENMC 1             | [none]        |
| <input type="radio"/> Cassette 1 ( <a href="#">show tracklist</a> )      |                         |  |            |  |                     |               |
| Genesis  | Genesis                 |  | 1983       | Vertigo (British rock label)   | 814 287-2           | 042281428722  |
| <input type="radio"/> CD 1 ( <a href="#">show tracklist</a> )            |                         |  |            |  |                     |               |
| Genesis  | Genesis                 |  | 1983-10-03 | Atlantic (Warner Music imprint)  |                     |               |
| <input type="radio"/> Digital Media 1 ( <a href="#">show tracklist</a> ) |                         |  |            |  |                     |               |
| Genesis  | Genesis                 |  | -          | Charisma, Virgin (worldwide imprint of Virgin Records Ltd. and all its subsidiaries) | 7 86436 2, GEN CD1  | 0077778643623 |
| <input type="radio"/> CD 1 ( <a href="#">show tracklist</a> )            |                         |  |            |  |                     |               |
| Genesis  | Genesis                 |  | 1985-06-01 | Vertigo (British rock label)   | 32PD-17             | 4988011303999 |
| <input type="radio"/> CD 1 ( <a href="#">show tracklist</a> )            |                         |  |            |  |                     |               |
| Genesis  | Genesis                 |  | 1983-10-03 | Mercury Records (or just "Mercury". A UMG imprint, do not use it for ©/© credits)    | 832 178-1           | 042281428715  |
| <input type="radio"/> 12" Vinyl 1 ( <a href="#">show tracklist</a> )     |                         |  |            |  |                     |               |
| Genesis  | Genesis                 |  | 1990       | Atlantic (Warner Music imprint)  | CD 80166            | 075678011627  |
| <input checked="" type="radio"/> CD 1 ( <a href="#">show tracklist</a> ) | Genesis (made in Japan) |  | -          | Atlantic (Warner Music imprint)  | 7 80116-2, 814287-2 | [none]        |
| <input type="radio"/> CD 1 ( <a href="#">show tracklist</a> )            |                         |  |            |  |                     |               |

4. If none of the releases displayed are correct, you have the option to add a new release (with some information automatically included). The disc id will automatically be attached to the new release when the edit is saved.

CD 1 ([show tracklist](#))

**Attach CD TOC**

**Add a new release**

If you don't see the release you are looking for, you can still add a new one, using this CD TOC:

[Add a new release](#)

[Donate](#) | [Wiki](#) | [Forums](#) | [IRC](#) | [Bug Tracker](#) | [Blog](#) | [Twitter](#) | [Use beta site](#)

## 12.2 Submitting Acoustic Fingerprints

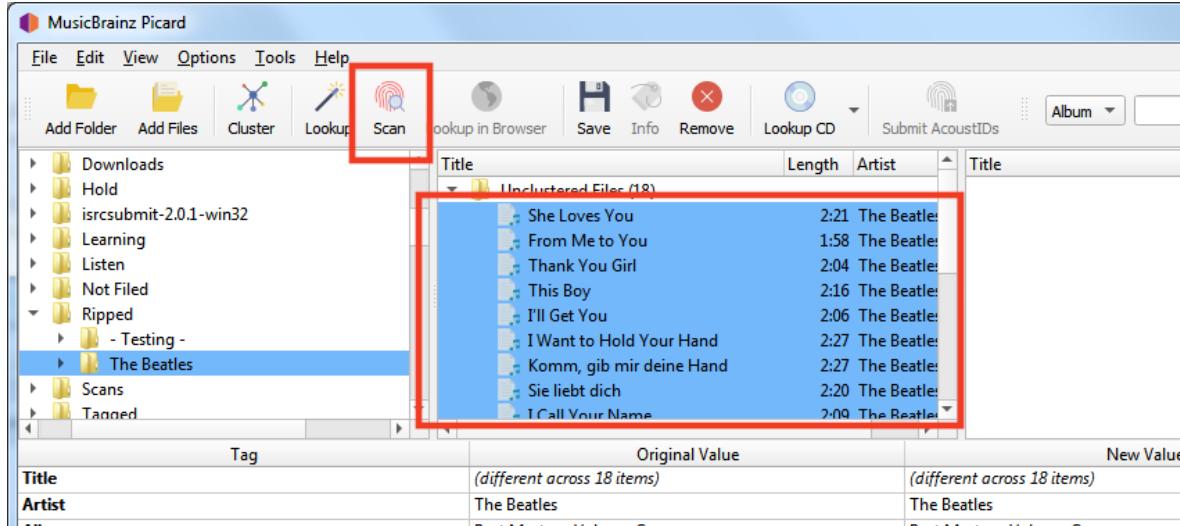
Acoustic fingerprints are very useful for identifying tracks and recordings, allowing them to be looked up in the MusicBrainz database. Thus, it is very valuable to add them when you are tagging files. Please see the [Understanding Acoustic Fingerprinting and AcoustIDs](#) tutorial for additional information.

**Note:** When using Picard to submit acoustic fingerprints, it is recommended to enable the Fingerprint column in the table view in the right-hand pane. This is done by right-clicking the column header and checking the box beside “Fingerprint status”. This will display an icon indicating whether the AcoustID was calculated and whether it ready for submission (red = unsubmitted, grey = already submitted).

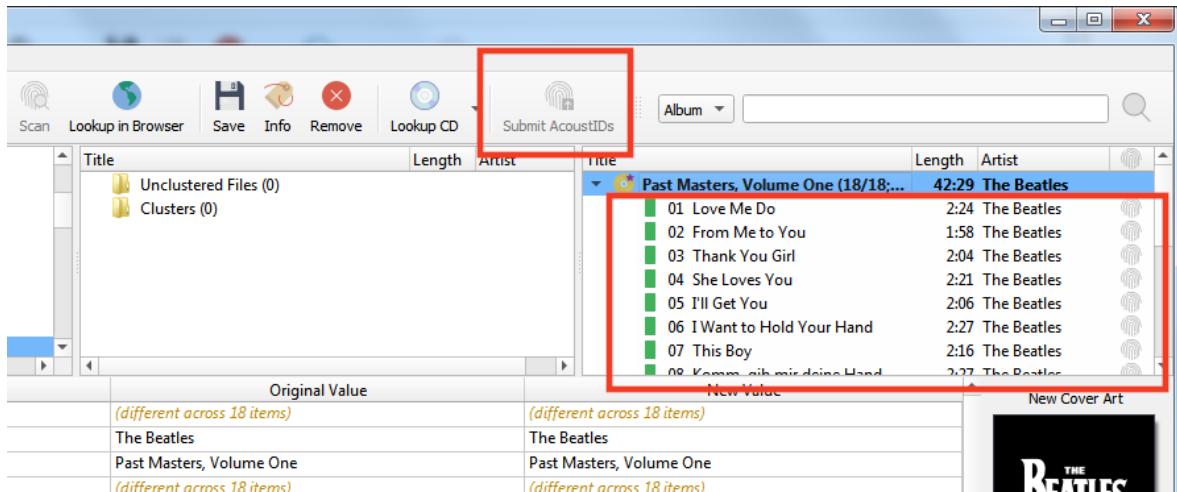
There are two methods for submitting acoustic fingerprints, depending on the workflow that you are using to identify the releases that you are tagging. The steps to follow to submit acoustic fingerprints for each of the two workflows are:

### 12.2.1 Submitting when using Scan to identify the release

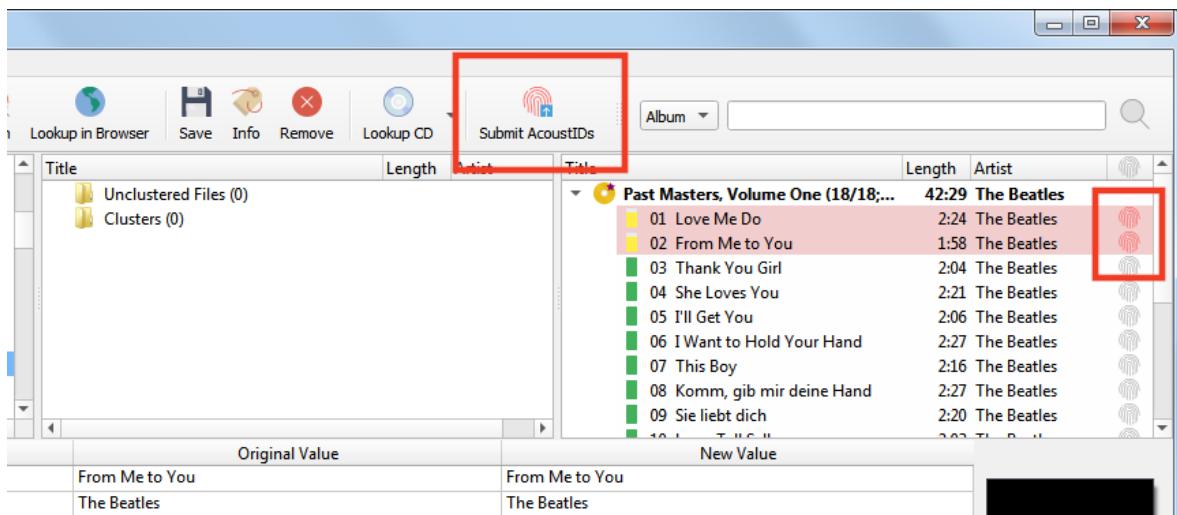
1. Load files into the clustering pane. Select the files and click the “Scan” button, or select “Tools → Scan”.



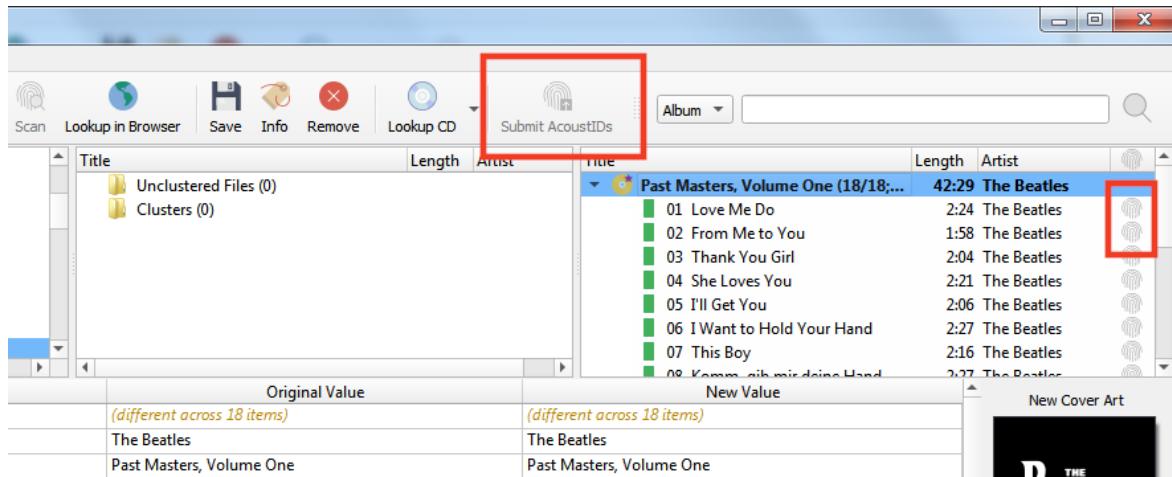
2. If the files are matched to a track and move to the right-hand pane, they already exist in the AcoustID database and do not need to be re-submitted. The “Submit” button will remain disabled.



3. If the files are not matched, or you manually move them to match to a different track they could be submitted. The AcoustID icon for the tracks will show up in red (i.e.: unsubmitted status) and the “Submit” button will be enabled.

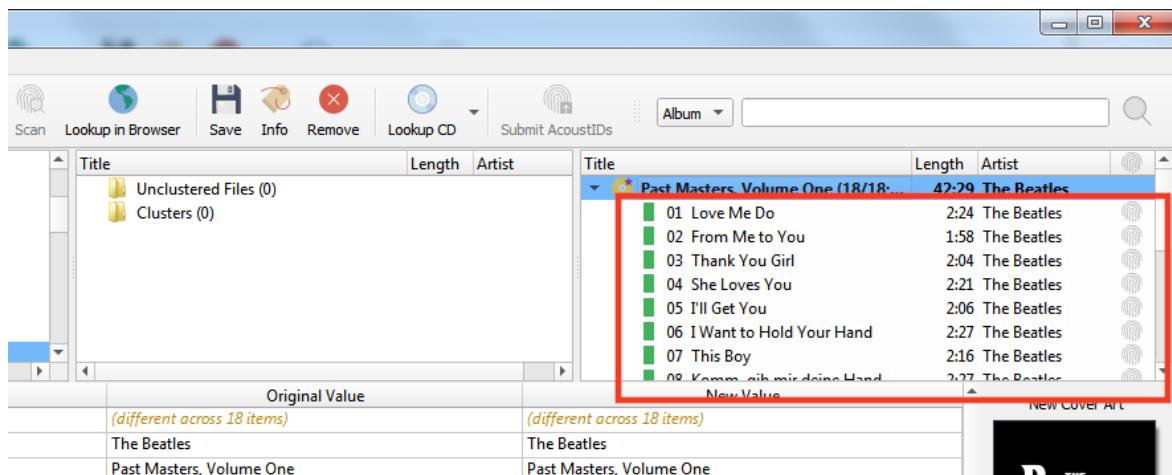


4. Clicking the “Submit” button will only submit the fingerprints for the files identified in Step 3. The AcoustID icon for the tracks will change to grey (i.e.: submitted status) and the “Submit” button will be disabled.

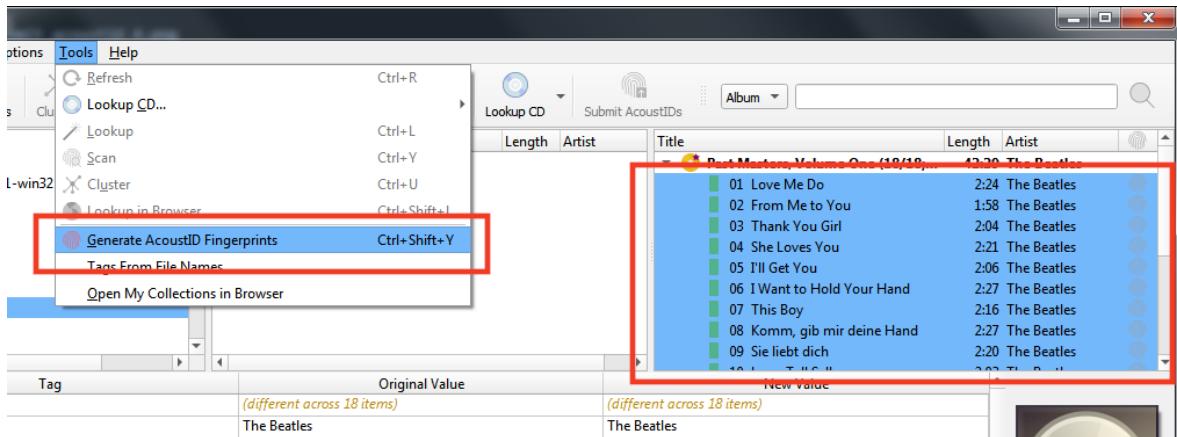


## 12.2.2 Submitting when not using Scan to identify the release

1. Make sure that the files are properly matched to tracks on a release in the right-hand pane.

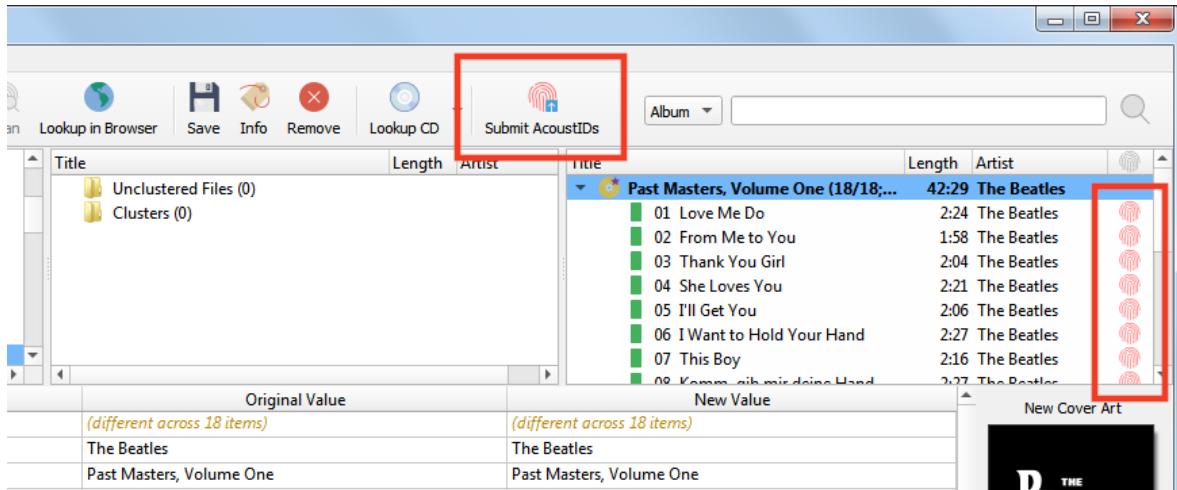


2. Select the files in the right-hand pane and select "Tools → Generate AcoustID fingerprints". This will calculate the acoustic fingerprints for the selected files.

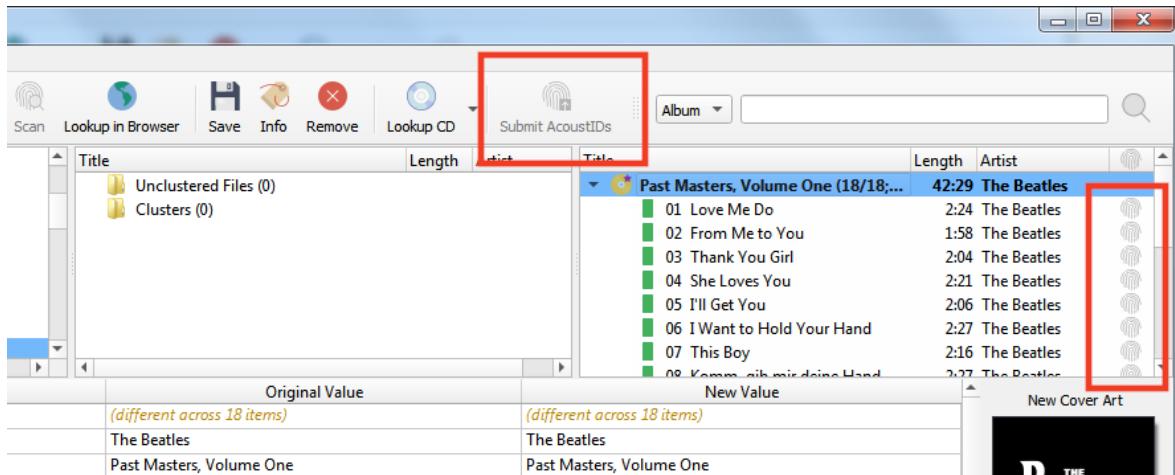


**Note:** The “Generate AcoustID fingerprints” action button can be added to the button bar by changing the settings in the User Interface options.

The AcoustID icon for the tracks will show up in red (i.e.: unsubmitted status) and the “Submit” button will be enabled.



3. Clicking the “Submit” button will submit the fingerprints for the files. The AcoustID icon for the tracks will change to grey (i.e.: submitted status) and the “Submit” button will be disabled.

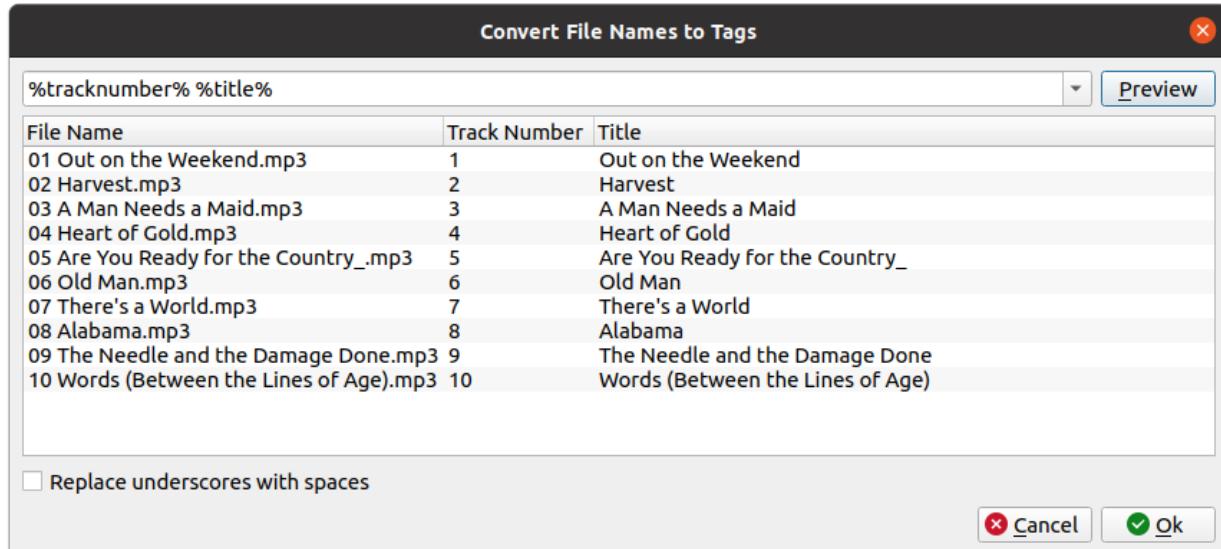


## 12.3 Generating tags from file names

Sometimes files have poor quality tags or no tags at all, but the file names are well structured and follow a pattern. In this case you can use “*Tools → Tags From File Names...*” to generate the tags from the file names.

### 12.3.1 Basic usage

To use this tool, select one or more files loaded into Picard and open the Tags From File Names dialog from the menu at “*Tools → Tags From File Names...*”. The dialog will show you a list of filenames and an input field at the top where you can enter a matching pattern.



The matching pattern can consist of Picard tag names enclosed in % signs and other characters that are matched verbatim. For the tag names you can use predefined

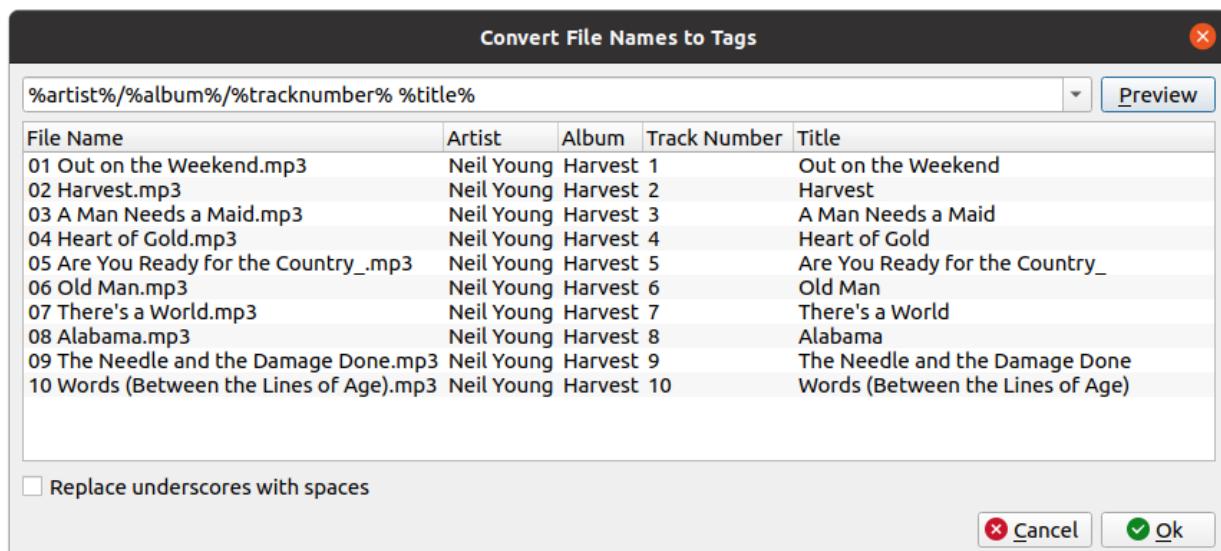
names such as %artist%, %album%, or %title% (see [Tags & Variables](#)) or use custom names. There are a few predefined patterns available to select from, but you can also adjust them or set your own.

If your files for example consist of a track number and track title separated by a space (e.g. 04 Heart of Gold.mp3) you can use the matching pattern %tracknumber% %title%. Should the track number and title be separated by for example a hyphen like 04 - Heart of Gold.mp3 the pattern needs to also include this separator, like %tracknumber% - %title%.

Clicking on the “Preview” button next to the matching pattern will show a preview of the extracted tags for each file name. Once you are satisfied with the result, you can accept the changes with the “Ok” button. The changed tags will be set for the files. Note that the changes will not be saved automatically, you still need to save the files if you want the tags to be written (see [Saving Updated Files](#)).

### 12.3.2 Matching folders

The pattern can also match the parent folders of the file. To match for folders use a slash (/) as separator. If for example the file is in a folder named after the album, which in turn is inside a folder named after the artist (i.e. Neil Young/Harvest/04 Heart of Gold.mp3) you could match the artist, album, track number and title with a pattern of %artist%/%album%/%tracknumber% - %title%.



### 12.3.3 Replace underscores with spaces

Sometimes files have been named without spaces and use underscores instead. For example a file could be named 04\_Heart\_of\_Gold.mp3. By default the title would get extracted as “Heart\_of\_Gold”. In this case enable the checkbox “Replace underscores with spaces” and use a pattern like %tracknumber%\_%title% to extract the title properly as “Heart of Gold”.

### 12.3.4 Ignoring parts of the file name

Sometimes you don’t want to include parts of the file name in your tags and just want to ignore them. The pattern must always match the entire file name, though. In this case you can use a hidden variable for the parts of the file name you do not want to match to an actual tag. Hidden variables start with an underscore like %\_dummy%. This variable will still be available on the file for *Scripting*, but will not get written to the actual file tags on saving.

One example might be if you want to extract only the track number from a file name like 04\_Are You Ready\_for\_the\_Country\_.mp3. Maybe the track number tag is missing in the file, but the title tag is already properly set. You could use the pattern %tracknumber%\_%filetitle%. This would extract the tracknumber tag properly, but would extract the rest of the file name to a hidden variable %\_filetitle% which would not get written to the file tags. The name %\_filetitle% is arbitrarily chosen, it just needs to start with an underscore.

---

**Note:** Parsing hidden variables from file names is supported since Picard 2.5. Earlier versions would create an actual tag which would get stored to the tags. If you are using a Picard version older than 2.5 you will need to remove the unwanted tags before saving the files.

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## CHAPTER THIRTEEN

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# EXTENDING PICARD

There are two primary ways that the functionality of MusicBrainz Picard can be extended: *plugins* and *scripts*.

Plugins can be installed / uninstalled and enabled / disabled from the Options menu. Installed plugins are loaded during the startup of Picard, and are made available to the program.

Scripts are stored within the user settings, and are managed from the “*Options → Options...*” menu.

### 13.1 Plugins

Plugins are written in Python, and are registered to the appropriate hooks. Each plugin has its own version identifier, but also lists the plugin API versions that it supports. When loading a plugin, Picard first compares its list of API versions to the plugin’s supported versions to ensure that the plugin will operate correctly. The Picard API versions indicate the version of the program in which the plugin API was last updated and any plugin APIs with which it is backwards compatible.

Hooks are connections to the various objects in Picard that call a specific type of plugin. During the normal running of Picard, when it encounters a hook it will first retrieve a list of all plugins registered for that specific hook, and then execute them sequentially in order based upon the priority specified when the plugin was registered to the hook.

There are a few different types of plugins, including:

**Metadata processors:** These plugins can access and modify the metadata when it is loaded from MusicBrainz. They are registered with `register_album_metadata_processor()` or `register_track_metadata_processor()`. These are what you might call “automatic” because they operate without any user intervention. An example is the Classical Extras plugin.

**Cover art providers:** These plugins provide another cover art source, and are registered with `register_cover_art_provider()`. They are also “automatic” in that they load album art without user intervention, although they must be enabled by the user in the Cover Art options. The Fanart.tv plugin is an example.

**Scripting function:** Some plugins just provide additional scripting functions for use in “*Options → Scripting*” or the renaming script. These are registered with `register_script_function()`. `Keep` tag, which provides the `$keep()` function, is an example.

**Context menu actions:** Plugins can register actions that can be activated manually via the context menu. This is what the Load as non-album track plugin does. Another example is Generate Cuesheet. These are registered with `register_album_action()`, `register_track_action()`, `register_file_action()`, `register_cluster_action()` or `register_clusterlist_action()`.

**File formats:** Plugins can also provide support for new file formats not yet supported by Picard. These are registered with `register_format()`.

**Event processors:** Plugins can execute automatically based on certain event triggers. These are registered with `file_post_load_processor()`, `file_post_save_processor()`, `file_post_addition_to_track_processor()`, `file_post_removal_from_track_processor()` or `album_post_removal_processor()`.

Note that plugins are not limited to one of those areas. A single plugin could implement all of the above, but most existing plugins focus on one.

The [Plugins API](#) provides information regarding the different plugin hooks available, along with some examples of their use. There is also a list of the [available plugins](#) that have been submitted to the MusicBrainz Picard repository shown on the Picard website.

## 13.2 Scripts

There are two types of scripts used in Picard: the file naming script and tagging scripts. These are managed from the “File Naming” and “Scripting” sections of the “*Options → Options...*” menu. All scripts are written using the [Picard scripting language](#). Scripts are often discussed in the [MetaBrainz Community Forum](#), and there is a thread specific to file naming and script snippets.

### 13.2.1 File Naming Script

There is only one file naming script defined in a user’s settings, although it can vary from a simple one-line script such as `%album%/%title%` to a very complex script using different file naming formats based on different criteria. In all cases, the files will be saved using the text output by the script.

---

**Note:** Any new tags set or tags modified by the file naming script will not be written to the output files’ metadata.

---

### 13.2.2 Tagging Scripts

There can be multiple tagging scripts defined in a user's settings. Individual scripts can be enabled or disabled, and the order of execution of the scripts can be set. Whenever a script is run automatically (i.e.: when an album is loaded), it is processed once for each track in the album that triggered the run. For example, if there are two tagging scripts enabled (A and B) and an album with three tracks is loaded, the scripts will be processed in the following order:

1. Script A Track 1;
2. Script A Track 2;
3. Script A Track 3;
4. Script B Track 1;
5. Script B Track 2;
6. Script B Track 3.

Metadata updates are not shared between tracks, so you cannot append data from one track to a tag in another track.

Any new tags set or tags modified by the tagging scripts will be written to the output files' metadata, unless the tag name begins with an underscore. These "hidden" tags are typically used as variables to hold temporary values that are used later in either the tagging or file naming scripts. Tagging scripts are run once for each track in the data, using the metadata for that track.

Tagging scripts can also be run manually by right-clicking either an album or a track in the right-hand pane in Picard. If run from the album entry, the script is run for each track in the album. If run from an individual track, the script is only run for that track.

### 13.2.3 Tagging Script Examples

The following scripting examples show how tagger scripts can be used to solve some specific use cases. Please refer to [Picard scripting language](#) for a detailed description of the variables and functions used in these examples.

#### Move disambiguation to album title

Append the disambiguation comment of a release to the album title:

```
$set(album,%album%$if(%_releasecomment%, \(%_releasecomment%\)))
```

## Release language as language

The `%_releaselanguage%` variable specifies the language of the track listing, whereas the `%language%` variable is supposed to be the lyrics language. The following script will use the `%_releaselanguage%` instead if `%language%` is empty:

```
$if($not(%language%),$set(language,%_releaselanguage%))
```

## Use original release date

By default Picard provides a tag date which holds the release date of a specific release and `originaldate` which provides the earliest release date of this release. For example you might have a 2020 reissue of an album that originally was released in 1992. In this case date will be set to “2020” and `originaldate` to “1992”. If you prefer to have always the original release date as the primary date in your file’s tags you could use the following script:

```
$set(date,$if2(%originaldate%,%date%))
```

The use of `$if2` ensures that if `originaldate` is empty it will fall back to `date`.

In addition Picard provides a variable `%_recording_firstreleasedate%`, which tries to provide the first release date per recording (which can be different for each track in a release). If you prefer this you can use the following script:

```
$set(date,$if2(%_recording_firstreleasedate%,%originaldate%,%date%))
```

Or if you want to keep the date for the actual release date of the specific release, but use the recording’s first release date as `originaldate`:

```
$set(originaldate,$if2(%_recording_firstreleasedate%,%originaldate%))
```

## Set album sort name

The `albumsrt` tag is not filled by Picard by default. You can set it to a meaningful value with prefixes “The” and “A” moved to the end with the following script:

```
$set(albumsort,$swapprefix(%album%))
```

This will e.g. set the sort name for the release “The Best of Muddy Waters” to “Best of Muddy Waters, The”.

### Set compilation for multi artist releases

By default the compilation tag will be set to 1 only for Various Artists releases. The following script will set it for all releases with more than one artist (as it was default behavior in Picard 1.2 and earlier):

```
$if(%_multiartist%, $set(compilation,1))
```

### Remove featuring from album artist

This always removes featuring artists from the album artist:

```
$set(albumartist,$rreplace(%albumartist%,\\s+feat\\.*,,))
```

### Move featuring from artist to title

According to MusicBrainz guidelines featuring artists are part of the artist name, e.g. "Artist A feat. Artist B". Some users prefer to have featuring added to the album or track title instead. The following script moves featured track artists to the track title:

```
$set(_feat_title,$rsearch(%artist%,\\s+\\\\(?\\(f\\(ea\\)?t\\\\.[^\\])]*\\)))  
$set(artist,$rreplace(%artist%,\\s+\\\\(?f\\(ea\\)?t\\\\.[^\\])*\\\\)?,,))  
$set(title,$if(%_feat_title%,%title% \\(%_feat_title%\\),%title%))
```

The same can be done for moving featured artists from the album artist to the album title:

```
$set(_feat_album,$rsearch(%albumartist%,\\s+\\\\(?\\(f\\(ea\\)?t\\\\.[^\\])]*\\)))  
$set(albumartist,$rreplace(%albumartist%,\\s+\\\\(?f\\(ea\\)?t\\\\.[^\\])*\\\\)?,,))  
$set(album,$if(%_feat_album%,%album% \\(%_feat_album%\\),%album%))
```

### Preserve original filename

The originalfilename tag is supposed to hold the filename the file originally had. By default Picard does not set or modify this tag. If you want to save this information the following Script can be used:

```
$set(originalfilename,$if2(%originalfilename%,%_filename%.%_extension%))
```

This will keep any existing originalfilename tag. But if this tag is not yet present the tag will be set to the current filename. As this happens before the file is being saved the original name of the file before Picard modifies it can be preserved.

## 13.3 Processing Order

In order to make effective use of plugins and scripts, it is important to understand when each is processed in relation to the others. As a general statement, plugins are always processed before scripts. Plugins of the same type will be executed in order based upon the priority specified when the plugin was registered.

### 13.3.1 Startup

During program startup, plugins with the following hooks are processed, and any additional functionality that they provide will be available immediately:

- File Formats
- Cover Art Providers
- Tagger Script Functions
- Context Menu Actions
- Option Pages

### 13.3.2 Loading a Release

When data gets loaded from MusicBrainz (while the album shows the “loading” status in the right-hand pane), the following are processed:

- Metadata Processor Plugins
- Tagging Scripts

Plugins have access to the raw data loaded from MusicBrainz and are processed before scripts, in the order of priority set when the plugin was registered.

Scripts are processed in the order set in the Options menu.

---

**Note:** Tagging scripts are always run against metadata loaded from MusicBrainz, and exactly after the data gets loaded and before files get matched. They are one of the last steps in the loading process. Tagging scripts do not have access to metadata stored in existing files.

---

### **13.3.3 Loading Music Files**

After a file has been loaded into Picard, plugins registered with `file_post_load_processor()` are executed. This could, for example, be used to load additional data for a file.

### **13.3.4 Adding / Removing Files**

After a file has been added to a track (on the right-hand pane of Picard), plugins registered with `file_post_addition_to_track_processor()` are executed.

After a file has been removed from a track (on the right-hand pane of Picard), plugins registered with `file_post_removal_from_track_processor()` are executed.

### **13.3.5 Saving Files**

When files are saved, for each file the File Naming Script is first executed to determine the destination path and file name. Note that this script has no effect on the tag values written to the output file.

After a file has been saved, plugins registered with `file_post_save_processor()` are executed. This can, for example, be used to run additional post-processing on the file or write extra data. Note that the file's metadata is already the newly saved metadata.

### **13.3.6 Removing Albums**

After an album has been removed from Picard, plugins registered with `album_post_removal_processor()` are executed.

### **13.3.7 Context Menus**

Individual tagging scripts can be executed on-demand from the context menu displayed when right-clicking on a file, album, track, cluster or cluster list.

## TROUBLESHOOTING

### 14.1 General Troubleshooting

#### 14.1.1 Getting Help

If you have problems using Picard, please first check the following resources:

- For general usage information see the [Using Picard](#) documentation and the [illustrated quick start guide](#).
- Read the [FAQ section](#) for common questions and problems.
- Consult the [community forums](#).
- Check the [download page](#) for a newer version of Picard which might solve your problem.
- If the problem is to do with a plugin, check the [Picard Plugins](#) for updated plugin versions.

#### 14.1.2 Reporting a Bug

If you think you have found a bug please check whether you are using the latest version of Picard and whether the bug has already been reported in the [bug tracker](#). If you're not sure or don't want to look through the existing tickets, ask on the community forums first.

If you're still convinced you have found a new bug, open a [new ticket](#) providing the following information:

- Which version of Picard do you use? ("Affects Version" in the form)
- Which operating system do you use? ("Environment" in the form)
- What did you do when the bug occurred?
- What actually happened and what did you expect to happen?
- If you're using plugins, which plugins do you have enabled?

### 14.1.3 Getting Logs

For many bugs, it helps developers to have a log from Picard. You can see the log by going to “Help → View Log”. You can also get a full debug log (better because it contains more detailed information) by starting Picard with `-d` as a command-line argument. If you’re using Windows, you can change your shortcut’s Target (*right click shortcut → Properties*) to:

```
"C:\Program Files\MusicBrainz Picard\picard.exe" -d
```

Pasting this log into your forum post or bug ticket can help developers and other users to resolve your issue more quickly.

**Warning:** Please remember to first remove any personal and confidential information like user id, passwords or authorization tokens before posting or submitting any log output.

## 14.2 Picard won’t start

If you find that Picard won’t start there are a few common possible reasons, and things to try to correct the issue. Before doing anything drastic, it is recommended that you try to start Picard from the command line with the `-d` option to generate the debug logging. This process is described in the [General Troubleshooting](#) section. If the resulting logs don’t provide any clues as to the problem, it may be one of the following:

### The program files have become corrupted

If you suspect that this may be the problem, the first (and simplest) thing to try is to reinstall the program. This should address any potential file corruption issues. If Picard still won’t start then it is unlikely that this was the problem.

### A plugin file has become corrupted or is incompatible

To check whether one of the plugin files has become corrupted or, in the case of a recent upgrade to a plugin or Picard, a plugin is not compatible, you should try removing all of the plugins and then start Picard. Since you won’t be able to disable or remove the plugins using Picard’s ‘Option’ settings, you will need to remove them manually. The plugins may be located in a `plugins` subdirectory of the directory where the Picard program file is stored, or in a user-specific directory:

- *Windows:* C:\Users\user\AppData\Local\MusicBrainz\Picard\plugins
- *macOS:* ~/Library/Preferences/MusicBrainz/Picard/plugins
- *Linux:* ~/.config/MusicBrainz/Picard/plugins

Once you have located the plugin files, they should be removed from the plugins directory and moved to a temporary directory. Then try to start Picard. If the program starts, you should try restoring the plugin files from your temporary directory one at a time, and check if Picard will start. This will help identify the plugin that was causing the problem.

### The option settings file has become corrupted or is incompatible

To check whether Picard's option settings file has become corrupted or, in the case of a recent upgrade to Picard, it is not compatible, you should try removing the settings file and then start Picard. If Picard is started without finding its configuration settings file, it will create a new one using the default settings. The settings file is called `Picard.ini` and can be found in a user-specific directory:

- Windows: `C:\Users\user\AppData\Roaming\MusicBrainz`
- macOS: `~/Library/Preferences/MusicBrainz`
- Linux: `~/.config/MusicBrainz`

Again, it is recommended that you move the file to a temporary directory so that it can be recovered if this turns out not to be the cause of the problem.

### There really is a bug in Picard

If this problem started just after updating Picard, in spite of all the testing that is performed prior to releasing a new version, it may be possible that this is indeed a bug. In that case, you should first try to reinstall the previous version to ensure that it works and that the problem is only occurring with the new version. Then you should report the issue, following the steps outlined in the “Reporting a Bug” topic of the [General Troubleshooting](#) section. Please be sure to include as much information as possible, which will help the developers to locate and fix the problem.

## 14.3 There is no coverart

There are two different problems that often fall under this topic:

### 14.3.1 Picard isn't finding and downloading any cover art

#### No cover art providers have been enabled in the configuration settings

Confirm that the “*Options → Options... → Cover Art*” settings have at least one cover art provider enabled. Please see the [Cover Art Providers](#) section for more information.

#### There is no cover art available from the selected providers

It's possible that the selected release does not have any cover art available from the enabled cover art providers. If a cover art image is displayed for

the release on the MusicBrainz website, it is possible that the image for the release group is being displayed, or it is being provided through a third-party provider agreement. Sometimes this can be addressed by enabling the “CAA Release Group” and “Allowed cover art URLs” provider options.

### The selected provider is not currently available

On occasion, the server providing the cover art (e.g.: archive.org) is not available, or mirror servers have not yet been synchronized with the latest updates. In this case, you may have to wait for a few minutes before retrying your request. Reviewing the details in Picard’s log often provides some insight into whether or not this is the issue.

### The cover art is still a pending edit

If the cover art was recently added, the edit adding the image may not have been accepted and applied yet. You can have Picard use the cover art from pending edits by disabling the “Download only approved images” option in the Cover Art Archives subsection of the “*Options → Options... → Cover Art*” settings. Please see the [Cover Art Archive](#) section for more information.

## 14.3.2 Coverart that is saved with the files isn't displayed

### Player doesn't support embedded cover art

Check to confirm that your player supports embedded cover art images. That support is not universal among all players. Some players support embedded images, some support images stored as files in the directory (e.g.: cover.jpg or folder.jpg), and some support both. Picard allows you to specify how the cover art images should be saved. Please see the [Location](#) section of the Coverart options for details.

You should also confirm that your player supports the version of the tags being written.

#### See also:

For more information please see: [AAC Files / AC3 Files / ID3 Files / WAVE Files](#)

### Embedded cover image too large

Even if your cover art image has been properly embedded in the file, it's possible that your player has trouble dealing with embedded images over a certain size. If all else fails, you might try using an image with a smaller file size.

## 14.4 Tags are not updated or saved

There are typically four reasons that tags may not be written or updated when files are saved:

### Saving tags has not been enabled in the configuration settings

Confirm that the “*Options → Save tags*” setting has been enabled. See [Action Options](#) for more information.

### Tags are being set in the file naming script

Tags created or updated in the file naming script will not be written to the output files. This script is only used for developing the file name and directory structure for the output. If you want to set or update a tag value in a script, it must be in a tagging script. Please see the [Scripts](#) section for more information about the different types of scripts.

### The tags begin with an underscore

Tags whose names begin with an underscore, regardless of how they are created, will not be written to the output files. These are considered variables for use within Picard rather than tags. Please see the [Tags & Variables](#) section for more information regarding the difference between tags and variables.

### The file type does not support writing tags

Confirm that the file type that you are writing actually supports the tags that are to be written. Not all file types support all the tags Picard supports.

Please see the [Appendix B: Tag Mapping](#) section for details about the tags supported by various file formats.

## 14.5 Files are not being saved

There are two typical scenarios where files are not being saved:

### After selecting files in the right-hand pane you see a red stop like icon

This indicates an error occurred during saving. In the majority of times people see this it is because the files they want to save are write protected (either have the readonly flag set or have wrong permissions). Check that the files are not write protected and that you have the appropriate permissions before trying again.

Permission problems seem to be more common when Picard has been installed using Flatpak, or when the files are being read from or written to a samba share on the network.

Another possibility is that the total length of the destination path and file name exceeds the maximum length allowed by the operating system. If you

have an extremely long path and file name, try shortening it to see if it allows the file to be saved.

### In the right-hand pane you see just a musical note icon in front of the tracks

That means that this is just the track data from MusicBrainz, but no file has been associated with it. In that case the save button is disabled. Check to make sure that the files are properly matched to the tracks before trying to save again. Please see the [Matching Files to Tracks](#) and [Saving Updated Files](#) sections for more information.

A third possibility, although very rare, is that you are trying to set a tag with an invalid key. If the two solutions above don't resolve your problem, try reviewing all of the tags to be written to see if there are any that don't appear to be valid.

## 14.6 Picard just stopped working

There are typically two reasons that Picard will run very slowly or appear to be stalled:

### Processing a large number of files at one time

When processing a large number of files in one batch, Picard can run into issues either due to processing each file (e.g.: AcoustID fingerprinting) or during lookups following clustering or fingerprinting because of all of the information requests to the MusicBrainz server API, as well as downloading cover art. Even though Picard may still be working its way through the backlog, the user interface may become non-responsive and appear that the program has stalled or frozen.

The impact of processing files in large batches is exacerbated when using plugins that make additional information request calls to the MusicBrainz server API.

If you are processing a large library of files, it is generally more effective to process smaller batches (e.g.: 200 files) at a time, first retrieving the information using a cluster and lookup process, and then processing any remaining unmatched files using the scan process. Please see the [Retrieving Album information](#) section for more information.

### Processing files across a network connection

If you are processing files across a network connection, this can impact the speed at which Picard works because of the speed difference between a network connection and a local drive. In this case, the throughput can be improved by first copying the source files to a local drive, process with Picard, and then move the resulting files to the network drive.

## **14.7 macOS shows the app is damaged**

On macOS 10.12 and 10.13 there have been reports that sometimes the MusicBrainz Picard app cannot be started and macOS shows an error message:

“MusicBrainz Picard.app” is damaged and can’t be opened. You should move it to the Trash.

This mostly seems to happen after moving the file to the Applications folder and seems to be caused by Gatekeeper mistakenly marking the app as damaged. To solve the issue open a terminal and run:

```
xattr -c "/Applications/MusicBrainz Picard.app"
```

This will clear the app being marked as damaged. If you have placed the app in a different location then /Applications adjust the path in the command above accordingly.

---

## CHAPTER FIFTEEN

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# FREQUENTLY ASKED QUESTIONS

Some of the most often asked questions have been addressed in the following sections. These have been organized into groups based on the operation being performed.

## 15.1 Using Picard

### 15.1.1 How do I tag files with Picard?

There is a separate section that explains the tagging process. Please see [Using Picard](#) for details.

### 15.1.2 The green “Tagger” icon disappeared from MusicBrainz.org, how do I get it back?

This icon shows up when a manual lookup is performed via Picard using “*Tools → Lookup*”.

Alternatively the parameter `?tport=8000` can be added to the end of almost any MusicBrainz URL and the green tagger icons will continue to show up from then on.

### 15.1.3 I’m trying to load a release in Picard, but all I’m seeing is “Couldn’t load album errors”. What’s up?

If you get “Couldn’t load album errors” for releases in Picard, this can occur for a number of reasons. Check the following:

#### 1. Is the problem persistent for a given release?

Try waiting a minute or two, or even a bit longer and then try again with a right-click, “Refresh”. Sometimes the servers are just overloaded and temporarily reject requests.

#### 2. Has the release been deleted from MusicBrainz?

If you are re-tagging files previously tagged with Picard, and get this error, the release has possibly been deleted. Try to right-click and use the “Lookup in browser” option to view the release on the website. If you can’t find it, it may have been deleted. This could be because you tagged a pending release that was voted down, or tagged against a release that was deleted because editors decided it wasn’t a valid release. This can happen for homebrew compilations, bad torrent or pirate rips, “advance” releases or very poorly added releases. Usually there will be an alternate release you can tag against, which you can find by searching or doing another clustered lookup from Picard. If you can’t find a replacement and believe it has been deleted unfairly, [submit a new release](#), supplying evidence of the track listing and as much information as possible to prove it is genuine and it may be accepted again.

#### **15.1.4 I’m using macOS, where are my network folders or drives?**

These should show up in the add file and add folder dialogs, but they aren’t visible by default in the file browser pane. If you want to see them in the file browser pane, right click in the pane and select “show hidden files”. They should then be visible in the /Volumes folder.

#### **15.1.5 macOS shows the app is damaged. How can I run Picard?**

On macOS 10.12 and 10.13 there have been reports that sometimes the MusicBrainz Picard app cannot be started and macOS shows an error message:

“MusicBrainz Picard.app” is damaged and can’t be opened. You should move it to the Trash.

This mostly seems to happen after moving the file to the Applications folder and seems to be caused by Gatekeeper mistakenly marking the app as damaged. To solve the issue open a terminal and run:

```
xattr -c "/Applications/MusicBrainz Picard.app"
```

This will clear the app being marked as damaged. If you have placed the app in a different location than /Applications adjust the path in the command above accordingly.

### **15.1.6 Picard is installed on Linux as a Snap, how can I access removable media?**

Picard installed as a Snap is running inside a sandbox and thus it does not have full access to all files and folders on your system. By default Picard has access to your home folder. You can additionally give it access to removable media by running the following command on a terminal:

```
snap connect picard:removable-media
```

## **15.2 File Formats**

### **15.2.1 What formats does Picard support?**

Picard supports the following file formats:

- MPEG-1 Audio (.mp3, .mp2, .m2a)
- MPEG-4 Audio (.m4a, .m4b, .m4p, .m4v, .mp4)
- Windows Media Audio (.wma, .wmv, .asf)
- Microsoft WAVE (.wav)
- The True Audio (.tta)
- FLAC (.flac)
- Audio Interchange File Format (.aiff, .aif, .aifc)
- Musepack (.mpc, .mp+)
- WavPack (.wv)
- OptimFROG (.ofr, .ofs)
- Monkey's Audio (.ape)
- Tom's lossless Audio Kompressor (.tak)
- Speex (.spx)
- Generic Ogg files (.ogg)
- Ogg FLAC (.ogg, .ogv)
- Ogg Theora (.ogg, .oga)
- Ogg Opus (.opus)
- Ogg Audio (.oga)
- Ogg Video (.ogv)
- ADTS stream / AAC (.aac)

- AC-3 (.ac3, .eac3)
- Direct Stream Digital (.dff, .dsf)

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**Note:** WAVE files lack a standard for proper tagging. Picard uses ID3v2 tags to tag WAVE files, but this is not supported by all software. For compatibility with software which does not support ID3v2 tags in WAVE files additional RIFF INFO tags can be written to the files. RIFF INFO has only limited support for tags and character encodings.

---

### 15.2.2 What formats will Picard support?

Picard is intended to eventually support all formats (including fingerprinting), but this is a complex (arguably never-ending) process, and will take some time.

### 15.2.3 Which tags can Picard write to my files?

See the [Tags & Variables](#) section for information on which MusicBrainz fields that Picard writes to tags. [Picard Tag Mapping](#) contains more technical information on how these are further mapped into each tag format.

### 15.2.4 How to I edit several tags at once? Why is it not easier do?

Please understand that Picard is not designed as a general purpose tag editor. Its primary goal is to retrieve community-maintained MusicBrainz data to write into your tags. Some secondary goals include:

- allowing rule-based customization of that data using scripts and plugins
- encouraging users to create an account and fix and update data via the MusicBrainz website, thus sharing their work with the rest of the community rather than simply fixing their tags locally.

To that end, Picard is likely to never have as much development focus on manual bulk editing of tags as other general purpose editors (e.g.: [Mp3tag](#), [foobar2000](#), or even many library managers such as iTunes, Windows Media Player, and MediaMonkey). That doesn't mean that the team won't welcome patches in this area!

Having said all this, it is still possible to edit several tags at once in Picard by following the steps:

1. Click and select several files with Ctrl or Shift
2. Right click on one of them, then click Details...
3. On the popup dialog you can see the tags, with entries that denote where tags are different across files. You can edit or add new tags here.
4. On exiting the dialog, you have changed the tags in memory. You need to click Save in order to persist these changes to your files.

This process should work in both panes.

### 15.2.5 The built-in audio player cannot play my file. Which formats does it support?

The formats supported by the built-in audio player depend on the formats supported by your operating system.

#### Windows:

The supported formats depend on the installed codecs. Depending on the Windows version certain codecs are pre-installed, but you can install additional codecs.

You might want to install the [Directshow Filters for Ogg](#) to add support for Ogg Vorbis, Ogg Speex, Ogg Theora, Ogg FLAC, native FLAC, and WebM files.

#### See also:

Additional information is available from [Microsoft's Codecs FAQ](#).

#### Linux:

On Linux systems the player uses GStreamer which supports most common audio formats, although some distributions might exclude some codecs due to licensing issues. For the widest format support make sure you install all of the GStreamer plugins available for your distribution.

### 15.2.6 I am using Fedora. Why doesn't acoustic fingerprinting work?

Acoustic fingerprinting in Picard uses a tool called `fpcalc`, which is not available in Fedora. You can get it by installing the `chromaprint-tools` package from the [RPM Fusion repository](#). This functionality is not contained in the main Fedora `picard` package because it requires the `ffmpeg` package which [cannot be distributed by Fedora](#). After enabling the “`rpmfusion-free`” RPM Fusion repository, install the package (as root) using:

```
yum install chromaprint-tools
```

## 15.3 Configuration

### 15.3.1 Where is the Picard configuration saved?

Picard saves the configuration in the file `Picard.ini`. Its location depends on the operating system:

#### Windows:

%APPDATA%\MusicBrainz\Picard.ini

This usually will be C:\Users\YourUserName\AppData\Roaming\MusicBrainz, where YourUserName should be replaced with your actual Windows user name.

#### macOS, Linux and other Unix like systems:

\$HOME/.config/MusicBrainz/Picard.ini

### 15.3.2 I tagged a file in Picard, but iTunes is not seeing the tags!

First, you need to force iTunes to re-read the information from your tags and update its library. This is discussed in the [iTunes Guide](#).

Additionally, iTunes has a known bug in its ID3v2.4 implementation, which makes it unable to read such tags if they also contain embedded cover art. As a work-around, you can configure Picard to write ID3v2.3 tags.

### 15.3.3 My tags are truncated to 30 characters in Windows Media Player!

Prior to version 0.14, Picard's default settings were to write ID3v2.4 and ID3v1 tags to files. WMP can't read ID3v2.4, so it falls back to ID3v1 which has a limitation of 30 characters per title. To solve this on versions prior to 0.14, configure Picard to write ID3v2.3 tags instead.

Starting with version 0.14, the default settings have been changed to ID3v2.3 and this should no longer be an issue.

### 15.3.4 How do I tell Picard which browser to use?

On Windows, macOS, GNOME and KDE, Picard uses the default browser that has been configured for the system. On other systems, you can use the BROWSER environment variable.

For example:

```
export BROWSER="firefox '%s' &"
```

Another approach that works in some GNU/Linux systems is the following command:

```
sudo update-alternatives --config x-www-browser
```

This should present you with a list of existing browsers in your system, allowing you to select the one to use by default.

---

## CHAPTER SIXTEEN

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## TUTORIALS

### 16.1 Writing a File Naming Script

Writing a script to organize and name your files is actually not that hard – just don't get intimidated by all the '\$', '%' and parentheses. If you can write down a pattern like "**ARTIST - (YEAR) ALBUM NAME/TRACK - SONG TITLE**" of how you want the files and folders named, you can quite easily translate this to the proper script.

Note that the use of a '/' in the formatting string separates the output directory from the file name. The formatting string is allowed to contain any number of '/' characters. Everything before the last '/' is the directory location, and everything after the last '/' becomes the file's name. In our example, we only have one '/' character, meaning that we will have one directory level for the album which will contain the songs for that album.

First, let's have a look at what we need. You see a list of the available tags in the *Basic Tags* section. We want the **ARTIST** name, so available tags for this could be albumartist or artist. This should be the name for an album folder, so albumartist sounds like what we need. To get the actual value for a tag you need to enclose its name in percent signs. So let's start:

```
%albumartist%
```

Now we want the **YEAR**. There is no year tag, but there is date. Let's use this for now. If we want to add extra text like the "-" just write it down. We need to be careful with the parentheses, because those are special variables in scripting. We need to prefix them with a backslash. Let's add this all:

```
%albumartist% - \(%date%\)
```

Now we want the **ALBUM NAME**. That's simple, just use album:

```
%albumartist% - \(%date%\) %album%
```

That takes care of the directory portion of the renaming. The next part is the **TRACK** number and **SONG TITLE**. The track number is available as tracknumber and the title of the track is simply title. Adding these to our script we get:

```
%albumartist% - \(%date%\)%album%/%tracknumber% - %title%
```

You can see that this looks nearly like the pattern that we said we wanted at the start. It's not perfect yet for a few reasons. What if there are 10 or more tracks on the album and they don't sort properly in the directory listing? Also, we get a full date instead of just the year. Finally, sometimes if you tag existing files they might not have the albumartist set, just artist.

Let's fix the track number first. We can take care of that by using the `$num` function to add a leading zero to the number shown for tracks 1 through 9:

```
%albumartist% - \(%date%\)%album%/$num(%tracknumber%,2) - %title%
```

Now let's fix the **ARTIST**. We can fallback to using artist if albumartist is not available by using:

```
$if2(%albumartist%,%artist%) - \(%date%\)%album%/$num(%tracknumber%,2) -  
→ %title%
```

The `$if2` function uses the first value that is not empty, so if albumartist is empty it uses artist instead.

For the date tag the dates from MusicBrainz are always formatted as YYYY-MM-DD. We only need the year, so let's get just the first 4 characters with the `$left` function:

```
$if2(%albumartist%,%artist%) - \($left(%date%,4)\)%album%/$num(%tracknumber%,  
→ 2) - %title%
```

What happens if there is no date tag information? Sometimes MusicBrainz does not have the release date of an album set as it is not yet known or hasn't been entered into the database. It would be great to omit the entire date with the parentheses in this case. Let's use the `$if` function to check whether the date is set:

```
$if2(%albumartist%,%artist%) - $if(%date%,\($left(%date%,4)\))%album%/$num(  
→ %tracknumber%,2) - %title%
```

Alternately, we can enter a placeholder such a "0000" if the date is missing:

```
$if2(%albumartist%,%artist%) - \($if(%date%,$left(%date%,4),0000)\)%album%/  
→ $num(%tracknumber%,2) - %title%
```

And there you have it - the final script for naming your files developed from the pattern that we used as our starting point.

### See also:

For additional information about the available tags and variables please see the [Tags & Variables](#) section. For information about the script functions available please see the [Scripting Functions](#) section.

## 16.2 Understanding Acoustic Fingerprinting and AcoustIDs

The fingerprinting is the basis for the whole AcoustID song identification system. The audio fingerprint captures the characteristics of the recording, but there can be slight differences in the fingerprint of files of the same recording caused by such things as different encoding or bitrate. Fingerprints, along with the track metadata, are submitted to the AcoustID website where the AcoustID server combines fingerprints that are similar enough and assigns them a single AcoustID. This is actually what makes the AcoustID system really work for audio identification. The same recording can generate many slightly different fingerprints, but the AcoustID represents what the service identifies as the same recording for all of the associated fingerprints.

What Picard does is as follows:

1. When you click “Scan” on a file, Picard generates the audio fingerprint for the file, using the **fpcalc** command line utility provided by AcoustID.
2. Picard uses this fingerprint to lookup an AcoustID from the AcoustID server. The AcoustID server will compare the fingerprint and will try to match it to an existing AcoustID. There are three possibilities:
  - It doesn’t find an AcoustID. The lookup failed.
  - The AcoustID server finds an existing AcoustID for the submitted fingerprint, but it is not associated with any MusicBrainz recording. The lookup failed.
  - The AcoustID server finds an existing AcoustID for the submitted fingerprint and it is associated with a MusicBrainz recording. Picard matches the file to one of the MusicBrainz recordings linked to the AcoustID.

If there was no AcoustID found you can use the “Submit” button in Picard to submit the fingerprints to the AcoustID server once you have matched the files to the proper recordings. If there is no AcoustID already existing for a fingerprint, the server will generate a new AcoustID (which can take some time). It will also link the AcoustID to the MusicBrainz recording identified by the submitted metadata. Please see the [Submitting Acoustic Fingerprints](#) section for a detailed step-by-step procedure.

You don’t need the AcoustID fingerprinting software to manually generate new AcoustIDs. The difference is, that the fingerprinting software is meant to be run on already tagged files, so if it cannot find an AcoustID it will immediately do the submission. For Picard the AcoustID is primarily an identification tool, and because the files are considered untagged at this *identification* stage, you can only do the submission once the files have been properly matched to a MusicBrainz recording. You will also find that after submission Picard will not automatically fetch the newly generated AcoustIDs. This is because the generation can take some time, and the response received from the AcoustID server does not contain newly generated AcoustIDs. However, if you do another scan on the files after submission, the AcoustID should be available.

**Note:** If files are matched using “Scan” and then “Generate fingerprints” is used on them, submission will not be enabled, because they have already been matched by fingerprint. This is the same situation as just using “Scan”, because after the files are scanned the resulting fingerprint / recording ID is remembered as already having been submitted.

Also if you have files matched to tracks and use “Generate fingerprints” and are able to successfully submit the fingerprints, attempting to use “Generate fingerprints” for the same files and tracks again does not re-enable submission for those files. The reason is the same: Picard remembers the fingerprint / recording ID combinations already being submitted. However, restarting Picard (or even just removing and re-adding those files) and then using “Generate fingerprints” will enable submission again.

Fingerprints are submitted in batches depending on fingerprint size, but often up to 200 or 250 fingerprints can be submitted in one batch. A submission request for a batch might fail due to various reasons such as networking or server issues. If a request fails, all of the fingerprints of this submission batch are still marked as not having been submitted and submission could be retried.

You can also use “Generate fingerprints” on either unmatched or matched files. This will only generate the acoustic fingerprints without doing any lookup on the AcoustID server. This also means there will be no AcoustID tag created. However, you can submit these fingerprints if you match the fingerprinted files to a track.

---

## 16.3 Handling of multiple release countries

Some releases, especially digital releases, can have a very long list of release countries, sometimes listing all of the world's countries except for a few where the release is not officially available. Picard offers some tools to handle this.

Let's take the release **Bleach**, by Nirvana (MusicBrainz release [adab3feb-1822-4d27-a997-db7d6c9688c0](#)) as an example.

By default Picard will write a single `releasecountry` tag to the files. Prior to v2.3.1, Picard had been populating the tag with what the MusicBrainz server returned as the country for the release. If there were multiple release events, this country field was just filled with the first one in alphabetical order (Afghanistan in our example). Picard v2.3.1 introduced some options to better handle this.

### 16.3.1 Using preferred release countries

If you configure preferred release countries in “*Options → Metadata → Preferred Releases*”. Picard will use the first country from the preferred release countries that is also in the list of release events. So if you have configured preferred release countries to be Europe, Canada, Germany and UK, for our example that would mean the `releasecountry` tag gets set to Canada.

### 16.3.2 Using scripting to set a different country

Picard v2.3.1 also added a new variable `%_releasecountries%`, which provides the complete list of release countries for a release as a multi-value variable. You can use this to set different values for the `releasecountry` tag.

For example, the following script would set it to “[International]” if there are 10 or more release countries:

```
$if($gte($lenmulti(%_releasecountries%),10),$set(releasecountry,  
↪[International]))
```

Of course you can adjust the count and the replacement text to your liking. You can also choose to save the entire list instead of just a single country to this tag using the script:

```
$setmulti(releasecountry,%_releasecountries%)
```

Perhaps you prefer to limit this list to the first few entries. The following example just uses the first 6 countries:

```
$setmulti(releasecountry,$slice(%_releasecountries%,0,6))
```

### 16.3.3 What's missing?

Countries are currently written to the tags as their ISO 3166-1 country code, with some special values added for historical countries and things like [Europe] or [Worldwide]. These codes are not always easily recognizable or obvious, such as "DZ" for Algeria or "DE" for Germany. You can of course use scripting to make these more readable. For example, if you want to see "United Kingdom" instead of "GB" in this tag use:

```
$if($eq(%releasecountry%,GB),$set(releasecountry,United Kingdom))
```

This might work if you deal only with a couple of countries in your collection, or you just want to handle some special cases like using "Europe" instead of "XE" such as in the following script:

```
$if($eq(%releasecountry%,XE),$set(releasecountry,Europe))
$if($eq(%releasecountry%,XU),$set(releasecountry,[Unknown]))
$if($eq(%releasecountry%,XW),$set(releasecountry,[Worldwide]))
$if($eq(%releasecountry%,XG),$set(releasecountry,DDR))
```

A change has been submitted to Picard to add a `$countryname()` function to easily convert the code into a readable name; however this is not scheduled for release until Picard v2.7.

## 16.4 Writing a Plugin

You have a great idea for extending Picard with a plugin but don't know where to start. Unfortunately, this is a common problem and prevents far too many of those great ideas from ever seeing the light of day. Perhaps this tutorial will help get you started in turning your great idea a reality.

Picard plugins are written in Python, so that's the programming language you'll be using. Please check the [INSTALL.md](#) file in the Picard repository on GitHub to see the minimum version requirements. This is Python 3.6 as of the time this tutorial was written. Also refer to the [Plugins API](#) for additional information, including the parameters passed to each of the function types.

For the purpose of this tutorial, we're going to develop a simple plugin to save the argument information provided by Picard to track and release processing plugins. This will demonstrate how the information is accessed, and will provide a utility that you might find useful when developing your own plugins.

The first thing that we'll need to include is the header information that describes the plugin.

```
PLUGIN_NAME = "Example plugin"
PLUGIN_AUTHOR = "This authors name"
PLUGIN_DESCRIPTION = "This plugin is an example"
PLUGIN_VERSION = '0.1'
PLUGIN_API VERSIONS = ['2.2']
PLUGIN_LICENSE = "GPL-2.0-or-later"
PLUGIN_LICENSE_URL = "https://www.gnu.org/licenses/gpl-2.0.html"
```

Next we list the modules that will be referenced in our code. In this case, we will be using the `os` module to build the output file path, and the `json` module to format the argument dictionary text for readability. We will be saving our output file to the base directory used for file naming so we import the `config` module from Picard, as well as the `log` module so that we can write debug or error messages to Picard's log. Finally, we import the appropriate processing hooks and plugin priority settings.

```
import json
import os

from picard import config, log
from picard.metadata import (register_album_metadata_processor,
                             register_track_metadata_processor)
from picard.plugin import PluginPriority
```

**Warning:** To ensure maximum compatibility, you should only use standard Python modules, or third-party modules that are already included in Picard. If you use other modules, then the plugin will not function properly if used on a system that doesn't have the proper version of the module installed or if someone is using an executable version of Picard.

Now we can start adding the code that we want Picard to execute. First we'll identify the output file to store the parameter information provided by Picard. This is a file named `data_dump.txt` to be stored in the file naming output directory. We find the name of the configuration setting we need, `move_files_to`, by examining the Picard source code for the corresponding option setting screen. In this case it is a `TextOption` in the `RenamingOptionsPage` class found in the file `picard/ui/options/renaming.py`.

```
file_to_write = os.path.join(config.setting["move_files_to"], "data_dump.txt")
```

The next part is a function to write a Python object to our output file. To allow the same function to be used for different situations, we include parameters to identify the type of line (input type), the object to write, and options for writing to JSON format and appending or overwriting an existing output file. In our case, we want to overwrite the file each time a new release is processed, but always append the track information to the file.

We also include error checking to write an entry to the Picard log in the event of an exception.

```
def write_line(line_type, object_to_write, dump_json=False, append=True):
    file_mode = 'a' if append else 'w'
    try:
        with open(file_to_write, file_mode, encoding="UTF-8") as f:
            if dump_json:
                f.write('{0} JSON dump follows:\n'.format(line_type))
                f.write('{0}\n\n'.format(json.dumps(object_to_write,
→indent=4)))
            else:
                f.write("{0:s}: {1:s}\n".format(line_type, str(object_to_
→write)))
    except Exception as ex:
        log.error("{0}: Error: {1}".format(PLUGIN_NAME, ex))
```

Now we include the functions to be called when releases and tracks are retrieved by Picard. The release function hook provides three arguments, and the track function hook provides four arguments. The argument types are described in the [Plugins API](#) section. The first argument, `album`, is an object that holds information about the selected album. See the `Album` class in the `picard/album.py` file in Picard's source code for more information.

The second argument, `metadata`, is an object that holds the tags and variables that Picard has assigned for the current release and track. This is where you can add or edit the tags and variables that Picard makes available to the user for scripts. See the `Metadata` class in the `picard/metadata.py` file in Picard's source code for more information.

The `track` and `release` arguments are Python dictionaries containing the information provided in response to Picard's calls to the MusicBrainz API. The information may differ, depending on the user's [Metadata Options](#) settings for things like "*Use release relationships*" or "*Use track relationships*".

```
def dump_release_info(album, metadata, release):
    write_line('Release Argument 1 (album)', album, append=False)
    write_line('Release Argument 3 (release)', release, dump_json=True)

def dump_track_info(album, metadata, track, release):
    write_line('Track Argument 1 (album)', album)
    write_line('Track Argument 3 (track)', track, dump_json=True)
    # write_line('Track Argument 4 (release)', release, dump_json=True)
```

Finally, we need to register our functions so that they are processed with the appropriate events. In our case, we set the priority to HIGH so that we output the parameter information as it is received by Picard before any other plugins have an opportunity to modify it.

```
# Register the plugin to run at a HIGH priority so that other plugins will
# not have an opportunity to modify the contents of the metadata provided.
register_album_metadata_processor(dump_release_info, priority=PluginPriority.
    ↪HIGH)
register_track_metadata_processor(dump_track_info, priority=PluginPriority.
    ↪HIGH)
```

The complete plugin code file looks something like:

```
PLUGIN_NAME = "Example plugin"
PLUGIN_AUTHOR = "This authors name"
PLUGIN_DESCRIPTION = "This plugin is an example"
PLUGIN_VERSION = '0.1'
PLUGIN_API_VERSIONS = ['2.2']
PLUGIN_LICENSE = "GPL-2.0-or-later"
PLUGIN_LICENSE_URL = "https://www.gnu.org/licenses/gpl-2.0.html"

import json
import os

from picard import config, log
from picard.metadata import (register_album_metadata_processor,
                             register_track_metadata_processor)
from picard.plugin import PluginPriority

file_to_write = os.path.join(config.setting["move_files_to"], "data_dump.txt")

def write_line(line_type, object_to_write, dump_json=False, append=True):
    file_mode = 'a' if append else 'w'
    try:
        with open(file_to_write, file_mode, encoding="UTF-8") as f:
            if dump_json:
                f.write('{0} JSON dump follows:\n'.format(line_type))
                f.write('{0}\n\n'.format(json.dumps(object_to_write,
                    ↪indent=4)))
            else:
                f.write("{0:s}: {1:s}\n".format(line_type, str(object_to_
                    ↪write),))
```

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```

except Exception as ex:
    log.error("{0}: Error: {1}".format(PLUGIN_NAME, ex,))

def dump_release_info(album, metadata, release):
    write_line('Release Argument 1 (album)', album, append=False)
    write_line('Release Argument 3 (release)', release, dump_json=True)

def dump_track_info(album, metadata, track, release):
    write_line('Track Argument 1 (album)', album)
    write_line('Track Argument 3 (track)', track, dump_json=True)
    # write_line('Track Argument 4 (release)', release, dump_json=True)

# Register the plugin to run at a HIGH priority so that other plugins will
# not have an opportunity to modify the contents of the metadata provided.
register_album_metadata_processor(dump_release_info, priority=PluginPriority.
    ↪HIGH)
register_track_metadata_processor(dump_track_info, priority=PluginPriority.
    ↪HIGH)

```

That's it for our plugin code. Now we need to package it so that we can install it into Picard. If we're going to just use it locally for ourselves, the easiest way is to just name the file something like `my_plugin.py`. If there are multiple files, such as plugins that include additional settings screens, then the files should be saved in a directory such as `my_plugin` with the main file named `__init__.py`. The directory is then archived into a `my_plugin.zip` file, with the file name the same as the included directory name. The the contents of the archive would show as something like:

```

my_plugin/__init__.py
my_plugin/another_file.py
my_plugin/etc

```

If you've made it this far, congratulations! You've just created your first Picard plugin. Now you have a starting point for turning that great idea into reality.

### See also:

Relevant portions of Picard's source code including:

- Option settings modules in `picard/ui/options/` for names used to access the settings.
- Album class in the `picard/album.py` file.
- Metadata class and metadata processing plugin registration functions in the `picard/metadata.py` file.
- `PluginPriority` class in the `picard/plugin.py` file.

---

## CHAPTER SEVENTEEN

---

## APPENDICES

### 17.1 Appendix A: Plugins API

#### 17.1.1 Plugin Metadata

Each plugin must provide some metadata as variables. Those variables should be placed at the top of the file.

```
PLUGIN_NAME = "Example plugin"
PLUGIN_AUTHOR = "This authors name"
PLUGIN_DESCRIPTION = "This plugin is an example"
PLUGIN_VERSION = '0.1'
PLUGIN_API VERSIONS = ['2.1', '2.2']
PLUGIN_LICENSE = "GPL-2.0-or-later"
PLUGIN_LICENSE_URL = "https://www.gnu.org/licenses/gpl-2.0.html"
```

Variables explanation:

- **PLUGIN\_DESCRIPTION** should be as simple as possible, while still describing the main function.
- **PLUGIN\_VERSION** should be filled with the version of Plugin. Plugin versions should be in the format x.y.z (e.g.: “1.0” or “2.12.4”). It is recommended that you use [Semantic Versioning](#).
- **PLUGIN\_API VERSIONS** should be set to the versions of Picard this plugin to run with. New Picard versions will usually support older plugin API versions, but on breaking changes support for older plugin versions can be dropped. Versions available for Picard 2 are “2.0”, “2.1” and “2.2”.
- **PLUGIN\_LICENSE** should be set with the license name of the plugin. If possible use one of the license names from the [SPDX License List](#), but you are welcomed to use another license if the one you chose is not available in the list.
- **PLUGIN\_LICENSE\_URL** should be set to a URL pointing to the full license text.

### 17.1.2 Metadata Processors

MusicBrainz metadata can be post-processed at two levels, album and track. The types of the arguments passed to the processor functions in the following examples are as follows:

- **album**: `picard.album.Album`
- **metadata**: `picard.metadata.Metadata`
- **release**: dict with release data from MusicBrainz JSON web service
- **track**: dict with track data from MusicBrainz JSON web service

#### Album metadata example:

```
PLUGIN_NAME = "Disc Numbers"
PLUGIN_AUTHOR = "Lukas Lalinsky"
PLUGIN_DESCRIPTION = "Moves disc numbers from album titles to tags."

from picard.metadata import register_album_metadata_processor
import re

def remove_discnumbers(tagger, metadata, release):
    matches = re.search(r"\(disc (\d+)\)", metadata["album"])
    if matches:
        metadata["discnumber"] = matches.group(1)
        metadata["album"] = re.sub(r"\(disc \d+\)", "", metadata["album"])

register_album_metadata_processor(remove_discnumbers)
```

#### Track metadata example:

```
PLUGIN_NAME = "Feat. Artists"
PLUGIN_AUTHOR = "Lukas Lalinsky"
PLUGIN_DESCRIPTION = "Removes feat. artists from track titles."

from picard.metadata import register_track_metadata_processor
import re

def remove_featartists(tagger, metadata, track, release):
    metadata["title"] = re.sub(r"\(feat. [^]*\)", "", metadata["title"])

register_track_metadata_processor(remove_featartists)
```

### 17.1.3 Event Hooks

Plugins can register themselves to listen for different events. Currently the following event hooks are available:

#### **file\_post\_load\_processor(file)**

This hook is called after a file has been loaded into Picard. This could for example be used to load additional data for a file. Usage:

```
from picard.file import register_file_post_load_processor

def file_post_load_processor(file):
    pass

register_file_post_load_processor(file_post_load_processor)
```

#### **file\_post\_save\_processor(file)**

This hook is called after a file has been saved. This can for example be used to run additional post-processing on the file or write extra data. Note that the file's metadata is already the newly saved metadata. Usage:

```
from picard.file import register_file_post_save_processor

def file_post_save_processor(file):
    pass

register_file_post_save_processor(file_post_save_processor)
```

#### **file\_post\_addition\_to\_track\_processor(track, file)**

This hook is called after a file has been added to a track (on the right-hand pane of Picard).

```
from picard.file import register_file_post_addition_to_track_processor

def file_post_addition_to_track_processor(track, file):
    pass

register_file_post_addition_to_track_processor(file_post_addition_to_track_
    ↴processor)
```

**file\_post\_removal\_from\_track\_processor(track, file)**

This hook is called after a file has been removed from a track (on the right-hand pane of Picard).

```
from picard.file import register_file_post_removal_from_track_processor

def file_post_removal_from_track_processor(track, file):
    pass

register_file_post_removal_from_track_processor(file_post_removal_from_track_
→processor)
```

**album\_post\_removal\_processor(album)**

This hook is called after an album has been removed from Picard.

```
from picard.album import register_album_post_removal_processor

def album_post_removal_processor(album):
    pass

register_album_post_removal_processor(album_post_removal_processor)
```

---

**Note:** Event hooks have been available since API version 2.2.

---

**17.1.4 File Formats**

Plugins can extend Picard with support for additional file formats. See the existing [file format implementations](#) for details on how to implement the \_load and \_save methods. Example:

```
PLUGIN_NAME = "..."
PLUGIN_AUTHOR = "..."
PLUGIN_DESCRIPTION = "..."
PLUGIN_VERSION = '...'
PLUGIN_API_VERSIONS = ['...']
PLUGIN_LICENSE = "..."
PLUGIN_LICENSE_URL = "..."

from picard.file import File
from picard.formats import register_format
from picard.metadata import Metadata

class MyFile(File):
    EXTENSIONS = [".foo"]
    NAME = "Foo Audio"
```

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```
def _load(self, filename):
    metadata = Metadata()
    # Implement loading and parsing the file here.
    # This method is supposed to return a Metadata instance filled
    # with all the metadata read from the file.
    metadata['~format'] = self.NAME
    return metadata

def _save(self, filename, metadata):
    # Implement saving the metadata to the file here.
    pass

register_format(MyFile)
```

### 17.1.5 Tagger Script Functions

To define new tagger script functions use `register_script_function(function, name=None)` from the `picard.script` module. `parser` is an instance of `picard.script.ScriptParser`, and the rest of the arguments passed to it are the arguments from the function call in the tagger script. Example:

```
PLUGIN_NAME = "Initials"
PLUGIN_AUTHOR = "Lukas Lalinsky"
PLUGIN_DESCRIPTION = "Provides tagger script function $initials(text)."
PLUGIN_VERSION = '0.1'
PLUGIN_API VERSIONS = ['2.0']
PLUGIN_LICENSE = "GPL-2.0"
PLUGIN_LICENSE_URL = "https://www.gnu.org/licenses/gpl-2.0.txt"

from picard.script import register_script_function

def initials(parser, text):
    return "".join(a[:1] for a in text.split(" ") if a[:1].isalpha())

register_script_function(initials)
```

`register_script_function` supports two optional arguments:

- **`eval_args`**: If this is **False**, the arguments will not be evaluated before being passed to **function**.
- **`check_argcount`**: If this is **False** the number of arguments passed to the function will not be verified.

The default value for both arguments is **True**.

### 17.1.6 Context Menu Actions

Right-click context menu actions can be added to albums, tracks and files in “Unmatched Files”, “Clusters” and the “ClusterList” (parent folder of Clusters). Example:

```
PLUGIN_NAME = u'Remove Perfect Albums'
PLUGIN_AUTHOR = u'ichneumon, hrgrmpf'
PLUGIN_DESCRIPTION = u'''Remove all perfectly matched albums from the
↪selection.'''
PLUGIN_VERSION = '0.2'
PLUGIN_API_VERSIONS = ['0.15.1']
PLUGIN_LICENSE = "GPL-2.0"
PLUGIN_LICENSE_URL = "https://www.gnu.org/licenses/gpl-2.0.txt"

from picard.album import Album
from picard.ui.itemviews import BaseAction, register_album_action

class RemovePerfectAlbums(BaseAction):
    NAME = 'Remove perfect albums'

    def callback(self, objs):
        for album in objs:
            if isinstance(album, Album) and album.is_complete()\
                and album.get_num_unmatched_files() == 0\
                and album.get_num_matched_tracks() == len(list(album.
↪iterfiles()))\
                and album.get_num_unsaved_files() == 0 and album.loaded ==
↪True:
                self.tagger.remove_album(album)

register_album_action(RemovePerfectAlbums())
```

Use `register_x_action` where ‘x’ is “`album`”, “`track`”, “`file`”, “`cluster`” or “`clusterlist`”.

## 17.2 Appendix B: Tag Mapping

The following is a mapping between Picard internal tag names and those used by various tagging formats. The mapping is also available as a [table](#) and a [spreadsheet](#).

### 17.2.1 AcoustID

|                   |                                   |
|-------------------|-----------------------------------|
| Internal Name     | acoustid_id                       |
| ID3v2             | TXXX:Acoustid Id                  |
| Vorbis            | ACOUSTID_ID                       |
| APEv2             | ACOUSTID_ID                       |
| iTunes MP4        | ----:com.apple.iTunes:Acoustid Id |
| ASF/Windows Media | Acoustid/Id                       |
| RIFF INFO         | n/a                               |

### 17.2.2 AcoustID Fingerprint

|                   |  |
|-------------------|--|
| Internal Name     | acoustid_fingerprint                       |
| ID3v2             | TXXX:Acoustid Fingerprint                  |
| Vorbis            | ACOUSTID_FINGERPRINT                       |
| APEv2             | ACOUSTID_FINGERPRINT                       |
| iTunes MP4        | ----:com.apple.iTunes:Acoustid Fingerprint |
| ASF/Windows Media | Acoustid/Fingerprint                       |
| RIFF INFO         | n/a  |

### 17.2.3 Album

|                   |               |
|-------------------|---------------|
| Internal Name     | album         |
| ID3v2             | TALB          |
| Vorbis            | ALBUM         |
| APEv2             | Album         |
| iTunes MP4        | ©alb          |
| ASF/Windows Media | WM/AlbumTitle |
| RIFF INFO         | IPRD          |

### 17.2.4 Album Artist

|                   |                |
|-------------------|----------------|
| Internal Name     | albumartist    |
| ID3v2             | TPE2           |
| Vorbis            | ALBUMARTIST    |
| APEv2             | Album Artist   |
| iTunes MP4        | aART           |
| ASF/Windows Media | WM/AlbumArtist |
| RIFF INFO         | n/a            |

### 17.2.5 Album Artist Sort Order

|                   |   |
|-------------------|---|
| Internal Name     | albumartistsort                                       |
| ID3v2             | TS02 (Picard>=1.2) TXXX:ALBUMARTISTSORT (Picard<=1.1) |
| Vorbis            | ALBUMARTISTSORT                                       |
| APEv2             | ALBUMARTISTSORT                                       |
| iTunes MP4        | soaa  |
| ASF/Windows Media | WM/AlbumArtistSortOrder                               |
| RIFF INFO         | n/a   |

### 17.2.6 Album Sort Order <sup>[4]</sup>

|                   |                   |
|-------------------|-------------------|
| Internal Name     | albumsrt          |
| ID3v2             | TS0A              |
| Vorbis            | ALBUMSORT         |
| APEv2             | ALBUMSORT         |
| iTunes MP4        | soal              |
| ASF/Windows Media | WM/AlbumSortOrder |
| RIFF INFO         | n/a               |

### 17.2.7 Arranger

|                   |   |
|-------------------|---|
| Internal Name     | arranger  |
| ID3v2             | TIPL:arranger (ID3v2.4) IPLS:arranger (ID3v2.3) |
| Vorbis            | ARRANGER  |
| APEv2             | Arranger  |
| iTunes MP4        | n/a   |
| ASF/Windows Media | n/a   |
| RIFF INFO         | n/a   |

### 17.2.8 Artist

|                   |        |
|-------------------|--------|
| Internal Name     | artist |
| ID3v2             | TPE1   |
| Vorbis            | ARTIST |
| APEv2             | Artist |
| iTunes MP4        | ©ART   |
| ASF/Windows Media | Author |
| RIFF INFO         | IART   |

### 17.2.9 Artist Sort Order

|                   |                    |
|-------------------|--------------------|
| Internal Name     | artistsort         |
| ID3v2             | TSOP               |
| Vorbis            | ARTISTSORT         |
| APEv2             | ARTISTSORT         |
| iTunes MP4        | soar               |
| ASF/Windows Media | WM/ArtistSortOrder |
| RIFF INFO         | n/a                |

### 17.2.10 Artists

|                   |                               |
|-------------------|-------------------------------|
| Internal Name     | artists                       |
| ID3v2             | TXXX:ARTISTS                  |
| Vorbis            | ARTISTS                       |
| APEv2             | Artists                       |
| iTunes MP4        | ----:com.apple.iTunes:ARTISTS |
| ASF/Windows Media | WM/ARTISTS                    |
| RIFF INFO         | n/a                           |

### 17.2.11 ASIN

|                   |                            |
|-------------------|----------------------------|
| Internal Name     | asin                       |
| ID3v2             | TXXX:ASIN                  |
| Vorbis            | ASIN                       |
| APEv2             | ASIN                       |
| iTunes MP4        | ----:com.apple.iTunes:ASIN |
| ASF/Windows Media | ASIN                       |
| RIFF INFO         | n/a                        |

## 17.2.12 Barcode

|                   |                               |
|-------------------|-------------------------------|
| Internal Name     | barcode                       |
| ID3v2             | TXXX:BARCODE                  |
| Vorbis            | BARCODE                       |
| APEv2             | Barcode                       |
| iTunes MP4        | ----:com.apple.iTunes:BARCODE |
| ASF/Windows Media | WM/Barcode                    |
| RIFF INFO         | n/a                           |

## 17.2.13 BPM <sup>[4]</sup>

|                   |                   |
|-------------------|-------------------|
| Internal Name     | bpm               |
| ID3v2             | TBPM              |
| Vorbis            | BPM               |
| APEv2             | BPM               |
| iTunes MP4        | tempo             |
| ASF/Windows Media | WM/BeatsPerMinute |
| RIFF INFO         | n/a               |

## 17.2.14 Catalog Number

|                   |                                     |
|-------------------|-------------------------------------|
| Internal Name     | catalognumber                       |
| ID3v2             | TXXX:CATALOGNUMBER                  |
| Vorbis            | CATALOGNUMBER                       |
| APEv2             | CatalogNumber                       |
| iTunes MP4        | ----:com.apple.iTunes:CATALOGNUMBER |
| ASF/Windows Media | WM/CatalogNo                        |
| RIFF INFO         | n/a                                 |

## 17.2.15 Comment <sup>[4]</sup>

|                   |                     |
|-------------------|---------------------|
| Internal Name     | comment:description |
| ID3v2             | COMM:description    |
| Vorbis            | COMMENT             |
| APEv2             | Comment             |
| iTunes MP4        | ©cmt                |
| ASF/Windows Media | Description         |
| RIFF INFO         | ICMT                |

**17.2.16 Compilation (iTunes) <sup>[5]</sup>**

|                   |                  |
|-------------------|------------------|
| Internal Name     | compilation      |
| ID3v2             | TCMP             |
| Vorbis            | COMPILATION      |
| APEv2             | Compilation      |
| iTunes MP4        | cpil             |
| ASF/Windows Media | WM/IsCompilation |
| RIFF INFO         | n/a              |

**17.2.17 Composer**

|                   |             |
|-------------------|-------------|
| Internal Name     | composer    |
| ID3v2             | TCOM        |
| Vorbis            | COMPOSER    |
| APEv2             | Composer    |
| iTunes MP4        | ©wrt        |
| ASF/Windows Media | WM/Composer |
| RIFF INFO         | IMUS        |

**17.2.18 Composer Sort Order**

|                   |  |
|-------------------|--|
| Internal Name     | composersort                                       |
| ID3v2             | TSOC (Picard>=1.3) TXXX:COMPOSERSORT (Picard<=1.2) |
| Vorbis            | COMPOSERSORT                                       |
| APEv2             | COMPOSERSORT                                       |
| iTunes MP4        | soco   |
| ASF/Windows Media | WM/ComposerSortOrder (Picard>=1.3)                 |
| RIFF INFO         | n/a  |

**17.2.19 Conductor**

|                   |                                 |
|-------------------|---------------------------------|
| Internal Name     | conductor                       |
| ID3v2             | TPE3                            |
| Vorbis            | CONDUCTOR                       |
| APEv2             | Conductor                       |
| iTunes MP4        | ----:com.apple.iTunes:CONDUCTOR |
| ASF/Windows Media | WM/Conductor                    |
| RIFF INFO         | n/a                             |

### 17.2.20 Copyright <sup>[4]</sup>

|                   |           |
|-------------------|-----------|
| Internal Name     | copyright |
| ID3v2             | TCOP      |
| Vorbis            | COPYRIGHT |
| APEv2             | Copyright |
| iTunes MP4        | cprt      |
| ASF/Windows Media | Copyright |
| RIFF INFO         | ICOP      |

### 17.2.21 Director

|                   |                     |
|-------------------|---------------------|
| Internal Name     | director            |
| ID3v2             | TXXX:DIRECTOR       |
| Vorbis            | DIRECTOR            |
| APEv2             | Director            |
| iTunes MP4        | mdir <sup>[9]</sup> |
| ASF/Windows Media | WM/Director         |
| RIFF INFO         | n/a                 |

### 17.2.22 Disc Number

|                   |              |
|-------------------|--------------|
| Internal Name     | discnumber   |
| ID3v2             | TP0S         |
| Vorbis            | DISCNUMBER   |
| APEv2             | Disc         |
| iTunes MP4        | disk         |
| ASF/Windows Media | WM/PartOfSet |
| RIFF INFO         | n/a          |

### 17.2.23 Disc Subtitle

|                   |                                    |
|-------------------|------------------------------------|
| Internal Name     | discsubtitle                       |
| ID3v2             | TSST (ID3v2.4 only)                |
| Vorbis            | DISCSUBTITLE                       |
| APEv2             | DiscSubtitle                       |
| iTunes MP4        | ----:com.apple.iTunes:DISCSUBTITLE |
| ASF/Windows Media | WM/SetSubTitle                     |
| RIFF INFO         | n/a                                |

**17.2.24 Encoded By [4]**

|                   |              |
|-------------------|--------------|
| Internal Name     | encodedby    |
| ID3v2             | TENC         |
| Vorbis            | ENCODEDBY    |
| APEv2             | EncodedBy    |
| iTunes MP4        | ©too         |
| ASF/Windows Media | WM/EncodedBy |
| RIFF INFO         | IENC         |

**17.2.25 Encoder Settings [4]**

|                   |                                     |
|-------------------|-------------------------------------|
| Internal Name     | encodersettings                     |
| ID3v2             | TSSE                                |
| Vorbis            | ENCODERSETTINGS                     |
| APEv2             | EncoderSettings                     |
| iTunes MP4        | n/a                                 |
| ASF/Windows Media | WM/EncodingSettings (Picard>=1.3.1) |
| RIFF INFO         | n/a                                 |

**17.2.26 Engineer**

|                   |   |
|-------------------|---|
| Internal Name     | engineer  |
| ID3v2             | TIPL:engineer (ID3v2.4) IPLS:engineer (ID3v2.3) |
| Vorbis            | ENGINEER  |
| APEv2             | Engineer  |
| iTunes MP4        | - - - :com.apple.iTunes:ENGINEER                |
| ASF/Windows Media | WM/Engineer                                     |
| RIFF INFO         | IENG  |

**17.2.27 Gapless Playback [4]**

|                   |         |
|-------------------|---------|
| Internal Name     | gapless |
| ID3v2             | n/a     |
| Vorbis            | n/a     |
| APEv2             | n/a     |
| iTunes MP4        | pgap    |
| ASF/Windows Media | n/a     |
| RIFF INFO         | n/a     |

## 17.2.28 Genre

|                   |          |
|-------------------|----------|
| Internal Name     | genre    |
| ID3v2             | TCON     |
| Vorbis            | GENRE    |
| APEv2             | Genre    |
| iTunes MP4        | ©gen     |
| ASF/Windows Media | WM/Genre |
| RIFF INFO         | IGNR     |

## 17.2.29 Grouping <sup>[3]</sup>

|                   |                            |
|-------------------|----------------------------|
| Internal Name     | grouping                   |
| ID3v2             | TIT1 GRP1 <sup>[8]</sup>   |
| Vorbis            | GROUPING                   |
| APEv2             | Grouping                   |
| iTunes MP4        | ©grp                       |
| ASF/Windows Media | WM/ContentGroupDescription |
| RIFF INFO         | n/a                        |

## 17.2.30 Initial Key

|                   |                                  |
|-------------------|----------------------------------|
| Internal Name     | key (Picard>=1.4)                |
| ID3v2             | TKEY                             |
| Vorbis            | KEY                              |
| APEv2             | KEY                              |
| iTunes MP4        | ----:com.apple.iTunes:initialkey |
| ASF/Windows Media | WM/InitialKey                    |
| RIFF INFO         | n/a                              |

## 17.2.31 ISRC

|                   |                            |
|-------------------|----------------------------|
| Internal Name     | isrc                       |
| ID3v2             | TSRC                       |
| Vorbis            | ISRC                       |
| APEv2             | ISRC                       |
| iTunes MP4        | ----:com.apple.iTunes:ISRC |
| ASF/Windows Media | WM/ISRC                    |
| RIFF INFO         | n/a                        |

### 17.2.32 Language

|                   |                                |
|-------------------|--------------------------------|
| Internal Name     | language                       |
| ID3v2             | TLAN                           |
| Vorbis            | LANGUAGE                       |
| APEv2             | Language                       |
| iTunes MP4        | ----:com.apple.iTunes:LANGUAGE |
| ASF/Windows Media | WM/Language                    |
| RIFF INFO         | ILNG                           |

### 17.2.33 License <sup>[6, 7]</sup>

|                   |  |
|-------------------|--|
| Internal Name     | license  |
| ID3v2             | WCOP (single URL) TXXX:LICENSE (multiple or non-URL) |
| Vorbis            | LICENSE  |
| APEv2             | LICENSE  |
| iTunes MP4        | ----:com.apple.iTunes:LICENSE                        |
| ASF/Windows Media | n/a  |
| RIFF INFO         | n/a  |

### 17.2.34 Lyricist

|                   |                                |
|-------------------|--------------------------------|
| Internal Name     | lyricist                       |
| ID3v2             | TEXT                           |
| Vorbis            | LYRICIST                       |
| APEv2             | Lyricist                       |
| iTunes MP4        | ----:com.apple.iTunes:LYRICIST |
| ASF/Windows Media | WM/Writer                      |
| RIFF INFO         | n/a                            |

### 17.2.35 Lyrics <sup>[4]</sup>

|                   |                    |
|-------------------|--------------------|
| Internal Name     | lyrics:description |
| ID3v2             | USLT:description   |
| Vorbis            | LYRICS             |
| APEv2             | Lyrics             |
| iTunes MP4        | ©lyr               |
| ASF/Windows Media | WM/Lyrics          |
| RIFF INFO         | n/a                |

### 17.2.36 Media

|                   |                             |
|-------------------|-----------------------------|
| Internal Name     | media                       |
| ID3v2             | TMED                        |
| Vorbis            | MEDIA                       |
| APEv2             | Media                       |
| iTunes MP4        | ----:com.apple.iTunes:MEDIA |
| ASF/Windows Media | WM/Media                    |
| RIFF INFO         | IMED                        |

### 17.2.37 Mix-DJ

|                   |   |
|-------------------|---|
| Internal Name     | djmixer                                     |
| ID3v2             | TIPL:DJ-mix (ID3v2.4) IPLS:DJ-mix (ID3v2.3) |
| Vorbis            | DJMIXER                                     |
| APEv2             | DJMixer                                     |
| iTunes MP4        | ----:com.apple.iTunes:DJMIXER               |
| ASF/Windows Media | WM/DJMixer                                  |
| RIFF INFO         | n/a   |

### 17.2.38 Mixer

|                   |                                       |
|-------------------|---------------------------------------|
| Internal Name     | mixer                                 |
| ID3v2             | TIPL:mix (ID3v2.4) IPLS:mix (ID3v2.3) |
| Vorbis            | MIXER                                 |
| APEv2             | Mixer                                 |
| iTunes MP4        | ----:com.apple.iTunes:MIXER           |
| ASF/Windows Media | WM/Mixer                              |
| RIFF INFO         | n/a                                   |

### 17.2.39 Mood [3]

|                   |                            |
|-------------------|----------------------------|
| Internal Name     | mood                       |
| ID3v2             | TM00 (ID3v2.4 only)        |
| Vorbis            | MOOD                       |
| APEv2             | Mood                       |
| iTunes MP4        | ----:com.apple.iTunes:MOOD |
| ASF/Windows Media | WM/Mood                    |
| RIFF INFO         | n/a                        |

**17.2.40 Movement <sup>[4]</sup>**

|                   |                        |
|-------------------|------------------------|
| Internal Name     | movement (Picard>=2.1) |
| ID3v2             | MVNM                   |
| Vorbis            | MOVEMENTNAME           |
| APEv2             | MOVEMENTNAME           |
| iTunes MP4        | ©mvn                   |
| ASF/Windows Media | n/a                    |
| RIFF INFO         | n/a                    |

**17.2.41 Movement Count <sup>[4]</sup>**

|                   |                             |
|-------------------|-----------------------------|
| Internal Name     | movementtotal (Picard>=2.1) |
| ID3v2             | MVIN                        |
| Vorbis            | MOVEMENTTOTAL               |
| APEv2             | MOVEMENTTOTAL               |
| iTunes MP4        | mvc                         |
| ASF/Windows Media | n/a                         |
| RIFF INFO         | n/a                         |

**17.2.42 Movement Number <sup>[4]</sup>**

|                   |                              |
|-------------------|------------------------------|
| Internal Name     | movementnumber (Picard>=2.1) |
| ID3v2             | MVIN                         |
| Vorbis            | MOVEMENT                     |
| APEv2             | MOVEMENT                     |
| iTunes MP4        | mvi                          |
| ASF/Windows Media | n/a                          |
| RIFF INFO         | n/a                          |

**17.2.43 MusicBrainz Artist ID**

|                   |   |
|-------------------|---|
| Internal Name     | musicbrainz_artistid                        |
| ID3v2             | TXXX:MusicBrainz Artist Id                  |
| Vorbis            | MUSICBRAINZ_ARTISTID                        |
| APEv2             | MUSICBRAINZ_ARTISTID                        |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Artist Id |
| ASF/Windows Media | MusicBrainz/Artist Id                       |
| RIFF INFO         | n/a   |

### 17.2.44 MusicBrainz Disc ID

|                   |   |
|-------------------|---|
| Internal Name     | musicbrainz_discid                        |
| ID3v2             | TXXX:MusicBrainz Disc Id                  |
| Vorbis            | MUSICBRAINZ_DISCID                        |
| APEv2             | MUSICBRAINZ_DISCID                        |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Disc Id |
| ASF/Windows Media | MusicBrainz/Disc Id                       |
| RIFF INFO         | n/a                                       |

### 17.2.45 MusicBrainz Original Artist ID

|                   |  |
|-------------------|--|
| Internal Name     | musicbrainz_originalartistid                                       |
| ID3v2             | TXXX:MusicBrainz Original Artist Id                                |
| Vorbis            | MUSICBRAINZ_ORIGINALARTISTID                                       |
| APEv2             | n/a  |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Original Artist Id (Picard>=2.1) |
| ASF/Windows Media | MusicBrainz/Original Artist Id (Picard>=2.1)                       |
| RIFF INFO         | n/a  |

### 17.2.46 MusicBrainz Original Release ID

|                   |   |
|-------------------|---|
| Internal Name     | musicbrainz_originalalbumid                                       |
| ID3v2             | TXXX:MusicBrainz Original Album Id                                |
| Vorbis            | MUSICBRAINZ_ORIGINALALBUMID                                       |
| APEv2             | n/a   |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Original Album Id (Picard>=2.1) |
| ASF/Windows Media | MusicBrainz/Original Album Id (Picard>=2.1)                       |
| RIFF INFO         | n/a   |

### 17.2.47 MusicBrainz Recording ID

|                   |  |
|-------------------|--|
| Internal Name     | musicbrainz_recordingid                    |
| ID3v2             | UFID:http://musicbrainz.org                |
| Vorbis            | MUSICBRAINZ_TRACKID                        |
| APEv2             | MUSICBRAINZ_TRACKID                        |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Track Id |
| ASF/Windows Media | MusicBrainz/Track Id                       |
| RIFF INFO         | n/a  |

### 17.2.48 MusicBrainz Release Artist ID

|                   |   |
|-------------------|---|
| Internal Name     | musicbrainz_albumartistid                         |
| ID3v2             | TXXX:MusicBrainz Album Artist Id                  |
| Vorbis            | MUSICBRAINZ_ALBUMARTISTID                         |
| APEv2             | MUSICBRAINZ_ALBUMARTISTID                         |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Album Artist Id |
| ASF/Windows Media | MusicBrainz/Album Artist Id                       |
| RIFF INFO         | n/a   |

### 17.2.49 MusicBrainz Release Group ID

|                   |  |
|-------------------|--|
| Internal Name     | musicbrainz_releasgroupid                          |
| ID3v2             | TXXX:MusicBrainz Release Group Id                  |
| Vorbis            | MUSICBRAINZ_RELEASEGROUPID                         |
| APEv2             | MUSICBRAINZ_RELEASEGROUPID                         |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Release Group Id |
| ASF/Windows Media | MusicBrainz/Release Group Id                       |
| RIFF INFO         | n/a  |

### 17.2.50 MusicBrainz Release ID

|                   |  |
|-------------------|--|
| Internal Name     | musicbrainz_albumid                        |
| ID3v2             | TXXX:MusicBrainz Album Id                  |
| Vorbis            | MUSICBRAINZ_ALBUMID                        |
| APEv2             | MUSICBRAINZ_ALBUMID                        |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Album Id |
| ASF/Windows Media | MusicBrainz/Album Id                       |
| RIFF INFO         | n/a  |

### 17.2.51 MusicBrainz Track ID

|                   |  |
|-------------------|--|
| Internal Name     | musicbrainz_trackid                                |
| ID3v2             | TXXX:MusicBrainz Release Track Id                  |
| Vorbis            | MUSICBRAINZ_RELEASETRACKID                         |
| APEv2             | MUSICBRAINZ_RELEASETRACKID                         |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Release Track Id |
| ASF/Windows Media | MusicBrainz/Release Track Id                       |
| RIFF INFO         | n/a  |

### 17.2.52 MusicBrainz TRM ID

|                   |  |
|-------------------|--|
| Internal Name     | musicbrainz_trmid (deprecated)           |
| ID3v2             | TXXX:MusicBrainz TRM Id                  |
| Vorbis            | MUSICBRAINZ_TRMID                        |
| APEv2             | MUSICBRAINZ_TRMID                        |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz TRM Id |
| ASF/Windows Media | MusicBrainz/TRM Id                       |
| RIFF INFO         | n/a                                      |

### 17.2.53 MusicBrainz Work ID

|                   |   |
|-------------------|---|
| Internal Name     | musicbrainz_workid                        |
| ID3v2             | TXXX:MusicBrainz Work Id                  |
| Vorbis            | MUSICBRAINZ_WORKID                        |
| APEv2             | MUSICBRAINZ_WORKID                        |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Work Id |
| ASF/Windows Media | MusicBrainz/Work Id                       |
| RIFF INFO         | n/a                                       |

### 17.2.54 MusicIP Fingerprint

|                   |  |
|-------------------|--|
| Internal Name     | musicip_fingerprint                              |
| ID3v2             | TXXX:MusicMagic Fingerprint                      |
| Vorbis            | FINGERPRINT=MusicMagic Fingerprint {fingerprint} |
| APEv2             | n/a  |
| iTunes MP4        | ----:com.apple.iTunes:fingerprint                |
| ASF/Windows Media | n/a  |
| RIFF INFO         | n/a  |

### 17.2.55 MusicIP PUID

|                   |                                    |
|-------------------|------------------------------------|
| Internal Name     | musicip_puid                       |
| ID3v2             | TXXX:MusicIP PUID                  |
| Vorbis            | MUSICIP_PUID                       |
| APEv2             | MUSICIP_PUID                       |
| iTunes MP4        | ----:com.apple.iTunes:MusicIP PUID |
| ASF/Windows Media | MusicIP/PUID                       |
| RIFF INFO         | n/a                                |

### 17.2.56 Original Album

|                   |                                     |
|-------------------|-------------------------------------|
| Internal Name     | originalalbum                       |
| ID3v2             | TOAL                                |
| Vorbis            | n/a                                 |
| APEv2             | n/a                                 |
| iTunes MP4        | n/a                                 |
| ASF/Windows Media | WM/OriginalAlbumTitle (Picard>=2.1) |
| RIFF INFO         | n/a                                 |

### 17.2.57 Original Artist

|                   |                                 |
|-------------------|---------------------------------|
| Internal Name     | originalartist                  |
| ID3v2             | TOPE                            |
| Vorbis            | n/a                             |
| APEv2             | Original Artist (Picard>=2.1)   |
| iTunes MP4        | n/a                             |
| ASF/Windows Media | WM/OriginalArtist (Picard>=2.1) |
| RIFF INFO         | n/a                             |

### 17.2.58 Original Filename

|                   |                                |
|-------------------|--------------------------------|
| Internal Name     | originalfilename (Picard>=2.3) |
| ID3v2             | TOFN                           |
| Vorbis            | ORIGINALFILENAME               |
| APEv2             | ORIGINALFILENAME               |
| iTunes MP4        | n/a                            |
| ASF/Windows Media | WM/OriginalFilename            |
| RIFF INFO         | n/a                            |

### 17.2.59 Original Release Date <sup>[1]</sup>

|                   |   |
|-------------------|---|
| Internal Name     | originaldate  |
| ID3v2             | TDOR (ID3v2.4) TORY (ID3v2.3)   |
| Vorbis            | ORIGINALDATE  |
| APEv2             | n/a   |
| iTunes MP4        | n/a   |
| ASF/Windows Media | WM/OriginalReleaseTime (Picard>=1.3.1) WM/OriginalReleaseYear (Picard<=1.3.0) |
| RIFF INFO         | n/a   |

## 17.2.60 Original Release Year <sup>[1]</sup>

|                   |  |
|-------------------|--|
| Internal Name     | originalyear                           |
| ID3v2             | n/a                                    |
| Vorbis            | ORIGINALYEAR                           |
| APEv2             | ORIGINALYEAR                           |
| iTunes MP4        | n/a                                    |
| ASF/Windows Media | WM/OriginalReleaseYear (Picard>=1.3.1) |
| RIFF INFO         | n/a                                    |

## 17.2.61 Performer

|                   |   |
|-------------------|---|
| Internal Name     | performer:instrument                                |
| ID3v2             | TMCL:instrument (ID3v2.4) IPLS:instrument (ID3v2.3) |
| Vorbis            | PERFORMER={artist} (instrument)                     |
| APEv2             | Performer={artist} (instrument)                     |
| iTunes MP4        | n/a   |
| ASF/Windows Media | n/a   |
| RIFF INFO         | n/a   |

### See also:

Please refer to [Relationship Types / Artist-Release / Performer](#) , [Relationship Types / Artist-Release / Vocal](#) , [Relationship Types / Artist-Release / Instrument](#) , [Relationship Types / Artist-Recording / Performer](#) , [Relationship Types / Artist-Recording / Vocal](#) , and [Relationship Types / Artist-Recording / Instrument](#) for more information.

## 17.2.62 Podcast <sup>[4]</sup>

|                   |         |
|-------------------|---------|
| Internal Name     | podcast |
| ID3v2             | n/a     |
| Vorbis            | n/a     |
| APEv2             | n/a     |
| iTunes MP4        | pcst    |
| ASF/Windows Media | n/a     |
| RIFF INFO         | n/a     |

**17.2.63 Podcast URL [4]**

|                   |            |
|-------------------|------------|
| Internal Name     | podcasturl |
| ID3v2             | n/a        |
| Vorbis            | n/a        |
| APEv2             | n/a        |
| iTunes MP4        | purl       |
| ASF/Windows Media | n/a        |
| RIFF INFO         | n/a        |

**17.2.64 Producer**

|                   |   |
|-------------------|---|
| Internal Name     | producer  |
| ID3v2             | TIPL:producer (ID3v2.4) IPLS:producer (ID3v2.3) |
| Vorbis            | PRODUCER  |
| APEv2             | Producer  |
| iTunes MP4        | ----:com.apple.iTunes:PRODUCER                  |
| ASF/Windows Media | WM/Producer                                     |
| RIFF INFO         | IPRO  |

**17.2.65 Rating**

|                   |                     |
|-------------------|---------------------|
| Internal Name     | _rating             |
| ID3v2             | POPM                |
| Vorbis            | RATING:user@email   |
| APEv2             | n/a                 |
| iTunes MP4        | n/a                 |
| ASF/Windows Media | WM/SharedUserRating |
| RIFF INFO         | n/a                 |

**17.2.66 Record Label**

|                   |                             |
|-------------------|-----------------------------|
| Internal Name     | label                       |
| ID3v2             | TPUB                        |
| Vorbis            | LABEL                       |
| APEv2             | Label                       |
| iTunes MP4        | ----:com.apple.iTunes:LABEL |
| ASF/Windows Media | WM/Publisher                |
| RIFF INFO         | n/a                         |

## 17.2.67 Release Country

|                   |   |
|-------------------|---|
| Internal Name     | releasecountry  |
| ID3v2             | TXXX:MusicBrainz Album Release Country                  |
| Vorbis            | RELEASECOUNTRY  |
| APEv2             | RELEASECOUNTRY  |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Album Release Country |
| ASF/Windows Media | MusicBrainz/Album Release Country                       |
| RIFF INFO         | ICNT  |

## 17.2.68 Release Date

|                   |                                      |
|-------------------|--------------------------------------|
| Internal Name     | date                                 |
| ID3v2             | TDRC (ID3v2.4) TYER + TDAT (ID3v2.3) |
| Vorbis            | DATE                                 |
| APEv2             | Year                                 |
| iTunes MP4        | ©day                                 |
| ASF/Windows Media | WM/Year                              |
| RIFF INFO         | ICRD                                 |

## 17.2.69 Release Status

|                   |  |
|-------------------|--|
| Internal Name     | releasestatus                                  |
| ID3v2             | TXXX:MusicBrainz Album Status                  |
| Vorbis            | RELEASESTATUS                                  |
| APEv2             | MUSICBRAINZ_ALBUMSTATUS                        |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Album Status |
| ASF/Windows Media | MusicBrainz/Album Status                       |
| RIFF INFO         | n/a  |

## 17.2.70 Release Type

|                   |  |
|-------------------|--|
| Internal Name     | releasetype                                  |
| ID3v2             | TXXX:MusicBrainz Album Type                  |
| Vorbis            | RELEASETYPE                                  |
| APEv2             | MUSICBRAINZ_ALBUMTYPE                        |
| iTunes MP4        | ----:com.apple.iTunes:MusicBrainz Album Type |
| ASF/Windows Media | MusicBrainz/Album Type                       |
| RIFF INFO         | n/a  |

### 17.2.71 Remixer

|                   |                                 |
|-------------------|---------------------------------|
| Internal Name     | remixer                         |
| ID3v2             | TPE4                            |
| Vorbis            | REMIXER                         |
| APEv2             | MixArtist                       |
| iTunes MP4        | - - - :com.apple.iTunes:REMIXER |
| ASF/Windows Media | WM/ModifiedBy                   |
| RIFF INFO         | n/a                             |

### 17.2.72 ReplayGain Album Gain

|                   |   |
|-------------------|---|
| Internal Name     | replaygain_album_gain (Picard>=2.2)           |
| ID3v2             | TXXX:REPLAYGAIN_ALBUM_GAIN                    |
| Vorbis            | REPLAYGAIN_ALBUM_GAIN                         |
| APEv2             | REPLAYGAIN_ALBUM_GAIN                         |
| iTunes MP4        | - - - :com.apple.iTunes:REPLAYGAIN_ALBUM_GAIN |
| ASF/Windows Media | REPLAYGAIN_ALBUM_GAIN                         |
| RIFF INFO         | n/a   |

### 17.2.73 ReplayGain Album Peak

|                   |   |
|-------------------|---|
| Internal Name     | replaygain_album_peak (Picard>=2.2)           |
| ID3v2             | TXXX:REPLAYGAIN_ALBUM_PEAK                    |
| Vorbis            | REPLAYGAIN_ALBUM_PEAK                         |
| APEv2             | REPLAYGAIN_ALBUM_PEAK                         |
| iTunes MP4        | - - - :com.apple.iTunes:REPLAYGAIN_ALBUM_PEAK |
| ASF/Windows Media | REPLAYGAIN_ALBUM_PEAK                         |
| RIFF INFO         | n/a   |

### 17.2.74 ReplayGain Album Range

|                   |  |
|-------------------|--|
| Internal Name     | replaygain_album_range (Picard>=2.2)           |
| ID3v2             | TXXX:REPLAYGAIN_ALBUM_RANGE                    |
| Vorbis            | REPLAYGAIN_ALBUM_RANGE                         |
| APEv2             | REPLAYGAIN_ALBUM_RANGE                         |
| iTunes MP4        | - - - :com.apple.iTunes:REPLAYGAIN_ALBUM_RANGE |
| ASF/Windows Media | REPLAYGAIN_ALBUM_RANGE                         |
| RIFF INFO         | n/a  |

### 17.2.75 ReplayGain Reference Loudness

|                   |  |
|-------------------|--|
| Internal Name     | replaygain_reference_loudness (Picard>=2.2)          |
| ID3v2             | TXXX:REPLAYGAIN_REFERENCELOUDNESS                    |
| Vorbis            | REPLAYGAIN_REFERENCELOUDNESS                         |
| APEv2             | REPLAYGAIN_REFERENCELOUDNESS                         |
| iTunes MP4        | - - - :com.apple.iTunes:REPLAYGAIN_REFERENCELOUDNESS |
| ASF/Windows Media | REPLAYGAIN_REFERENCELOUDNESS                         |
| RIFF INFO         | n/a  |

### 17.2.76 ReplayGain Track Gain

|                   |   |
|-------------------|---|
| Internal Name     | replaygain_track_gain (Picard>=2.2)           |
| ID3v2             | TXXX:REPLAYGAIN_TRACK_GAIN                    |
| Vorbis            | REPLAYGAIN_TRACK_GAIN                         |
| APEv2             | REPLAYGAIN_TRACK_GAIN                         |
| iTunes MP4        | - - - :com.apple.iTunes:REPLAYGAIN_TRACK_GAIN |
| ASF/Windows Media | REPLAYGAIN_TRACK_GAIN                         |
| RIFF INFO         | n/a   |

### 17.2.77 ReplayGain Track Peak

|                   |   |
|-------------------|---|
| Internal Name     | replaygain_track_peak (Picard>=2.2)           |
| ID3v2             | TXXX:REPLAYGAIN_TRACK_PEAK                    |
| Vorbis            | REPLAYGAIN_TRACK_PEAK                         |
| APEv2             | REPLAYGAIN_TRACK_PEAK                         |
| iTunes MP4        | - - - :com.apple.iTunes:REPLAYGAIN_TRACK_PEAK |
| ASF/Windows Media | REPLAYGAIN_TRACK_PEAK                         |
| RIFF INFO         | n/a   |

### 17.2.78 ReplayGain Track Range

|                   |  |
|-------------------|--|
| Internal Name     | replaygain_track_range (Picard>=2.2)           |
| ID3v2             | TXXX:REPLAYGAIN_TRACK_RANGE                    |
| Vorbis            | REPLAYGAIN_TRACK_RANGE                         |
| APEv2             | REPLAYGAIN_TRACK_RANGE                         |
| iTunes MP4        | - - - :com.apple.iTunes:REPLAYGAIN_TRACK_RANGE |
| ASF/Windows Media | REPLAYGAIN_TRACK_RANGE                         |
| RIFF INFO         | n/a  |

**17.2.79 Script**

|                   |                              |
|-------------------|------------------------------|
| Internal Name     | script                       |
| ID3v2             | TXXX:SCRIPT                  |
| Vorbis            | SCRIPT                       |
| APEv2             | Script                       |
| iTunes MP4        | ----:com.apple.iTunes:SCRIPT |
| ASF/Windows Media | WM/Script                    |
| RIFF INFO         | n/a                          |

**17.2.80 Show Name <sup>[4]</sup>**

|                   |      |
|-------------------|------|
| Internal Name     | show |
| ID3v2             | n/a  |
| Vorbis            | n/a  |
| APEv2             | n/a  |
| iTunes MP4        | tvsh |
| ASF/Windows Media | n/a  |
| RIFF INFO         | n/a  |

**17.2.81 Show Name Sort Order <sup>[4]</sup>**

|                   |         |
|-------------------|---------|
| Internal Name     | showsrt |
| ID3v2             | n/a     |
| Vorbis            | n/a     |
| APEv2             | n/a     |
| iTunes MP4        | sosn    |
| ASF/Windows Media | n/a     |
| RIFF INFO         | n/a     |

**17.2.82 Show Work & Movement <sup>[4]</sup>**

|                   |                            |
|-------------------|----------------------------|
| Internal Name     | showmovement (Picard>=2.1) |
| ID3v2             | TXXX:SHOWMOVEMENT          |
| Vorbis            | SHOWMOVEMENT               |
| APEv2             | SHOWMOVEMENT               |
| iTunes MP4        | shwm                       |
| ASF/Windows Media | n/a                        |
| RIFF INFO         | n/a                        |

### 17.2.83 Subtitle [4]

|                   |                                |
|-------------------|--------------------------------|
| Internal Name     | subtitle                       |
| ID3v2             | TIT3                           |
| Vorbis            | SUBTITLE                       |
| APEv2             | Subtitle                       |
| iTunes MP4        | ----:com.apple.iTunes:SUBTITLE |
| ASF/Windows Media | WM/SubTitle                    |
| RIFF INFO         | n/a                            |

### 17.2.84 Total Discs

|                   |                              |
|-------------------|------------------------------|
| Internal Name     | totaldiscs                   |
| ID3v2             | TP0S                         |
| Vorbis            | DISCTOTAL and TOTALDISCS     |
| APEv2             | Disc                         |
| iTunes MP4        | disk                         |
| ASF/Windows Media | WM/Part0fSet (Picard>=1.3.1) |
| RIFF INFO         | n/a                          |

### 17.2.85 Total Tracks

|                   |                            |
|-------------------|----------------------------|
| Internal Name     | totaltracks                |
| ID3v2             | TRCK                       |
| Vorbis            | TRACKTOTAL and TOTALTRACKS |
| APEv2             | Track                      |
| iTunes MP4        | trkn                       |
| ASF/Windows Media | n/a                        |
| RIFF INFO         | n/a                        |

### 17.2.86 Track Number

|                   |                |
|-------------------|----------------|
| Internal Name     | tracknumber    |
| ID3v2             | TRCK           |
| Vorbis            | TRACKNUMBER    |
| APEv2             | Track          |
| iTunes MP4        | trkn           |
| ASF/Windows Media | WM/TrackNumber |
| RIFF INFO         | ITRK           |

**17.2.87 Track Title**

|                   |       |
|-------------------|-------|
| Internal Name     | title |
| ID3v2             | TIT2  |
| Vorbis            | TITLE |
| APEv2             | Title |
| iTunes MP4        | ©nam  |
| ASF/Windows Media | Title |
| RIFF INFO         | INAM  |

**17.2.88 Track Title Sort Order <sup>[4]</sup>**

|                   |                   |
|-------------------|-------------------|
| Internal Name     | titlesort         |
| ID3v2             | TSOT              |
| Vorbis            | TITLESORT         |
| APEv2             | TITLESORT         |
| iTunes MP4        | sonm              |
| ASF/Windows Media | WM/TitleSortOrder |
| RIFF INFO         | n/a               |

**17.2.89 Website (official artist website)**

|                   |                              |
|-------------------|------------------------------|
| Internal Name     | website                      |
| ID3v2             | WOAR                         |
| Vorbis            | WEBSITE                      |
| APEv2             | Weblink                      |
| iTunes MP4        | n/a                          |
| ASF/Windows Media | WM/AuthorURL (Picard>=1.3.1) |
| RIFF INFO         | n/a                          |

**17.2.90 Work Title**

|                   |                               |
|-------------------|-------------------------------|
| Internal Name     | work (Picard>=1.3)            |
| ID3v2             | TXXX:WORK TIT1 <sup>[8]</sup> |
| Vorbis            | WORK                          |
| APEv2             | WORK                          |
| iTunes MP4        | ©wrk (Picard>=2.1)            |
| ASF/Windows Media | WM/Work                       |
| RIFF INFO         | n/a                           |

### 17.2.91 Writer [2]

|                   |                           |
|-------------------|---------------------------|
| Internal Name     | writer                    |
| ID3v2             | TXXX:Writer (Picard>=1.3) |
| Vorbis            | WRITER                    |
| APEv2             | Writer                    |
| iTunes MP4        | n/a                       |
| ASF/Windows Media | n/a                       |
| RIFF INFO         | IWRI                      |

**Notes:**

1. Taken from the earliest release in the release group.
2. Used when uncertain whether composer or lyricist.
3. This is populated by LastFMPlus plugin and not by stock Picard.
4. This is not able to be populated by stock Picard. It may be used and populated by certain plugins.
5. For Picard>=1.3 this indicates a Various Artists album; for Picard<=1.2 this indicates albums with tracks by different artists which is incorrect (e.g.: an original album with a duet with a feat. artist would show as a Compilation). In neither case does this indicate a MusicBrainz Release Group subtype of compilation.
6. [Release-level license](#) relationship type.
7. [Recording-level license](#) relationship type.
8. With “Save iTunes compatible grouping and work” (since Picard>=2.1.0)
9. From iTunes Metadata Format Specification

## 17.3 Appendix C: Command Line Options

Picard can be started from the command line with the following arguments:

```
picard [-h] [-c CONFIG_FILE] [-d] [-N] [-P] [-v] [-V] [FILE [FILE ...]]
```

where the options are:

- h, --help**  
show a help message and exit
- c CONFIG\_FILE, --config-file CONFIG\_FILE**  
location of the configuration file to use
- d, --debug**  
enable debug-level logging

- M, --no-player**  
disable built-in media player
- N, --no-restore**  
do not restore window positions or sizes
- P, --no-plugins**  
do not load any plugins
- v, --version**  
display the version information and exit
- V, --long-version**  
display the long version information and exit

### FILE

the file or files to load

## 17.4 Appendix D: Keyboard Shortcuts

### 17.4.1 Main window

#### File

| Action              | Windows / Linux | macOS |
|---------------------|-----------------|-------|
| Add folder          | Ctrl+E          | ⌘+E   |
| Add files           | Ctrl+O          | ⌘+O   |
| Save selected files | Ctrl+S          | ⌘+S   |
| Quit Picard         | Ctrl+Q          | ⌘+Q   |

#### Edit

| Action                      | Windows / Linux | macOS |
|-----------------------------|-----------------|-------|
| Cut selected files          | Ctrl+X          | ⌘+X   |
| Paste selected files        | Ctrl+V          | ⌘+V   |
| Show info for selected item | Ctrl+I          | ⌘+I   |

#### View

| Action              | Windows / Linux | macOS |
|---------------------|-----------------|-------|
| Toggle file browser | Ctrl+B          | ⌘+B   |

#### Tools

| Action                         | Windows / Linux | macOS |
|--------------------------------|-----------------|-------|
| Refresh                        | Ctrl+R          | ⌘+R   |
| Lookup CD                      | Ctrl+K          | ⌘+K   |
| Lookup                         | Ctrl+L          | ⌘+L   |
| Scan                           | Ctrl+Y          | ⌘+Y   |
| Cluster                        | Ctrl+U          | ⌘+U   |
| Lookup in browser              | Ctrl+Shift+L    | ⌘+↑+L |
| Search for similar tracks      | Ctrl+T          | ⌘+T   |
| Generate AcoustID fingerprints | Ctrl+Shift+Y    | ⌘+↑+Y |
| Tags from file names           | Ctrl+Shift+T    | ⌘+↑+T |

## Help

| Action                | Windows / Linux | macOS |
|-----------------------|-----------------|-------|
| Help                  | F1              | ⌘+?   |
| View activity history | Ctrl+H          | ⌘+⬆+H |
| View error/debug log  | Ctrl+G          | ⌘+G   |

## Metadata view

| Action                      | Windows / Linux    | macOS               |
|-----------------------------|--------------------|---------------------|
| Add new tag                 | Alt+Shift+A        | ⌥+⬆+A               |
| Edit selected tag           | Alt+Shift+E        | ⌥+⬆+E               |
| Remove selected tag         | Alt+Shift+R<br>Del | ⌥+⬆+R<br>Del<br>⌘+⌫ |
| Copy selected tag value     | Ctrl+C             | ⌘+C                 |
| Paste to selected tag value | Ctrl+V             | ⌘+V                 |

## Other

| Action               | Windows / Linux | macOS      |
|----------------------|-----------------|------------|
| Focus search         | Ctrl+F          | ⌘+F        |
| Remove selected item | Del             | Del<br>⌘+⌫ |

## 17.4.2 Script editor

| Action                  | Windows / Linux | macOS         |
|-------------------------|-----------------|---------------|
| Show auto completion    | Ctrl+Space      | ⌃+Space       |
| Use selected completion | Tab<br>Return   | Tab<br>Return |
| Hide completions        | Esc             | Esc           |

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