

# mAirList AudioLogger 1.0 – Manual

February 2, 2011

# Contents

<b>1</b>	<b>Description and Features</b>	<b>3</b>
<b>2</b>	<b>Installation and Activation</b>	<b>4</b>
<b>3</b>	<b>Setting up the Recording</b>	<b>5</b>
3.1	Overview of Recording Slots . . . . .	5
3.2	Configuring a Slot . . . . .	5
3.3	Output Folder . . . . .	7
<b>4</b>	<b>Integrated Web Server</b>	<b>8</b>
4.1	Setting up the Web Server . . . . .	8
4.2	Using the Web Interface . . . . .	8
4.3	REST . . . . .	9
4.3.1	Status Information and Recordings . . . . .	9
4.3.2	Remote Command Execution . . . . .	10

# 1 Description and Features

mAirList Audio Logger records audio material from one or more audio sources (sound cards or internet streams) and stores the audio data on the hard drive in compressed format. The main purpose of this software is 24/7 recording of e.g. a radio station broadcast signal for archival.

Features of this software include:

- Simultaneous 24/7 recording of any number<sup>1</sup> of audio sources.
- Supported audio sources:
  - WDM/DirectX compatible sound cards
  - ASIO compatible sound cards
  - WASAPI compatible sound cards (Windows Vista and later)
  - Internet streams in MP3, Ogg Vorbis or WMA format
- Audio can be stored in either MP3<sup>2</sup>, Ogg Vorbis, Windows Media (WMA) or WMA Pro format, at customizable quality (bitrates). You can define a different output format for each recording slot.
- Old recordings are deleted automatically after a customizable number of days, or when the free space on the hard disk drops below a particular threshold.
- Recordings can be accessed through Windows Explorer or using a built-in web server with a calendar-style HTML interface<sup>3</sup>.

(\*) exact specification depends on the software license/edition

---

<sup>1</sup>Available number of recording slots depends on the exact edition of the software.

<sup>2</sup>An MP3 encoder (lame.exe) is not included in the download of this software but can be downloaded and installed separately if the software patents of your country permit the use of MP3 technology without paying any royalty fees.

<sup>3</sup>Not available in all editions.

## 2 Installation and Activation

This section is under construction.

To install the software, run the downloaded `mAirList-AudioLogger-<version>-setup.exe` file and follow the instructions on the screen.

By default, the software is installed with a time-limited demo license that will shut down the software after one hour. To download and activate your personal license (demo license or purchased license), click the *About* tab and then the *License Manager* button.

The License Manager is the exact same component as used in the mAirList Radio Automation software. Please see the mAirList manual for detailed instructions on how to use it.

Note that you need to restart the software after you change the license by using the License Manager.

## 3 Setting up the Recording

### 3.1 Overview of Recording Slots

The *Slots* tab is the most important part of the main window. It displays the list of available recording slots along with their current status. For each slot, the following information is displayed:

**Status LED** A green LED is displayed when the slot is enabled and recording. A red LED is displayed when the slot is disabled, the recording was stopped by the user, or something is wrong with its settings.

**Slot Name** You can give each recording slot a name/description for easy identification of the signal that is recorded in this slot, e.g. "Studio 1" or "Satellite Feed".

**Source** In the second line, the current recording source for this slot is displayed; this is either the sound card name, the stream URL or the word "Disabled" in case no record source is selected. When recording an Internet stream which announces the title of the song currently played, the song name is displayed instead of the stream URL.

**Current Filename** In the third line, the name of the file that is currently recorded to is displayed. When the recording has been stopped by the user, the words "Encoder disabled" are displayed instead.

**Current Recording Time** When the encoder is recording, the current position within the recorded file is displayed in the fourth line. As a new file is started each hour, the time is usually in the range 00:00:00 to 00:59:59.

**Audio Level** In the rightmost part of the table, the current audio level (logarithmic scale, dBFS) is displayed as two bars, indicating the left and right audio levels. If the audio level is at or above 0 dBFS (overload), the bars are displayed in red. If you have specified a nominal level (see Section 3.2), a small line is displayed at that level, and if the signal is above that level, the bars turn orange. In all other cases, the bars are displayed in green.

**Settings Button** Clicking this button opens the configuration dialog for this slot (see Section 3.2 below). You can also double-click the slot to open the dialog.

**Start/Stop Buttons** These buttons start and stop the actual recording and encoding of the signal for this slot. Note that Audio Logger keeps the specified sound card input or Internet stream open even when the recording is stopped.

### 3.2 Configuring a Slot

When you click the *Configure* button, or double-click a slot, the configuration dialog for that slot comes up. It allows you to modify the following settings:

**Name/Description** The default name for a slot is "Slot *i*", where *i* is the number of the slot, but you can change that name and type any name or description you like.

**Input** In this section, you choose which input signal should be recorded. Setting the input to *Disabled* turns off this slot completely. You should use this setting for all spare slots that are not currently in use.

### 3 Setting up the Recording

When recording from a sound card, select the card and input you wish to use from the list. Under Windows Vista and later, the inputs of all WDM sound cards are listed separately. Under older Windows versions (e.g. Windows XP), you will only see a single entry for each sound card, and you have to choose the desired input source(s) in the Windows Mixer application.

When using an ASIO sound card, it can happen that some of the input channels are missing from the device list. For example, if you have an 8-channel sound card, only channel 1/2 might be displayed. In this case, select the available entry and click the *Configure* button next to the device list. The ASIO control panel for your sound card will open, and you will be able to activate the missing inputs. The channels will be available after you restart the software.

For Internet streams, enter the stream URL in the appropriate field. Audio Logger supports streams in MP3, Ogg Vorbis or WMA format.

The Nominal Level settings specifies the audio level (in dBFS) above which the signal should be regarded as overloaded. The audio level in the main window will be displayed in orange if the signal is above this level. The default setting is 0 dBFS which means that no overload detection takes place.

**Output** In the Output section, you specify where the recorded audio files should be stored, and in which format. First of all, select an output folder — Audio Logger will automatically create sub-folders for the current year, month and day, and save the audio files in those folders using a yyy-mm-dd-hh-mm-ss naming scheme.

The audio format can either be MP3, Ogg Vorbis, WMA or WMA Pro.

When recording in MP3 format, you need to download and install (copy to Audio Logger program folder) the external *LAME* encoder, more precisely *lame.exe*. The encoder is not included in the Audio Logger package because the software patent laws of some countries prohibit the use of MP3 encoding unless you pay a royalty fee to the MP3 patent holders. Please check if this is the case for your country before downloading and installing the LAME encoder.

For Ogg Vorbis, the required command line encoder (*oggenc.exe*) is included in the Audio Logger installation.

For WMA and WMA Pro encoding, the latest Windows Media Player must be installed on your system to ensure that you have the required codecs available.

Please note that the bitrate is specified in **kilobits** (e.g. 128) for MP3 and Ogg Vorbis, and in **bits** (e.g. 128000) for WMA and WMA Pro. For the latter two formats, you can also enter a number between 1 and 100 in order to create VBR files. The number determines the quality of the VBR file.

Extra encoder options are only available for MP3 and Ogg Vorbis encoding. The options are appended to the command line when the encoder (*lame.exe* or *oggenc.exe*) is started. The encoder options allow you to fine-tune the encoder settings, e.g. add quality settings for the MP3 encoding. Please refer to the documentation of *lame.exe* or *oggenc.exe*, respectively, for a list of available options.

**Cleanup** When recording 24/7 the recorded audio material can take up a lot of space on your hard disk. For example, one minute of 128kbps audio is around 1 MB, or 1.4 GB per day.

To make sure that your hard disk doesn't run out of space, Audio Logger can automatically delete recordings that are older than a particular number of days, or when the free space on your hard drive drops below a certain threshold.

You can enable both options at the same time. When multiple slots use the same hard disk, and the disk space option is enabled, the oldest recording from any slot is deleted until the free space is above the threshold again.

The cleanup takes place once an hour, usually at the top of the hour, when a new recording is started. If you change the settings here, the new settings will not have any effect until the next hour.

### 3.3 Output Folder

When you right-click a slot in the slot overview, a popup menu will open. Click *Open Output Folder* to open an Explorer window that displays the folder in which the recordings for this slot are saved. Navigate through the subfolders for the year, month and day to locate a particular recording. Audio Logger starts a new recording file every hour, and the filename indicates the date and time at which the recording was started.

At the top level of the output folder, you will also find a file named AudioLogger.db. This SQLite database file contains a list of all recordings and is used internally by Audio Logger and its integrated web server. Please do not alter or delete this file or any of its contents.

If you want to delete any old recordings, do not delete the files manually, because they will still be referenced in the database file. Instead, use the Cleanup setting (see Section 3.2 above). Note that the cleanup is only performed once an hour when a new recording is started.

## 4 Integrated Web Server

The integrated web server (not available in all editions) allows you to access the recordings of all slots from your local computer and all computers on your network in a very convenient way. The web server displays the recordings in a calendar-style grid in your browser.

### 4.1 Setting up the Web Server

Before the webserver can be used, it needs to be set up on the *Web Server* tab on the main page (the tab is missing if your license/edition does not include the web server).

In particular you, need to enter the **TCP Port** on which the server should listen. The default port is 5252. In case you are using a firewall software, you will need to open that port for incoming connections. The firewall built into the recent versions of Windows will usually prompt you to open the port when you enable the web server for the first time.

Optionally, enter a **username** and **password** to protect the web interface from unauthorized access. The credentials will be checked using basic HTTP authentication. Note that you can only change the username and password while the server is stopped.

If you want to enable the execution of remote commands through REST (see Section 4.3.2 below), check the appropriate box **Allow command execution**.

To start the web server, click the button **Start Server**. To stop the server again, click **Stop Server**.

### 4.2 Using the Web Interface

To access the web interface, start the web server (see above) and open the URL of your Audio Logger instance in your web browser. The URL is made up of the IP address of your computer and the port number you entered in the server configuration. For example, when the IP address is 192.168.1.77, and you're using the default port 5252, point your web browser to `http://192.168.1.77:5252`.

If you have entered a username and password in the web server configuration, you will be prompted for this information before any page appears.

The web page that is displayed is divided into two parts:

- In the upper part, a selection box allows you to select the desired recording slot.
- In the lower part, you will see a calendar view. Each available recording for the selected recording slot is displayed as an event in that calendar, along with its start and end time. Click the event to download the recorded audio file or open in an audio player installed on your computer.



## 4.3 REST

The REST (Representational State Transfer) interface can be used to remotely access the running Audio Logger instance in a machine-readable way, for example from third-party software or web pages. REST is built into the integrated web server, so you need to enable the web server in order to use the REST functions.

In this section, we give a reference of all supported REST URLs, divided into two groups:

1. URLs for accessing status information and recordings
2. URLs for remote command execution

All URLs are given relative to the base URL of the running Audio Logger instance. For example, when the base URL is `http://192.168.1.77:5252`, and the URL for executing remote commands given below is `/execute`, the full URL will be `http://192.168.1.77:5252/execute`. Note that some REST URLs use HTTP GET requests, while others use POST requests.

Some URLs include the ID of a particular recording slot. The ID of a slot is the slot number displayed in the main window, minus one. For example, the first recording slot has the ID 0, the second the ID 1 and so on.

### 4.3.1 Status Information and Recordings

#### List and Status of all Slots

HTTP Method: GET

URL: `/ws/slots`

Returns a JSON document containing a list (and status information) of all recordings. The document describes an array containing one object for each slot. The slot objects have the following form:

```
{
  "ID": 0,
  "Name": "eldo",
  "Source": "http://sender.eldorado.de:8000/128",
  "Recording": true
}
```

where *ID* is the ID of the slot, *Name* is the name/description you entered for the slot, *Source* is the name of the source that is used for recording (sound card input name or Internet stream URL), and *Recording* specifies whether the recording/encoder is currently enabled (true or false).

#### Name of a Particular Slot

HTTP Method: GET

URL: `/ws/slot/<SlotID>/name`

Returns the name of the slot with the specified ID as a simple string.

### Record Source of a Particular Slot

HTTP Method: GET

URL: /ws/slot/<SlotID>/source

Returns the name of record source of the slot with the specified ID as a simple string.

### Recording Status of a Particular Slot

HTTP Method: GET

URL: /ws/slot/<SlotID>/recording

Returns 1 if recording/encoding is started for the slot with the specified ID, or 0 otherwise.

### List of Recordings

HTTP Method: GET

URL: /ws/slot/<SlotID>/list/<year>/<month>/<day>

Returns the list of all recordings for the slot with the specified ID and for the specified date as a JSON document. The document contains an array with one object for each recorded audio file which has the following form:

```
{
  "ID": 8795,
  "Time": "2011-02-01T18:48:38",
  "Duration": 685.270202636719
}
```

where ID is the internal ID of the recording, Time is the time at which the recording was started, and Duration is the duration of the recording in sections, including fractions.

### List of Recordings

HTTP Method: GET

URL: /ws/slot/<SlotID>/getfile/<RecordingID>

Returns the audio file for the recording with the specified internal ID and the slot with the specified Slot ID. The file name and file type will be transferred using the appropriate HTTP headers (content type and attachment name).

## 4.3.2 Remote Command Execution

The remote command execution part of REST allows you to start or stop a particular slot using HTTP POST calls. The interface is compatible to the REST interface built into the mAirList Radio Automation

#### 4 Integrated Web Server

software, so you can control an Audio Logger instance from a mAirList instance (given that both pieces of software have REST available in their respective licenses).

To enable remote command execution, the appropriate option must be checked in the web server configuration.

Remote command execution works by sending an HTTP POST request to the URL `/execute`. The POST data must include a parameter named `command` that specified the command to be executed. At the moment, there are two commands available:

- `SLOT x START` – start the recording of a particular slot. Replace `x` by the number of the desired slot. The slot number is the number displayed in the main window; The first slot has the number 1.
- `SLOT x STOP` – stop the recording of a particular slot.

# Acknowledgements

mAirList Audio Logger was developed using, among others, the following third party libraries:

- BASS, BASSASIO, BASSenc, BASSmix, BASSWASAPI, BASSWMA – <http://www.un4seen.com>
- JCL – <http://homepages.borland.com/jedi/jcl>
- JVCL – <http://jvcl.sourceforge.net>
- Super Object Toolkit – <http://www.prodigy.com>
- TRegExpr – Partial Copyright (c) 2004 Andrey V. Sorokin, <http://RegExpStudio.com>, <mailto:anso@mail.ru>

The "Nuvola" icons used in the main window are provided by David Vignoni (<http://www.icon-king.com>) under LGPL license. To install and use a newer version of the icon set, unzip the Nuvola distribution into a folder named `nuvola` inside the Audio Logger program folder. Audio Logger will locate and use the updated icons automatically given that the folder structure of the original Nuvola release 1.0 is preserved.

The author would like to thank Michel Gmür, Timo Schmidt and Cad Delworth for their useful comments.