AFP-Lookup Professional

Manual

1. General Information

1.1. Program summary

AFP-Lookup Professional is a software tool designed for the analysis of AFPDS data streams. To the professional document developer, this program offers support-developing AFP-documents, no matter which software is being used. Furthermore, AFP-Lookup Professional is able to offer a valuable help for people that either work with AFP doing administration or use it for different purposes.

First task of AFP- Lookup is to give a complete outlook concerning AFP-structure and its contents. Doing this in a professional way, does not only mean to concentrate on single localized code pages or single AFP- objects; this program therefore offers support for all AFP- objects that have been specified by IBM, it is also able to analyze files with 70 code pages already installed - in each language desired.

You will find all details about what AFP-Lookup Professional can do in the detailed description of the program (Menu Option 2).

1.2. Improvements

All improvements and changes are now listed in the program folder in file "Releases.txt".

1.3. AFP-Basics

1.3.1. History

During the last years, AFP has been given many names:

- Composed Text
- AFP (Advanced Function Printing)
- AFP (Advanced Function Presentation)
- AFPDS (Advanced Function Presentation Data Stream)
- MO:DCA (Mixed Objects Document Content Architecture)
- IPDS (Intelligent Printer Data Stream)

All these names and the resulting structures either have a historical background, describe themselves or have the same origin. To be precise, the current designation is "MO:DCA-P" (Mixed Document Content Architecture for Presentation), usually it is still called only "AFP" or "AFPDS". IBM, however, regularly adjusts this format, to present needs in its function as an originator.

1.3.2. Concept

IBM developed AFP having the intention to supplement the line data that were used in connection with the first laser printers with the new abilities of those systems. One achievement that was most important: the development of a small, fine data format, which was supposed to predominantly make an impression as fare as good portability and fast process speed were concerned. Among other things, this format was supposed to be used to serve printers at high speed in the whole world with the speed offered.

Meanwhile, an extremely flexible data format has developed, which can be transported by any network protocols or physical data carriers without causing any problems and hardly demands any requirements to the present surroundings. Moreover, AFP is able to bring all resources needed along or to use the elements that already exist on the target platform (optional).

For this purpose, AFP – strictly speaking – consists of a range of elements, that can exist separately or can be united to a data (optional). By modularizing the whole data stream, (small) data quantities (as desired) and as a result, fast process speed are achieved. Additionally, each external module is only loaded, when it is really needed.

1.3.3. AFP-Elements

1.3.3.1. FormDef's

FormDef is the ordinary abbreviation for "Form Definition". FormDef's describe the physical characteristics of a sheet of paper one wants to print on and the logical subdivision on print pages on top (example: two A4 pages on a A3-Page portrait, simplex, duplex, turning of print pages, etc.)

1.3.3.2. PageDef's

PageDef`s (abbreviation for "page definition) describe how and where line data are to be put up on the print-page inscribed by FormDef. Besides the possibility, to reference even other AFP-elements and by doing this, bringing them on the print page, conditional processing – for the first time - is available without changing the main program, i. e. to print parts of a document by the means of line data, or not.

1.3.3.3. Fonts

Next to the typical raster character fonts, there have also been outline fonts for a couple of years, which instead of byte patterns describe single symbols the mathematical way. The advantage of this solution lies in its independence as far as conversion is concerned; single symbols are converted into byte pattern shortly before printing.

Due to larger variability, raster character fonts are divided up into three single files or resources.

Coded Font

The so-called "Coded Font" only describes the combination made out of a code page and a character set.

Code Page

In each country, code pages define, which byte pattern (summarized: bytes) present the symbol required. So it is up to the definition of a code page, if an "A", that is saved up, really expresses an "A" or maybe another symbol. Therefore, the correct Code Page always has to be available on the target system.

Character Set

The character set contains the single byte patterns of the symbols that may be presented in a comparative disorder. A character set must not only contain the symbols of a country, it is not limited any further. A classification of bytes to the symbols defined is done by Coded Font.

1.3.3.4. Documents

Most important elements of an AFP-data stream are of course the single documents, typically consisting of several single pages. They carry the content without being dependent on the physical division and paper size (see FormDef).

Fonts and other elements like graphics for example are not always directly part of a document. More often, access to external files or resources takes place here.

1.3.3.5. Overlays

Overlays are independent elements of a document, that are internally built up after the same rules as documents are. Typically, larger parts of a print page that are not changed very often, such as foot notes or graphic elements (frames) are saved up in overlays.

When running, those elements are being projected onto the print page, to be compared with a slide. By external placing onto overlays, administration of documents that do not have to be changed so often, or administration for documents containing the same components, is strongly simplified.

1.3.3.6. Page Segments

Contrary to Overlays, Page Segments generally contain picture data.

A definition of text elements, including the fonts to be used, is completely missing. This is why texts in page segments can only be put away as byte patterns (pictures). In order to save these graphic elements, different object types can be used (IM, IOCA, GOCA) - each of those has different characteristics.

1.3.3.7. Indices

AFP is one of the only formats being able to contain own indices. These indices are optionally kept on the print page concerned or they are united into own resources.

Normally, printers do not need these indices, however there is a large number of later programs that are able to filter out documents out of a date stream by indices, data streams that may be - under some circumstances - very huge.

1.3.3.8. Resources

At the beginning of a file, the following AFP-elements can be united to their own resource files or to resource-blocks. This way, one may skip the administration of several single files, that might not be available on the target system.

By connection with the real documents, one single file is built that way, containing everything that a document needs to have.

- FormDef
- PageDef
- Coded Font
- Code Page
- Character Set
- Overlay
- Page Segment
- Index

1.3.4. AFP-Objects

AFP consists of a range of single objects that are more able to correspond to demands than a specification that includes everything. Years gone by, the following objects have developed:

1.3.4.1. MO:DCA (Mixed Objects Document Content Architecture)

MO:DCA is the main format of AFP-data streams. This specification contains everything that has to be defined for the document and its details. At the same time, it forms the frame that describes all objects quoted here, no matter how these objects might look like inside.

1.3.4.2. FOCA (Font Object Content Architecture)

Font-object describes all structured fields that are related to fonts. Formation of a Coded font, the Code Page and Character Sets are defined here.

1.3.4.3. PTOCA (Presentation Text Object Content Architecture)

The Presentation-Text-Object comprises everything that has to do with the real text of a print page. Starting position for example and turning of the text are specified here, independent of the remaining document.

Moreover, real text data and simple lines are contained (lines in a 0, 90, 180 and 270 degree direction)

1.3.4.4. BCOCA (Bar Code Object Content Architecture)

Bar-Code-Object contains all relevant information about the UPC code/bar code. Most important contents here: character sequence to be coded and the barcode-algorithm to be used.

1.3.4.5. GOCA (Graphics Object Content Architecture)

Graphics-Object describes all elements dealing with vector graphics. Next to all typical vector elements like lines, rectangles and circles, there is also a raster-picture-object, which is kept by GOCA. All graphic elements of a print page can be saved within one single object in a space-saving way.

1.3.4.6. IOCA (Image Object Content Architecture)

IOCA is specialized in raster pictures. The resulting data quantities that may be huge under some circumstances, can be economically integrated into the AFP data by compressions algorithm.

1.3.4.7. CMOCA (Color Management Object Content Architecture)

CMOCA describes the usage of independent color management-resources, in particular ICC profiles in AFPDS. ICC profiles allow adequate, defined true colorr support over the whole process chain from design to print for the first time in the AFPDS world.

1.3.5. Structured Field

A structured field is not the smallest independent unit of an AFP-data stream, but it is the most important one.

Every element, every single objects consists of a set of structure fields that define themselves.

Typically, structure fields start after a x'5A' with a length field, which indicates the whole length of the total field. Shortly after, the real distinction of what is saved up in this field takes place (three bytes starting with x'D3'). This way, target systems having a limited range of functions only are able to skip (ignore) the structured fields which they cannot manage without stopping the processing.

1.3.6. Triplet

A Triplet is the little brother of a structured field. It appears within its variable data and consists of an own length field, a function that distinguishes and its data.

Similar to structured fields, many triplets can exist, but they do not necessarily have to. If they exist, they generally define closer details.

2. AFP-Lookup Professional

2.1. Installation

2.1.1. Normal Installation

The normal installation of AFP-Lookup Professional is the dialog-oriented way. To do this, simply call the provided file `AFPLookupProfessional-Setup.exe`. The user is then guided through all necessary steps.

When the application is started for the first time, the software recognizes this state and asks for further options such as a possibly existing license file and further basic settings if necessary.

2.1.2. Silent Installation

Apart from the "normal" installation, the installation routine knows a so-called "unattended" mode, which allows both the installation and the registration without any dialog. In this way, an administered, silent installation can be performed on other computers. To do this, call the above installation routine with additional parameters:

Parameter	Value
`--mode`	`unattended`
`--licenseFile`	`Path and filename to license file *.txt`

A note for use in scripts: Since the installation program is basically a graphical application, the associated thread returns to the command line immediately after startup. If it is important to check when the installation was actually completed, the installation must also have to be started with prefix

```
start /W
```

An example call of a completely silent installation of AFP-Lookup Professional with process control therefore looks like this:

```
start /W
    AFPLookupProfessional-Setup.exe
        --mode unattended
        --licenseFile C:\Users\GSchnepp\Desktop\License-1234567_*.txt
```

2.2. Functionality

AFP-Lookup Professional is a professional tool for AFP- data stream analysis. Programs like AFPDump or AFP-Lister that can be downloaded free of charge from the Internet do not at all offer the range of functionality that AFP-Lookup Professional does.

All advantages in detail:

- Support of all AFP-data and AFP-objects, of those that are up-to-date and those that are meanwhile retired or exist in coexistence

- 70 single byte code pages for all important languages

- Presentation of all NOP-records and indices

- Analysis of AFP-files with more MB in size

- Several AFP-files can be analyzed at the same time

- Multilingual user interface (English, German and French at present)

- Search functions within the data to be analyzed

- Saving of the analysis results for archival, comparison or printout

- Numerous viewing options for individual presentation

- Integrated AFP viewer for preview if each analyzed page

- Presentment of the selected structured field in a hex window

2.3. Local License Store

Standard license store is a specific file in folder C:\ProgramData\CRE-DO, where all other user-independent AFP-Lookup files reside. This may be unhandy from time to time. So a full new path can be set via environment variable

licenseStorageFile

This file must exist with a size of 0 bytes prior first license registration.

This variable can be set permanently via Windows Control Center easily:

1. Type 'Environment' in the Windows start menu and open the system properties dialog

2. Choose tab 'Advanced'

3. Choose button 'Environment Variables'

4. Create a new user variable with name 'licenseStorageFile' and a full path to the new license store.
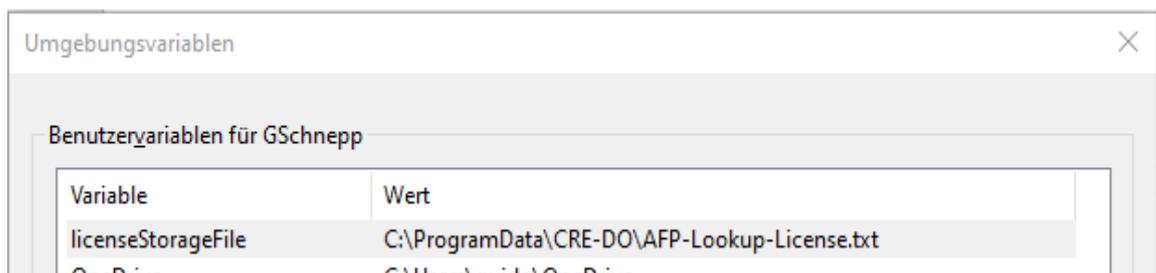
2.4. System Requirements

AFP-Lookup Professional has been developed in Visual Basic and therefore needs the actual run time libraries of Microsoft Visual Basic 6 Service Pack 6. The installation routine contains all necessary files and copies them to the correct target directories.

With the libraries mentioned above, AFP-Lookup Professional is executable on all systems with operating systems Windows XP, Vista, Windows 7, 8, 8.1 and 10 (both, 32 or 64 Bit).

15 MB of free hard disc space are required.

A minimum of 64 MB of available main memory is required, we recommend 128 MB or more.

Please work with AFP-Lookup Professional only on systems with a processor speed of 500 MHz or higher.

2.5. User Interface

2.5.1. Overview
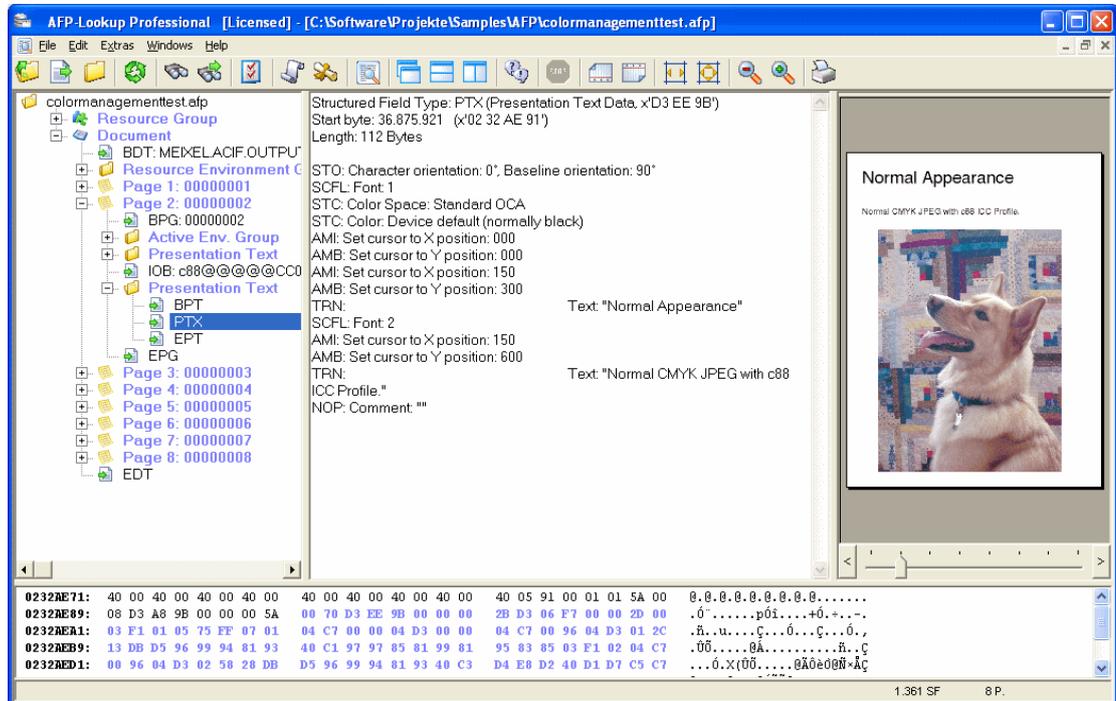
2.5.2. Description

The main window offers the menu and a command bar, including all routines connected with it. AFP-files that have been opened are shown within an unused frame. Several secondary windows may be opened at the same time, which is equivalent to the parallel reports of several AFP-files. One single file may be loaded in various windows at the same time.

When loading, a progress bar will be inserted at the lower edge of a file window showing the actual status. On the right of this bar, you will find a counter for processed structured fields and pages and a cancel button in order to stop the process. In that case, the file analyzed so far will be presented.

The AFP-Lookup Professional surface is made up in Windows Explorer style. The AFP structure itself is strictly hierarchical; therefore it is most convenient to present it in form of a tree structure.

The integrated AFP viewer is placed at the right side. The actual page at a time is shown here. With a new selection in the tree or the slider below of the page shown the presented page can be changed.

You see the new hex viewer below of the analysis result. All bytes of a selected structured field are shown here embedded in other bytes directly from the file.

2.5.3. Command line

AFP-Lookup Professional knows rudimental command line parameters as following:

2.5.3.1. Open AFP-files

You can open any AFP-file already at startup. These files will be analyzed automatically.

2.5.3.2. Automatic Extraction

After such an analysis, a dump can be created automatically. AFP-Lookup Professional will be closed when ready. Just type "/extract" in front of the filename.

Example:

AFP-Lookup Professional.exe **/extract** sample1.afp

The internal function called is identical to the menu entry "File / Save dump".

2.6. AFP viewer module

2.6.1. Overview
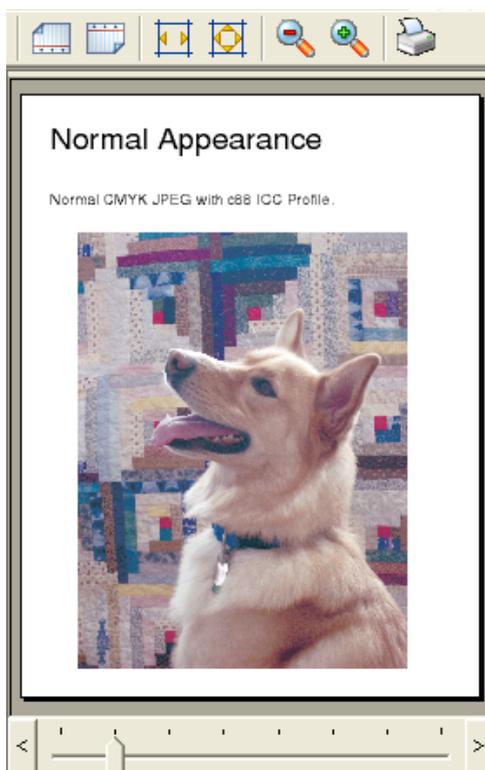
2.6.2. Description

The integrated AFP viewer is able to show single pages with all resources like it would be printed. The page shown is selected by the re-selection of another structured field in the tree or by moving the slider below the viewing area. In addition, the page shown can be printed on the default printer.

This whole viewing area is only shown, when the file contains a minimum of one BDT struc-tured field (Begin Document). Therefore the file must contain a printable page, not only an AFP resource file for example.

The whole viewing area can be disabled on button or by default to let the user also analyze corrupt AFPDS files.

2.6.3. Icons

The specific command icons are placed right above the view window. The following options are installed here starting from left to right. If applicable, single switching buttons are deactivated from time to time.

- Rotate 90 degrees counter-clockwise
- Rotate 90 degrees clockwise
- Scale to page width
- Scale to whole page
- Zoom out
- Manual setting of zoom level
- Zoom in
- Show AFP Resource options
- Enable/disable viewing area
- Print page to default printer

2.7. Program Options

2.7.1. Language Settings
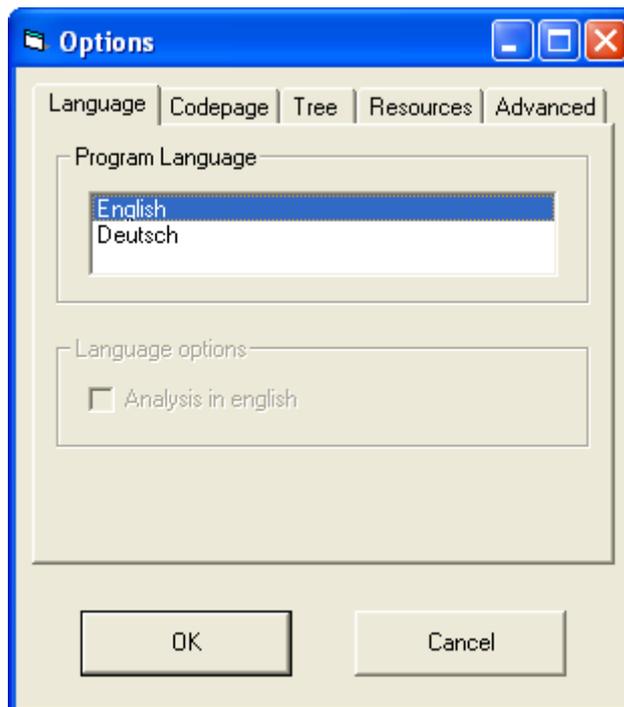
The user can choose between several languages in which the graphical user interface and the analysis results are represented. Currently German, English and French are available.

Beyond this overall option the native german user has the option to do the analysis in English every time.

2.7.2. Codepages
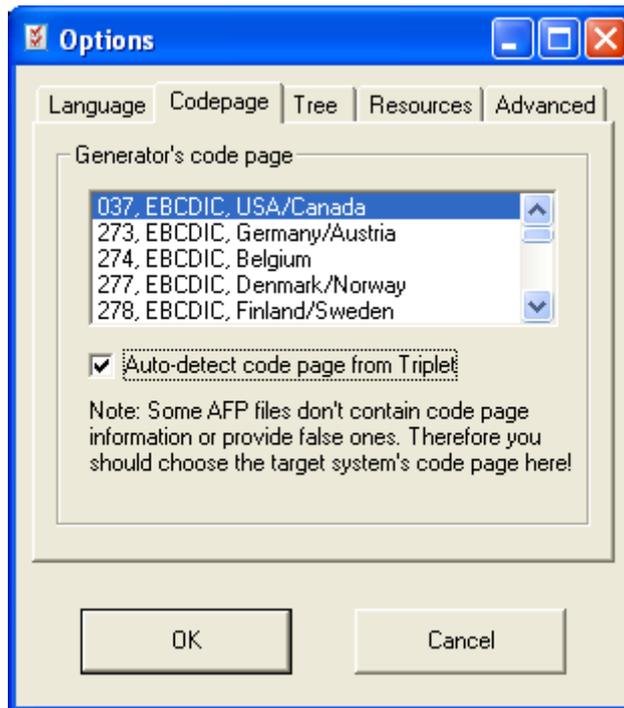
The AFP architecture does not depend on any code page to be used while generation. The triplet x'01' is for serving the internal code page information to the receiver.

But this triplet is only mandatory for the BDT-structured field (Begin Document) and one data stream can contain information in more than one code page, e.g. external Windows file references in ANSI code page and document texts in EBCDIC encoding.

Generally, AFP-Lookup Professional takes the code page information provided in the data. But for these cases, where this triplet is not provided at the beginning of the data stream, a manual setting can be necessary to read the information.

Contrary to the common AFP specification, some generators don't include triplet x'01'. In this case it is necessary to the user, to set the target code page instead of the generators code page, if he wants to read the text contents.

2.7.3. Tree Settings
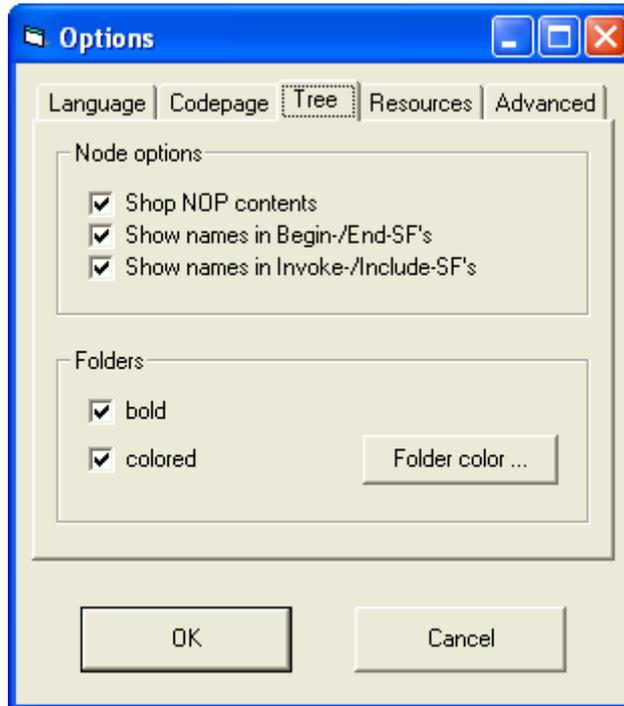
Different settings are available for the representation of the analysis results. E.g., the user can choose between selected contents of structured fields, which should be shown in the tree structure.

A different folder color set here is also used in the hex-window for accentuation of the selected structured field

2.7.4. Preview Settings

AFP-Lookup uses a foreign plug-in for document preview. This module is multi-format capable in terms of being able to present AFP files and also different foreign objects carried with the AFP file in so called AFP containers. The following formats are currently available:

- PDF & PDF/A Container

- PostScript Container

- PCL 5/6 & HPGL Container

- SVG Container

- AFP Mixed-Mode and -Line-Mode

Support of one are more of these container formats are costly options and features need to be added to your license via license extension through our shop.

2.7.4.1. Resource Settings
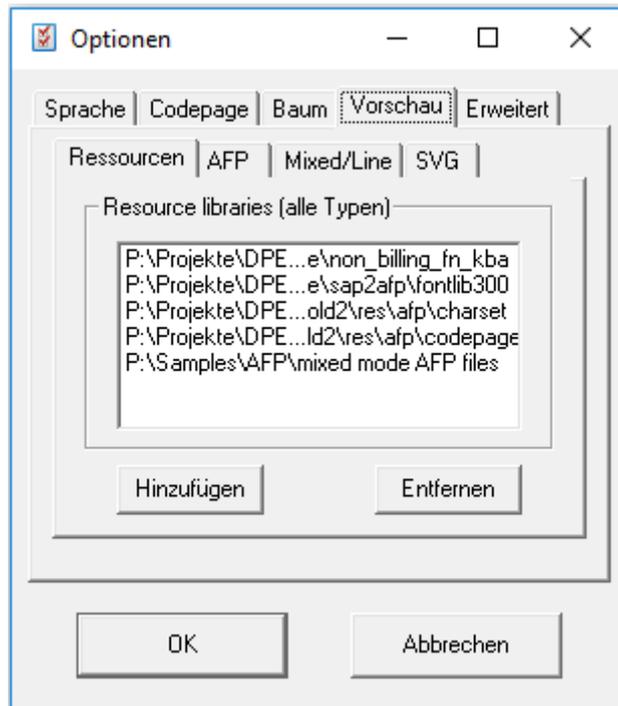
The integrated AFP-Viewer needs to reload external AFP resources like fonts, page segments or overlays for example for correct page representation from time to time. This dialog allows the user to set these paths in a very comfortable way.

2.7.4.2. AFP-specific settings
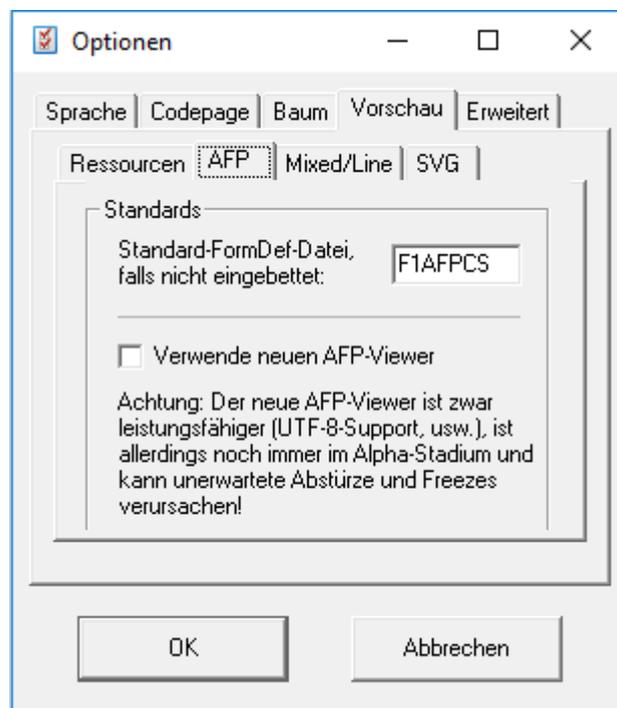
One important exception from "normal" AFP resources is the Form Definition, or short FormDef. FormDefs at the end are configuration files for environmental settings, with a vast set of options like simplex or duplex processing or static back pages, and so on.

Different FormDefs can contain different settings for the same set of printers – or other receivers in general like viewers or converters. This is the reason why you have to name a specific FormDef here if you like to see the preview in a specific manner.

You don't have to name a FormDef if your process has not defined any specialties or the FormDef is embedded in the files' internal resource group.

2.7.4.3. SVG specific settings

Currently there's only one setting to be made for Scalable Vector Graphics: The internal resolution SVG objects are to be rendered into raster graphics for presentation. The setting is DPI * 100. Since default resolution for SVG is 72 DPI, which is not set necessarily from inside the SVG AFP container object, default setting in AFP-Lookup has to be "7200".

2.7.5. Advanced Options
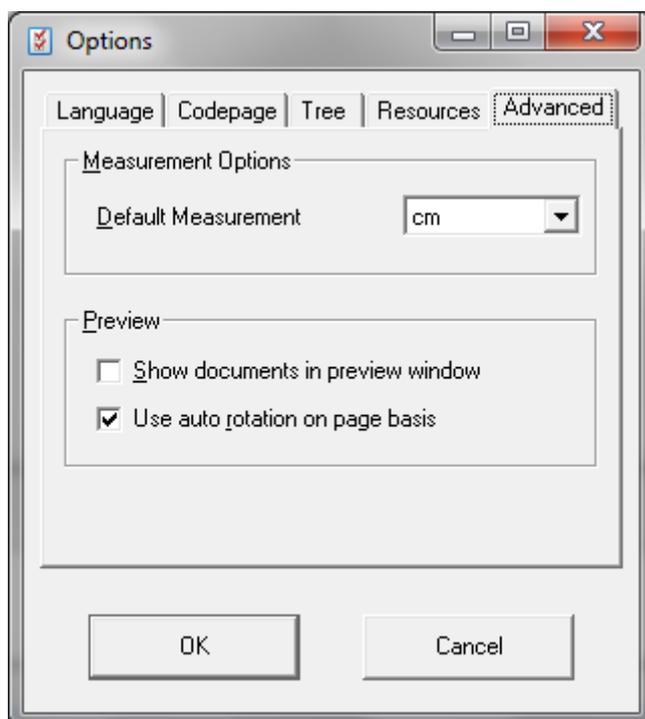
The advanced options allow it to select the default measurement unit used while analysis. Possible units are inch, centimetre, millimetre and points (1/72 inch) as well as 240, 300 and 600 pels.

The default behavior of the AFP viewing module can be changed here, too. The whole viewer or just the default auto-rotation can be disabled here for example, before you start to analyze a corrupt file.

2.8. Menus

2.8.1. File

2.8.1.1. Open

A file of your choice with AFP-contents is opened independent of the file extension. Besides the typical AFP-files (documents) the following AFP-files can also be analyzed:

- FormDef

- PageDef
- Coded Font
- Code Page
- Character Set
- Overlay
- Page Segment
- Index

After installing, you will find a subdirectory below the program directory, called "samples". All files included there can be analyzed by AFP-Lookup Professional.

2.8.1.2. Close

Closes the file that is opened at present.

This menu option is deactivated, when no file is opened.

2.8.1.3. Reload

The latest analyzed file will be loaded again. The old analysis results are closed.

This menu option is deactivated, when no file is opened.

2.8.1.4. Save dump

Saves the results of the analysis to disc using the ANSI text format. The file will be saved in the source directory including an additional extension ".txt" as default.

This menu option is deactivated, when no file is opened.

This menu option is also called when command line parameter /extract is used. See chapter 2.3.3 for more information.

2.8.1.5. Save dump as

Saves the results of the analysis to disc using the ANSI text format. The user can choose a filename to which the analysis will be saved.

This menu option is deactivated, when no file is opened.

2.8.1.6. Exit

Terminates AFP-Lookup Professional. All files that may be opened will be closed automatically.

2.8.2. Edit

2.8.2.1. Find

Opens a window for searching entry. The text entered is being searched for case-insensitive, starting from the first structured field in the tree structure and properties.

This menu option is deactivated as long as no file is opened.

2.8.2.2. Find next

Starting from the actual position, the text entered is searched for one more time. If no text to be searched for has been entered, a search dialogue opens up.

This menu option is deactivated, as long as no file is opened.

2.8.2.3. Expand Tree

Expanding all "leafs" of the AFP structure tree.

This menu option is deactivated, as long as no file is opened.

2.8.2.4. Collapse Tree

Collapsing all "leafs" of the AFP structure tree.

This menu option is deactivated, as long as no file is opened.

2.8.3. Extras

2.8.3.1. Options

Opens the options-dialogue. The user can adjust the code page to be used for analysis and choose the program language.

Changing of the setting of a code page does not have an influence on files already opened.

2.8.4. Help

2.8.4.1. Help

Shows help online.

2.8.4.2. Website

Opens the AFP-Lookup Professional-Website **www.afp-lookup.com/** in your internet browser window.

2.8.4.3. License

Opens the window in order to show the license data. If you have a trial license, you will find the expiration date here.

2.8.4.4. Register License

Runs a separate program for registering your new license on your computer. AFP-Lookup Professional will be closed before to avoid problems.

2.8.4.5. About

Opens the window with all details of the version of the program.

2.9. Command Bar

2.9.1. Icons

The command bar is placed below the menu border. The following menu options are installed here starting from left to right. If applicable, single switching buttons are deactivated analogue to the corresponding menu options.

- Open file
- Save dump

- Close file

- Reload

- Open search dialog

- Continue search

- Options

- Expand Tree

- Collapse Tree

- Help

- Cancel

2.9.2. Hints for several buttons

2.9.2.1. Cancel

The cancel button for stopping the process is only visible when loading. The functionality corresponds to the switching button intended for stopping at the lower-right edge of the window. Pressing this button, the file analyzed so far will be shown.

3. Information

3.1. AFP-Documentation

3.1.1. Books about AFP

IBM offers the following books (order numbers) for download or order. Sometimes you will find, that the orderable book is available earlier than the download version.

- Printing and Publishing Collection Kit (SK2T-2921, only orderable)

- Guide to AFP (G544-3876)

- Advanced Function Presentation: Programming Guide and Line Data Reference (S544-3884)

- MO:DCA Reference (SC31-6802)

- PTOCA Reference (SC31-6803)

- FOCA Reference (S544-3285)

- BCOCA Reference (S544-3766)

- AFP GOCA Reference (S544-5498)

- IOCA Reference (SC31-6805)

- ACIF User's Guide (S544-5285)

- Intelligent Printer Data Stream Reference (S544-3417)

- and many, many more ...

3.1.2. Publications online

You can find detailed information about the AFP architecture using the following address:

AFP Consortium: http://www.afpcinc.org

3.2. Program history

All improvements and changes are now listed in the program folder in file "Releases.txt".

3.3. Known issues

3.4. Registration

Purchasing this software, you register yourself as a legal user. You will receive all necessary details and the program for license release a few days after purchase by mail or online by e-mail.

Hints concerning terms of payment and sale are available on the internet-pages of the Company GmbH under the domains http://www.cre-do.de or http://www.afp-lookup.com.

3.5. License Agreement

3.5.1. Not registered Software

3.5.1.1. Limited Warranty

Limited Warranty

The program is provided "as is" without warranty of any kind either express or implied, including, but not limited to warranties of merchantability or fitness for a particular purpose. In no event will the author or authors be liable to you for any damages, including incidental or consequential damages, arising out of the use of the program, even if advised of the possibility of such damages.

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Usage Allowed

AFP-Lookup Professional is a shareware program and is provided at no charge to the user for evaluation. The purpose of shareware software is to provide personal computer users with quality software on a "try before you buy" basis, however payment is still required for continued use of the product.

If you find this program useful and continue to use it after the trial period, you must make a registration payment (see the registration instructions for details). This registration fee will license one user to use one copy of AFP-Lookup Professional on any one computer at any one time. All users will receive a copy of the latest release when they register, or it will be made available for downloading, and free technical support. Additionally the user will receive a registration code by mail.

Commercial users must register and pay for their copies within 15 days of first use or their license is withdrawn. Site License and multiple user license arrangements may be made by contacting CRE-DO GmbH

After the testing period AFP-Lookup Professional will limit itself to a minimum of functionality. The original functionality will be re-established only if you buy it.

Anyone distributing this product for any kind of remuneration must first contact CRE-DO GmbH for authorization.

You may distribute this software to friends and colleagues but you must include all files in the original distribution. Please encourage them to register their copy if they find that they make use of it.

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3.5.2.2. Limited Warranty

Limited Warranty

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