# BestPDF Optimizer
# *User's Guide*

Version V3.3

This edition applies to BestPDF Optimizer.

MakeAFP welcomes your comments and suggestions. You can send your comments and suggestions to:

support@makeafp.com

When you send information to MakeAFP, you grant MakeAFP a non-exclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

# Contents

# Preface

This User's Guide describes the functions, commands, and parameters associated with BestPDF Optimizer.

## About this User's Guide

This User's Guide provides information about using BestPDF Optimizer, it helps you:

- Plan for BestPDF Optimizer.
- Install and configure BestPDF Optimizer.
- How to use BestPDF Optimizer.
- Configure and use BestPDF Optimizer for Windows and Linux.

The information in this user's guide is for users who install, configure, and use BestPDF Optimizer.

## Conventions Used in This User's Guide

This User's Guide uses consistent conventions for the following:

- Highlighting
- Syntax notation

### Highlighting

This User's Guide uses the following highlighting conventions:

- **Bold**  Identifies commands, keywords, and other items, whose names or values are predefined by BestPDF Optimizer or must be entered as-is.

- *Italic*  Identifies parameters whose actual names or values you supply.

### Syntax Notation

This User's Guide uses the following syntax notation:

- Italics within a command represent variables for which you must supply a value. For instance:

    **-log** *logPath*

means that you need to replace the variable *logPath* with a value that represents any valid path name for recording logs.

- Do not enter the following symbols as part of the command:

  | | |
  |---|---|
  | Vertical bar | \| |
  | Braces | { } |
  | Brackets | [ ] |
  | Underscore | _ |
  | Ellipsis | … |

  The above symbols have the following meanings:

  - A vertical bar, |, between values, indicates that you can only enter one of the values with the command.

  - Braces, { }, around values indicate a required value; you must select one of the mutually exclusive values.

  - Brackets, [ ], around parameters indicate that they are optional.

  - An underscore, _, indicates the default value, which BestPDF Optimizer uses if you do not specify the parameter with a non-default value.

  - An ellipsis, …, following command or set of commands indicates the command or set of commands can be repeated.

# Chapter 1. Overview

BestPDF Optimizer is the World's best PDF optimization and compression solution for the organizations that need to process high volume PDF documents for transmission, archiving, compliance, accessibility, and efficiency.

The BestPDF Optimizer optimizes and compresses PDF documents in high-performance, to suit your specific e-Business requirements that need electronic documents to be delivered, exchanged, and archived quickly.

With BestPDF Optimizer, you can achieve the optimized and compressed PDF in the smallest file size and high-performance, reduce your storage costs tremendously.

BestPDF Optimizer enables you:

- Leverage the benefits and advantage of PDF protects your existing significant investment in PDF, enable your business to grow and thrive consistently.
- Achieve smallest linearized PDF documents, improving the outgoing email process performance, and reducing the web-based application's demand for short response times significantly.
- Instantly deliver the billing statements and documents to your customers and archive the documents with significant cost savings.
- Support PDF encryption, by the owner and user-open password protection and digital signatures.
- Provide graphical user interfaces to help you to optimize and compress your PDF documents quickly.
- Designed to integrate easily with your mission-critical document delivery systems and document archiving systems.

## Benefits

The most advanced BestPDF Optimizer provides the following benefits to PDF business users and clients:

### Documents On-Demand

- Presenting e-Statement on-demand via the internet is your efficient, cost-effective route to expand your business and enhance the communication with your customers, allowing them to access and view statements and invoices online when and where they want instantly, you can gain much better competitive, customer relationships and satisfaction, adherence to legal regulations, yet generating significant cost reductions.

- BestPDF Optimizer enables you to quickly migrate to electronic delivery of statements, invoices, and documents in secured PDF format, so your customers can easily and quickly search and retrieve the information they want within the multi-page PDF document.

### Business Protection

- BestPDF Optimizer leverages the benefits and advantage of PDF, industry-standard high-performance open presentation architecture for documents, protects your significant investment in PDF, enables your business to grow and thrive consistently.

- BestPDF Optimizer supports 256-bit encryption, as well as high-security protection with a user-supplied digital signature, boosting your PDF document security by defining an owner password to control whether or not an end-user can modify the document's contents, copy text or graphics from the document, add or modify text annotations or print the document, and you can also specify an end-user open password, only the authorized user can open the document.

### Productivity and Accuracy

- BestPDF Optimizer accurately and efficiently optimizes and compresses your existing PDF data streams into reduced size PDF in extremely fast performance.

- Whatever your needs, BestPDF Optimizer provides a flexible solution that is typically faster than competitive products, with the highest PDF optimization and compression.

- BestPDF Optimizer uses sophisticated optimization and compression that delivers the smallest PDF data stream enables your organization and your customers to achieve the best performance with PDF document delivering, archiving, retrieving, and viewing.

### Easy Integration

- With the BestPDF Optimizer, you can quickly enable electronic document delivery with very minimal changes to your existing production environment, significantly simplify and streamline the documents management and deliveries throughout your enterprise.

- BestPDF Optimizer is designed to integrate easily with your mission-critical document delivery systems and document archiving systems; provides both command-line interfaces and APIs in C/C++, C#, and Java, to manage the workflow operations of PDF documents optimization and compression.

- BestPDF Optimizer supports the full automation of complex production processes.

## Functions at a Glance

BestPDF Optimizer is highly compact and very well-tuned, developing by the combinations of C/C++ and Assembler programs, to optimizing and compressing mission-critical PDF documents in superb quality and extremely high performance.

The most advanced text, font, and image core intelligent algorithms ensure the best output file size, image quality, and processing performance, which can greatly save long-term storage space up to 95% for documents, bills, insurance policies, and electronic invoice systems. The optimized PDFs are fully compatible with all PDF software.

Designed to integrate easily with your mission-critical document delivery systems and document archiving systems. Suit the specific e-Business requirements that need electronic documents to be delivered quickly and archived in the long term.

BestPDF Optimizer provides the following advanced features, functions, and capabilities to PDF business users and clients:

### High Performance and PDF Encryptions

- Multitasking and multithreading in extremely high-performance.

- Processing and Analyzing PDF data streams and structures in high-performance.

- Supports PDF encryption and authorization, by the owner and user-open password protection and digital signatures.

- Supports high-security protection in 256-bit PDF encryption, as well as digitally sign the PDF document by a digital signature with the encryption key lengths from 1024 bits up to 8192 bits.

### Document and Page Content Optimization

- Able to linearize PDF documents for fast web viewing; able to set PDF version of the output files.

- Auto optimizes page contents; Auto removes redundant and unnecessary PDF data stream.

- Auto removal of obsolete and unused redundant resources; Auto remove unnecessary information.

- Able to remove article threads, metadata, annotations, bookmarks, page-piece dictionaries, spider information, and thumbnails.

- Able to quickly merge a huge number of PDFs and reducing merged output PDF file size tremendously for such as high-speed production printing and document archiving.

### Font Optimization

- Auto-merge, de-duplicate and substitute compatible fonts, remove redundant font information and unnecessary font data table entries and unused glyph definitions, subset font to contain only the used glyphs.

- Auto optimizes and compresses fonts by using our advanced the best PDF font data streams optimization and compression algorithms and technologies, PDF document file size can be reduced effectively without losing any text quality information.

- Able to remove embedded PDF standard fonts, e.g. Courier, Helvetica, Times, etc.

- Able to remove embedded fonts entirely.

### Image Optimization

- Auto selects the best compression type for each image; able to convert image color space, enhance the quality of logo-type images in solid colors, and downgrade image resolution in high quality.

- Provides 5 types of interpolation scaling algorithm options to downscale color images, suppress the loss of image information, allows for pixel interpolation that is closer to the true value.

- Provides 6 types of quantization algorithm options to reduce color image data stream size, the number of colors in images can be reduced without loss of visual quality and of important global information.
- Able to extract color images from specific pages into separate PDFs to reduce color production printing costs.
- Able to remove images entirely.

### GUI Tools and Automation

- Provides graphical user interfaces for Windows, to help you to optimize and compress your PDF documents quickly.
- Provides graphical user interfaces for Windows, to help you to define and configure the automation of production.
- Auto pulling multiple input hot-folders and output to multiple folders, fully automate the mission-critical production.
- Multithreading and multiprocessing in extremely high-performance auto-production.

### Integrations and Compressions

- Integrates easily with your mission-critical document delivery systems and document archiving systems.
- Provides command-line interfaces for both Windows and Linux platforms.
- Provides Application Programming Interfaces (APIs), for C/C++, C#, and Java application programs, to quickly optimize and compress PDF documents from an input file or memory buffer to reduce output PDF file size.
- Empower 6 compression levels, to enable you in the balance of faster processing performance and best compression ratio, to reduce your PDF document systems production running cost tremendously.

# Chapter 2. Installing BestPDF Optimizer for Windows

This chapter provides information on the Windows prerequisites and installation of the BestPDF Optimizer retail version for Windows.

## BestPDF Optimizer for Windows Prerequisites

Here are the prerequisites to run BestPDF Optimizer for Windows:

1. Windows 7 SP1 or above, 64-bit.
2. Windows Server 2012 R2 (with Update 2919355) or above,  64-bit.
3. Recommend using the latest computer hardware with above 32 GB memory.

## Installing BestPDF Optimizer on Windows

To install BestPDF Optimizer on Windows:

1. Log on to the Windows system as an administrator.
2. Run the BestPDF Optimizer setup package you received.
3. Follow the instructions on the installation screens to install the package, the default destination folder is **d:\BestPDF**.

## Applying License of BestPDF Optimizer Retail Version for Windows

**Applying Independent License Key**

1. Click the **Start** button, then select **Programs**, and **BestPDF Optimizer.**
2. On the **BestPDF Optimizer License** window, copy the Serial ID and then paste it into the email to be sent to **support@makeafp.com**, to request a software license key for your system.
3. After received a BestPDF Optimizer License key, you need to run BestPDF Optimizer to apply the license key.

# Chapter 3. Installing BestPDF Optimizer for Linux

This chapter provides installation information on the BestPDF Optimizer retail version for Linux. Recommend using the latest computer hardware with above 32 GB memory.

## Installing BestPDF Optimizer on Linux

To install BestPDF Optimizer on a Linux server:

If install on the BestPDF Optimizer default installation path **/usr/share/bestpdf**, type the following command:

> **sudo sh bestpdf_install.bin**

If install on a user-defined specific path, type the following command:

> **sudo sh bestpdf_install.bin *your_bestpdf_path_name***

## Applying License of BestPDF Optimizer Retail Version for Linux

BestPDF Optimizer for Linux provides the soft-license key.

### Installing Soft-license Key

1. Type command **bestpdf**, copy the Serial Number generated, and then paste into an email to be sent to **support@makeafp.com** to request a software license key for your system.
2. Once your BestPDF Optimizer License key file **bestpdf.lic** was received, copy it into your BestPDF Optimizer installation path, the default path is:

> **/usr/share/bestpdf**

## Uninstalling BestPDF Optimizer on Linux

To uninstall BestPDF Optimizer on a Linux server:

If BestPDF Optimizer was installed on the default installation path /usr/share/bestpdf, type the following command:

> **sudo sh bestpdf_install.bin --uninstall**

If BestPDF Optimizer was installed on a user-defined specific path, type the following command:

> **sudo sh bestpdf_install.bin *your_bestpdf_path_name* --uninstall**

# Chapter 4. BestPDF Optimizer Command

BestPDF Optimizer provides an easy-to-use high-performance command-line program, to enable you quickly optimize and compress your PDF documents in high-performance.

## BestPDF Optimizer Command Syntax

BestPDF Optimizer command is designed to be easy to use, only some of the basic flag parameters are needed to control the BestPDF Optimizer.

### Command syntax

**bestpdf**  [ *inPDF* ] [ *outPDF* ] [ *flag_parameters* ]

### Parameters

*inPDF*
Specify the fully qualified filename of the input PDF file, wildcard character * and ? are allowed for the multiple PDF files optimization.

*outPDF*
Specify the fully qualified filename of the output PDF file.

**-i** *inPath*
Optional, specify the input path to optimize all PDF files. BestPDF Optimizer ignores non-PDF files.

**-is** *inPath*
Optional, specify the input path to optimize all PDF files, and also read sub-paths. BestPDF Optimizer ignores non-PDF files.

**-o** *outPath*
Optional, specify the output path of optimized PDF document files.

**-bdpi** *nnn*
Optional, specify the image resolution in DPI to downscale the monochrome image resolution, value 0 disables downscale resolution. Default is 200 dpi for the monochrome images.

**-c** *n*
Optional, set image color space, valid values are:

1    Retain original color space
2    Transform to greyscale
3    Transform to RGB (default)

**-cdpi** *nnn*
Optional, specify the image resolution in DPI to downscale the color image resolution, value 0 disables downscale resolution. Default is 128 dpi for the color images.

**-d**
Optional, delete input PDF file(s) after done optimization successfully.

**-di** *n*
Optional, set image downscale interpolation, valid values are:

1. Finetune algorithms (default value), might be better quality and smaller file speed
2. Bicubic algorithms
3. Lanczos4 algorithms
4. Bilinear algorithms
5. Nearest neighbor algorithms

**-eci** *nnn,nnn, …*
Optional, extract color images from specific pages into separate PDFs to reduce color production printing costs. Color images will be removed from original PDF pages and inserted into new separate PDFs with filename naming convention in *basename_nnn*.pdf.

**-iq** *N,ccc*
Optional, use quantization algorithm to reduce color image data stream size greatly, the number of colors can be reduced possible without loss of visual quality & important global information. **This feature is very useful to the billing statements with simple small color images**. *ccc* default is 256 color, valid value is 2 to 256; valid *N* values are:

1. Optimal color quantization
2. Flat color quantization
3. Divisive hierarchical clustering quantization
4. Octree color quantization
5. NeuQuant Neural-Net quantization
6. Pairwise nearest neighbor quantization

**-iu** *password*
Optional, specify the user open password of input PDF files.

**-jpg** *nnn*
Optional, set color images to JPEG format with a quality value from 1 to 100. BestPDF Optimizer default uses JPEG with a quality value 55.

**-jpgm** *nnn*
Optional, set color images to MOZJPEG format with a quality value from 1 to 100. Might get a better image quality and smaller file than JPEG, but speed slows.

**-l** *logFile*
Optional, specify a file if you want to record all the messages into a log file.

**-lf**
Optional, list unembedded fonts

**-lq** *nn.nn,nn.nn,ccc:*
Optional, use optimal color quantization to process solid-color logo-type images, only process the logo images whose dimensions are less than *nn.nn,nn.nn* in unit CM, default

values are 5.0,1.8, and *ccc* default is 16 colors, valid value is 2 to 256. You might able to get a better quality logo with smaller image stream size. **This feature is very useful to the billing statements with solid-color logo images**.

**-mc** *n%*
Optional, detect black-white images in color format and transform to monochrome format by using either flag -mh or -md. Default maximum noise percentage is 1% with flag '-mh 0'.

**-md** *n*
Optional, specify the dither algorithm for transform color images to monochrome images, valid values are:

| | |
|---|---|
| 1 | Floyd Steinberg |
| 2 | Burkes |
| 3 | Stucki. |
| 4 | Jarvis-Judice-Ninke |
| 5 | Sierra |
| 6 | Stevenson-Arce |
| 7 | Bayer ordered |
| 8 | Ordered-dithering |

**-mh** *nnn*
Optional, transform color images to monochrome by using a threshold value from 1 to 255. . Value 0 set to use auto-thresholding algorithms.

**-mm** *color*
Optional, transform color images to monochrome images, valid values are: `black, blue, red, pink, green, cyan, yellow, gray, darkblue, brown, orange, purple, darkgreen, darkcyan, mustard,` default is `black`. RGB color can be specified by the `R,G,B` values.

**-n** *n*
Optional, set the number of multi-tasks to allow, default is auto-assign up to the CPUs available and the software license tier.

**-nimg**
Optional, do not change images in PDF.

**-nri**
Optional, do not further reduce big image's data stream size.

**-nrp**
Optional, do not remove all page-piece dictionaries.

**-nrs**
Optional, do not remove spider information

**-nrsf**
Optional, do not remove the embedded PDF standard fonts, such as Courier, Helvetica, Times, etc.

**-nrt**
Optional, do not remove all thumbnails.

**-ol**
Optional, linearize the output PDF documents for fast web viewing.

**-pc** *CertFile CertPassword*
Optional, specify a fully qualified filename of PKCS#12 certificate file with the encryption key lengths from 1024 bits up to 8192 bits, and its password, to digitally sign the PDF document file.

If the input file is a digitally signed PDFs and the flag parameter "**-pd**" is not specified, then the original signature definition parameter will be retained to resign output PDFs.

**-pc2** *CertFile stashFile*
Or specify a fully qualified filename of PKCS#12 certificate file with the encryption key lengths from 1024 bits up to 8192 bits, and the name of the stash file created by "**pwdstash**" command to encrypt a password.

**-pd** *p,x,y,w,h; …..*
Optional, to be used with "**-pc**" or "-**pc2**" flag, multiple parameter groups can be separated by semicolon (;), valid parameters:

> p    Page number
> x    Left-to-Right X coordinate in CM
> y    Top-down Y coordinate in CM
> w    Area width in CM
> h    Area height in CM

**-po** *pwd*
Optional, Set output PDF owner password, to be used with flag '-pp'.

**-pp** *permit*
Optional, specify the permissions to protect the output PDF documents, need to be used with flag parameter '-po'. Default is inheriting the PDF permissions from the input PDF file. Valid permission options can be a combination of `acefmps` parameters:

> a    Comment adding
> c    Content copying
> e    Accessibility allowing
> f    Form fields filling
> m    Document modifying
> p    Document printing
> s    Document assembly

Default inherits the permissions from the input PDF file.

**-pu** *password*
Optional, specify the user open password of output PDF file, 256-bit encryption.

**-pv** *n.n*
Optional, set PDF version to *n.n*, default is 1.7.

**-q** *n*
Optional, running in quiet mode. Valid values are:

> 0    Ignore info messages
> 1    Ignore warning messages, default value
> 2    Ignore info and warning messages
> 3    Show info and warning messages

**-ra**
Remove all annotations.

**-rb**
Remove all bookmarks.

**-rf**
Remove all embedded fonts.

**-ri**
Remove all images.

**-rthr**
Remove article threads.

**-sd**
Optional, support sub-paths for the paths of input PDF, output PDF, and logs.

**-set** *setting_file*
Optional, read optimization settings from the setting file in XML format predefined by GUI.
default search path is <install_path>\Config\Settings\ on Windows systems, and on Linux is
<install_path>/config/settings/. You can specify a fully qualified file name.

**-si**
Optional, read the PDF data stream from the standard input.

**-so**
Optional, write the PDF data stream to the standard output.

**-ti**
Optional, transform PDF metadata to PDF page-piece dictionary information for other
applications, like PDF2AFP Transforms.

The following is an example of how the PDF metadata would appear inside a PDF document:

```
PDF metadata: <<
/CreationDate (D:20210913080458-04'00')
/ACCTNUM (5000 0310 4667)
/ADDRLINE (SPARACIO, ROTTMANN)
/STMDATE (2020-09-15)
/POSTCODE (234796)
/ModDate (D:20210913080458-04'00')
>>
```

**-tm**
Optional, merge all PDF files from an input path and output to a PDF file. You may need to
merge all PDF files into one PDF file for such as production high speed printing. 32 GB big
memory is required if you need to merge a huge number of PDF files.

**-z** *n*
Optional, set compression level, valid values are from 1 to 6. The default value is 6 with the
highest compression.

## BestPDF Optimizer Command Examples

The following example shows how to use the BestPDF Optimizer command to transform a
PDF document.

```
bestpdf  masterCard.pdf  masterCard_tuned.pdf
```

The following example shows how to use the BestPDF Optimizer command to optimize all PDF documents from the input path `d:\pdf_visaCards` and output optimized PDF documents into path `e:\pdf_visaCards_tuned`.

```
bestpdf  -i d:\pdf_visaCards  -o e:\pdf_visaCards_tuned
```

# Chapter 5. BestPDF Optimizer GUIs for Windows

This chapter describes BestPDF Optimizer Graphical User Interfaces and their functions.

## Starting BestPDF Optimizer GUIs
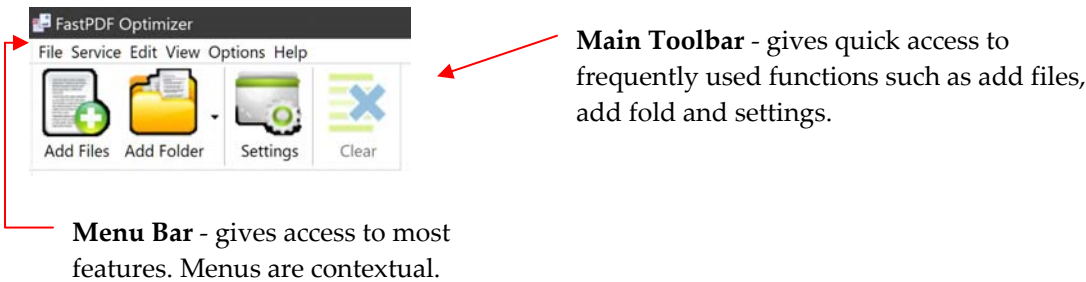
To start BestPDF Optimizer GUIs:

1. Click the **Start** button.
2. Select **Programs**, **MakeAFP Software**, and then **BestPDF Optimizer**, or double-click the **BestPDF Optimizer** icon on your Windows desktop.
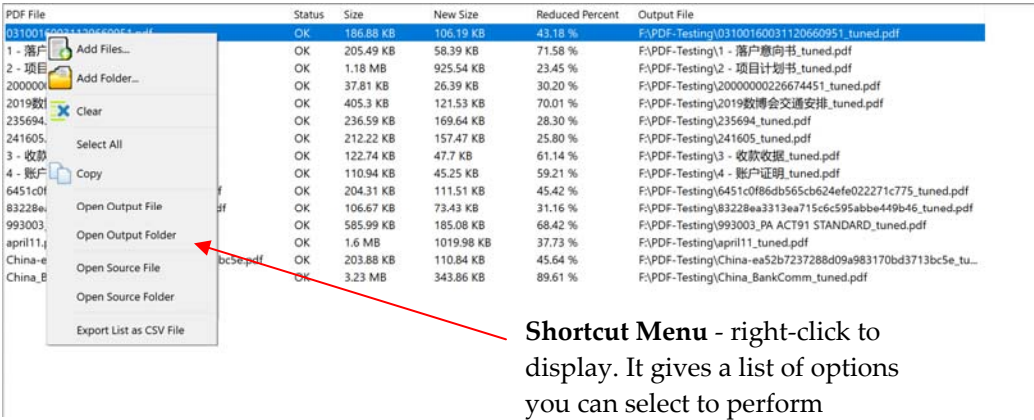
## Parts of the BestPDF Optimizer Interface

The Menu Bar and Toolbar in BestPDF Optimizer are similar to most Microsoft Windows-based software interfaces.

Additional features are available and their purposes are outlined in the following narrative.
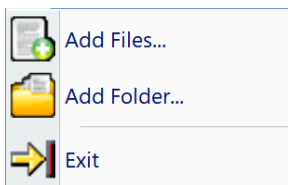
**Top Portion of the Interface**



**Main Toolbar** - gives quick access to frequently used functions such as add files, add fold and settings.

**Menu Bar** - gives access to most features. Menus are contextual.

**Middle Portion of the Interface**



**Shortcut Menu** - right-click to display. It gives a list of options you can select to perform
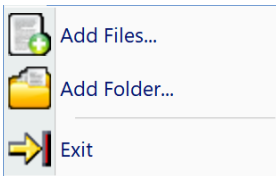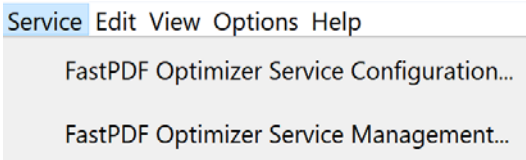
# Using the Menu Bar

Click on an item in the Menu Bar to select its options. Available options and shortcut keys are displayed adjacent to the item, and menu options are context-sensitive.
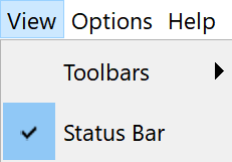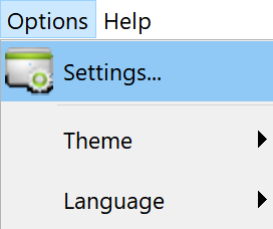


# Menu Bar Options

Most of the options under the Menu Bar should be self-explanatory to any experienced computer user. For example, you should be able to comprehend how to add PDF files or a folder to optimize and compress, define and change the settings of optimization and compression.

The Menu Bar and options are listed in the following tables sequentially:

| Menu Option | Functions |
|---|---|
| **File** | To add the PDF files or a PDF folder to be optimized and compressed.<br><br><br><br>**Add Files …** – to add the PDF files.<br>**Add Folder …** to add a PDF folder.<br>**Exit** - to close the active window and exit BestPDF Optimizer. |
| **Service** | To define the configuration of BestPDF Optimizer Service, and manage the BestPDF Optimizer Service.<br><br><br><br>**BestPDF Service Configuration** – to define the configuration settings of BestPDF Optimizer Service.<br><br>**BestPDF Service Management** – to manage the BestPDF Optimizer Service. |

| | |
|---|---|
| **View** | The View Menu lets you enable or disable the Standard Toolbars and Status Bar.<br><br>View Options Help<br>　Toolbars ▶<br>✓ Status Bar<br><br>**Toolbars** – to enable or disable the Standard Toolbars.<br><br>**Status Bar** – to enable or disable the Status Bar at the bottom of the view pane. |
| **Options** | The Options Menu allows you to define and customize the settings of optimization and compression; selects a language for your Menu, edits, and creates the Language Files.<br><br>Options Help<br>　Settings…<br>　Theme ▶<br>　Language ▶<br><br>**Settings** – to define and customize the settings of optimization and compression.<br><br>**Theme** – to choose a color theme for your GUIs.<br><br>**Languages** – to choose a preferred language for the Menu, edit or add a new language file. |

# ToolBar Options

BestPDF Optimizer provides a suite of tools to help you to optimize and compress PDF quickly.

The tools are arranged on toolbars for convenient access, which are customizable. The tools are also available on the menus.

| Tool | Function |
|---|---|
| **Add Files…** | Add the PDF files to be optimized and compressed. |

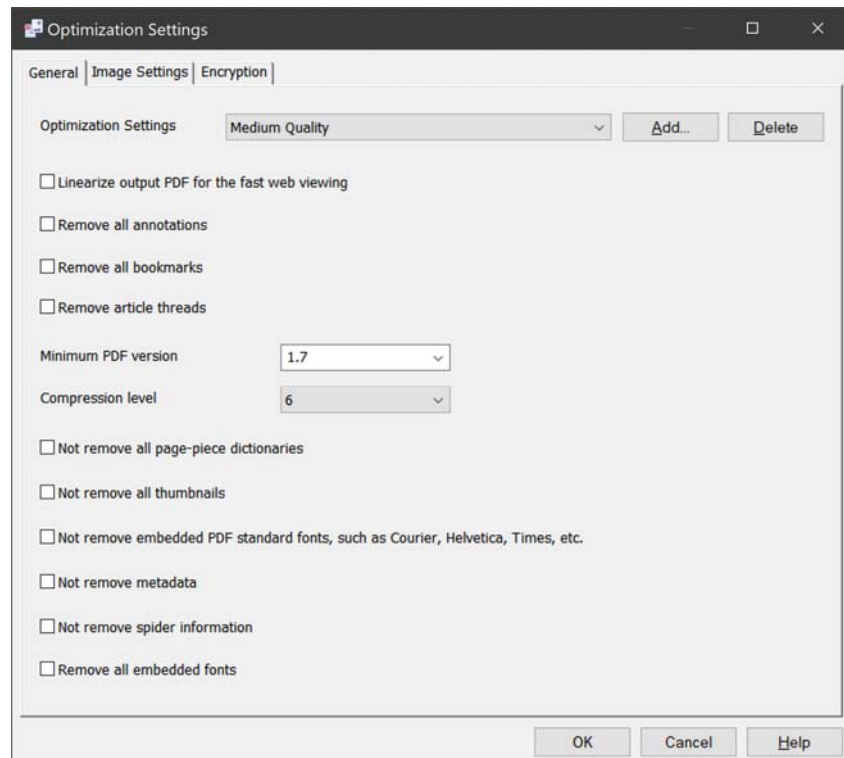| | |
|---|---|
|  **Add Folder…** | Add a folder to optimize and compress the PDF files. |
|  **Settings** | Define and change the settings of optimization and compression. |
|  **Clear** | Clear up PDF file list from the main pane. |

## Optimization Settings

By default, the setting configuration files are saved in the path *<install_path>*/config/ on Windows platforms.

Setting configuration files are in XML format with the syntaxes which are very simple and easy to understand, editing such XML configuration file directly is quite straight-forward. As these XML files are encoded in Unicode UTF-8 encoding, make sure the text editor you are using supports Unicode encoding texts, like the powerful freeware Notepad++ is one of them.

BestPDF Optimizer provides user-friendly GUIs to help you quickly define and update the BestPDF Optimizer optimization settings.
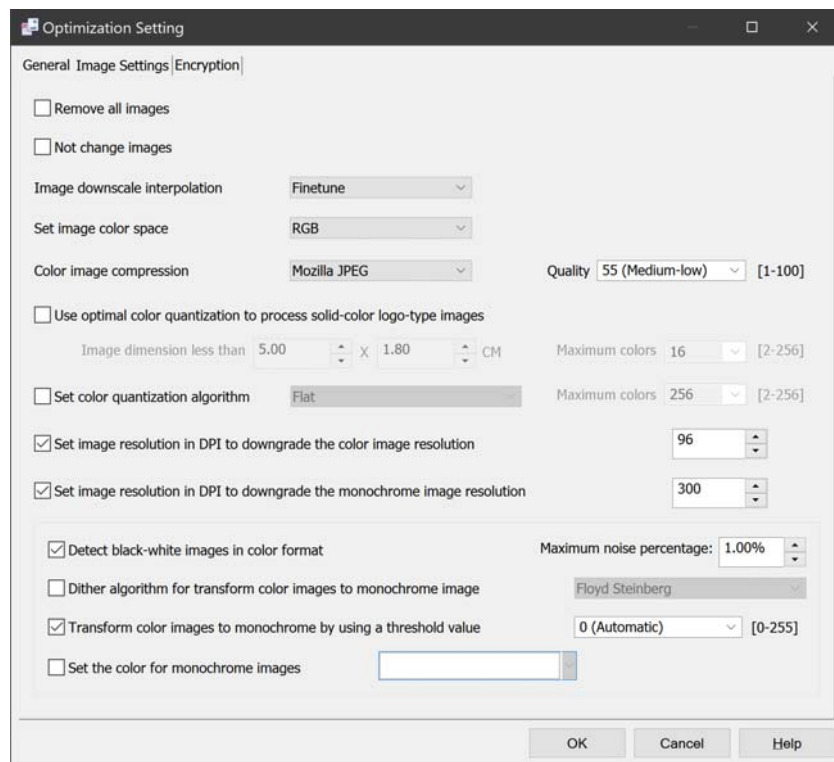
You can define and change the settings by opening the **Options** Menu and then **Settings** or clicking on the toolbar of **Settings**.

With settings of **General,** you can add a new setting, define and modify an existing setting:

- Set the name of the optimization settings.
- Linearize PDF documents for fast web viewing.
- Remove all annotations.
- Remove all bookmarks.
- Remove article threads.
- Set PDF version of the output PDF files.
- Set compression level, to enable you in the balance of faster processing performance and best compression ratio.
- Not remove page-piece dictionaries.
- Not remove thumbnails.
- Not remove embedded PDF standard fonts, e.g. Courier, Helvetica, Times, etc.
- Not remove Metadata.
- Not remove spider information.
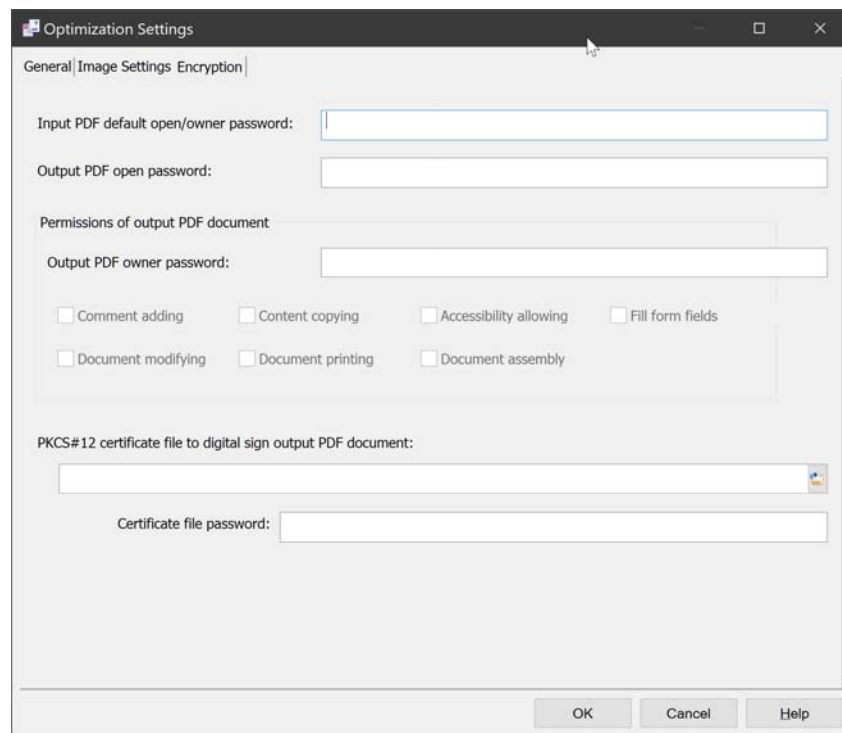- Remove all embedded fonts.

With **Image Settings,** you can define:



- Remove all images.
- Not change images in PDF.
- Set the image downgrade interpolation.
- Set the image color space.
- Set compression type of color images, Mozilla JPEG might get a better image quality and smaller file than JPEG, but speed slows.

- Set quality of color images, valid values are from 0 to 100, the default value is 55.
- Set whether use optimal color quantization to process solid-color logo-type images. You might able to get a better quality logo with smaller image stream size.
- Set color quantization to reduce the color image stream size, the number of colors can be reduced possible without loss of visual quality & important global information. This feature is very useful to billing-type documents with simple solid-color logos.
- Set image resolution in DPI to downscale the color images, value 0 disables downscale resolution, the default value is 128 dpi.
- Set image resolution in DPI to downscale the monochrome images, value 0 disables downscale resolution, the default is 200 dpi.
- Set whether to detect the black and white images in color format and convert to black-white monochrome format.
- Transform color images to monochrome by using a threshold value from 0 to 255.
- Set the dither algorithm for transform color images to monochrome images.
- Set a color for the monochrome images.

With settings of **Encryption,** you can define:



- Set the input PDF default open/owner password.
- Set output PDF owner password.
- Set output PDF open password.
- Set encryption and permissions for the PDF output documents.
- Set the PKCS#12 certificate file and its password to digitally sign the PDF output files. PKCS#12 encryption key lengths can be from 1024 bits up to 8192 bits.

# Chapter 6. BestPDF Optimizer Service for Windows

BestPDF Optimizer Service on Windows platforms runs as a Windows Service that is registered to the Windows service manager and starts as soon as the system boots and remains running as long as the system is up.
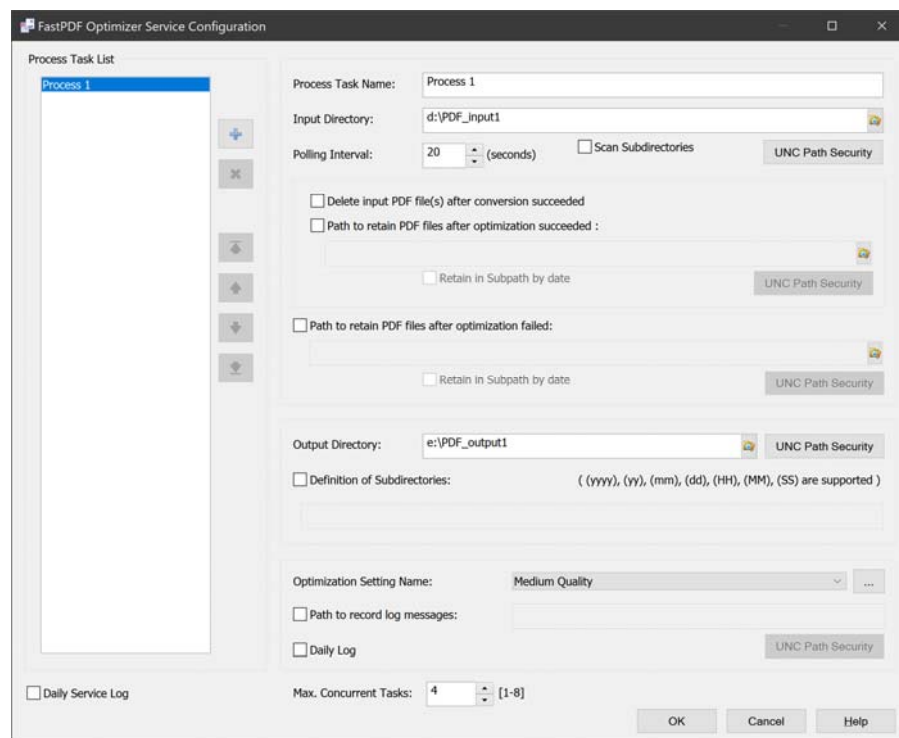
With the powerful multithreading and multitasking BestPDF Optimizer Service, once your PDF document files are placed in the user-designated watching hot-folders, from which they are dispatched to the appropriate BestPDF Optimizer optimization & compression processes.

## Configuration of BestPDF Optimizer Service

BestPDF Optimizer provides user friendly GUIs to help you quickly define and update the BestPDF Optimizer Service configuration file *<install_path>*/config/BestPDFServ.xml.

The configuration file of BestPDF Optimizer Service is in XML format with syntaxes that are very simple and easy to understand, edit such an XML configuration file directly is quite straightforward. As these XML files are encoded in Unicode UTF-8 encoding, make sure the text editor you are using supports Unicode encoding texts, like the powerful freeware Notepad++ is one of them.

Click on the Windows **Start** button, select **Programs**, **MakeAFP Software**, **BestPDF Optimizer,** and then select menu **Service, BestPDF Service Configuration**, to start the GUI of BestPDF Optimizer Server Configuration.

With GUI of **BestPDF Service Configuration,** you can define:

1. Define a new process task, or modify an existing process task.
2. Define a PDF input directory and whether to scan its subdirectories.
3. Define whether to retain the PDF input files into the retain path after optimization and compression succeeded, or retain PDF input files into a path after optimization failed.
4. Select a name of optimization settings, previously defined by using the GUIs of **Settings**.
5. Define PDF output path, etc.
6. Define the maximum concurrent tasks, you need to adjust them according to your computer hardware capabilities and the software license to achieve the best optimization and compression performance.

## Managing BestPDF Optimizer Service

At system boot, the Windows system starts an RPC server called Service Control Manager (SCM). A Windows service is a Windows program that is loaded by the SCM. It is loaded before any user has logged into the system, Service may sometimes be manually started instead of starting automatically at boot time.

BestPDF Optimizer provides easy access to the SCM to manage the service of BestPDF Optimizer Service, with the command-line flag options, you can easily install, start and stop the service, and alternatively you can use the GUI of BestPDF Optimizer Service Management to install, start, stop and uninstall the service.

### Command Syntax

**bestpdfserv { -c | --install | -- start| --stop | --remove }**

**-c**
To run BestPDF Optimizer Service in batch mode instead of Windows service mode. With batch mode, you can get more messages than Windows service mode. You may run it as an Auto running task under Windows Scheduled Tasks.

Make sure you have defined the configurations of BestPDF Optimizer Service before you start it.

**--install**
To install the BestPDF Optimizer Service into SCM.

**--start**
To start the BestPDF Optimizer Service.

Make sure you have defined the configurations of BestPDF Optimizer Service before you start the service.
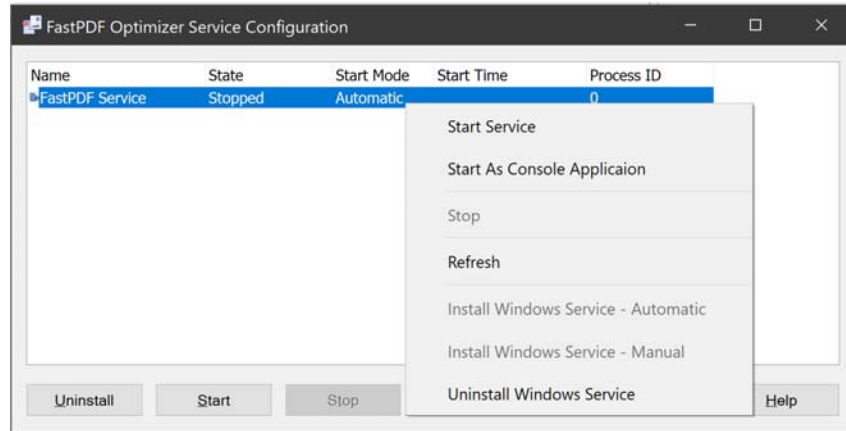
**--stop**
To stop the BestPDF Optimizer Service.

**--remove**
To uninstall the BestPDF Optimizer Service from SCM.

## Graphical User Interface

Click on the Windows **Start** button, select **Programs**, **MakeAFP Software**, **BestPDF Optimizer,** and then select menu **Service, BestPDF Service Management**, to start the GUI of **BestPDF Service Management**, with which you can easily install, start, stop, uninstall the service, monitor its state and view its log.



## Log File of BestPDF Optimizer Service

As BestPDF Optimizer Service runs as a Windows service, you cannot get its messages on the command-line screen while it is running. BestPDF Optimizer Service records all the messages in its log file *<install_path>*\log\BestPDFServ.log.

# Chapter 7. BestPDF Optimizer Application Programming Interfaces

The BestPDF Optimizer Application Programming Interfaces (APIs) are written to interface with a C/C++, C# or Java application program, to quickly optimize PDF documents from a file or memory buffer.

This chapter describes the APIs for BestPDF Optimizer.

## BestPDF Optimizer APIs Libraries and Examples

BestPDF Optimizer APIs are available in the Dynamic Link Library, C/C++, C#, and Java programming examples are provided in the **<*install_path*>/APIs** path.

## BestPDF Optimizer APIs Functions

This section describes all supported functions of BestPDF Optimizer APIs in detail.

### BestPDFCancel Function

Syntax:

```
void BestPDFCancel(
    HANDLE hBestPDF )          // Handle returned by BestPDFInit or BestPDFInitStream
                              // function
```

This function cancels or stops the current BestPDF Optimizer task.

### BestPDFClose Function

Syntax:

```
void BestPDFClose(
    HANDLE hBestPDF )          // Handle returned by BestPDFInit or BestPDFInitStream
                              // function
```

This function closes and releases the current BestPDF Optimizer handle.

### BestPDFGetError Function

Syntax:

```
LPWSTR BestPDFGetError(
    HANDLE hBestPDF,           // Handle returned by BestPDFInit or BestPDFInitStream
                              // function
    int nErrorIndex,           // Index of errors, base 0
    LPWSTR pszBuffer,          // Address of buffer to retrieve the error
                              // messages
    DWORD dwSize)              // Specifies the maximum buffer size, in WCHARs
```

This function gets BestPDF Optimizer warning or error messages.

## BestPDFGetErrorCount Function

Syntax:

```
int BestPDFGetErrorCount(
    HANDLE hBestPDF)            // Handle returned by BestPDFInit or BestPDFInitStream
                               // function
```

This function gets the count of BestPDF Optimizer warning and error messages.

## BestPDFInit Function

Syntax:

```
HANDLE BestPDFInit(
    LPCWSTR pszCmdArgs,        // BestPDF Optimizer command-line argument flags
    LPWSTR pszError)           // Error messages, its buffer size recommended
                               // is above 1024
```

This function initializes BestPDF Optimizer and returns a BestPDF Optimizer handle.
Returns NULL if it is failed.

You need to specify input & output PDF files/paths, and other options by the command-line
flag parameters. Refer to Section *BestPDF Optimizer Command Syntax* of *Chapter 4. BestPDF
Optimizer Command* for more information about BestPDF Optimizer command-line flag
parameters supported.

## BestPDFInitStream Function

Syntax:

```
HANDLE BestPDFInitStream(
    LPCWSTR pszCmdArgs,            // BestPDF Optimizer command-line argument flags
    const char *InPDFBuffer,      // Address of input PDF data stream buffer, while
                                  // PDF optimizing, you cannot release or free
                                  // this memory buffer
    int nInPDFBufSize,            // Size of input PDF data stream
    const char **ppOutPDFBuffer,  // Pointer to the address of output PDF data
                                  // stream buffer, you cannot release or free
                                  // this pointer, will be released by BestPDFClose
    int *pnOutPDFBufSize,         // Pointer to the size of output PDF data stream
    LPWSTR pszError)              // Error messages, recommended buffer size is
                                  // above 1024
```

This function initializes BestPDF Optimizer and returns a BestPDF Optimizer handle.
Returns NULL if it is failed.

It reads input PDF stream from a memory buffer and writes optimized PDF output stream to
the memory buffer, other options can be specified by the command-line flag parameters.
Refer to Section *BestPDF Optimizer Command Syntax* of *Chapter 4. BestPDF Optimizer Command*
for more information about BestPDF Optimizer command-line flag parameters supported.

**BestPDFQueryState Function**

Syntax:

```
bool BestPDFQueryState(
    HANDLE hBestPDF,                     // Handle returned by BestPDFInit or
                                        // BestPDFInitStream function
    TBestPDFStateInfo *pStateInfo)      // BestPDF Optimizer state information
```

This function queries the current running state of BestPDF Optimizer.

BestPDF Optimizer state and information available are:

```
typedef struct
{
    EBestPDFState eState;           // Real-time state of the current BestPDF Optimizer
    WCHAR szSrcPDF[A2P_MAXPATH];    // Current source PDF filename
    WCHAR szDstPDF[A2P_MAXPATH];    // Current destination PDF file
    BYTE  nProgress;                // Current optimization progress of the source PDF
                                    // file, value range is [0-100]
    BYTE  nTotalProgress;           // Total progress was used while optimizing
                                    // multiple PDF files
} TA2PStateInfo;
```

**BestPDFStart Function**

Syntax:

```
int BestPDFStart(
    HANDLE hBestPDF)                // Handle returned by BestPDFInit or
                                    // BestPDFInitStream function
```

This function starts the BestPDF Optimizer task, and its valid returns codes are:

```
0  – if successful

4  – if any warning

8  – if any error

12 – if any warning and error
```

# Appendix A. PDF File Size Optimization

The objectives of BestPDF Optimizer are to produce the smallest PDF file size for the e-Business applications. BestPDF Optimizer offers a variety of options to optimize and compress PDF fonts and image resources.

## Relevant Factors of Image Resources

The size of an image resource is determined by four factors:

1. **The pixel mass** - The total amount of pixels of an image, for instance, a 600 x 600 dpi image has a total of 360,000 pixels.

2. **The color depth** - How many bits are required to describe 1 pixel, for instance, an RGB true-color image requires 24 bits (3 bytes) per pixel, the grey-scale image requires 8 bits (1 byte), and monochrome image requires 1 bit, a 600 x 600 dpi RGB image requires therefore 600 x 600 x 3 bytes = 1.03 MB in uncompressed format.

3. **The compression** a**lgorithm** - An image can be compressed by a compression algorithm to reduce its file size. There are two types of compression:

   a. **Lossless** - Original image can be restored exactly, common lossless compression is LZW, CCITT G3/G4, and new JBIG2 with the highest compression ratio for the bi-level monochrome images.

   b. **Lossy** - Compression algorithm modifies the pixels, the original image can not be restored from the compressed version. It is typically applied to the photographic type images with which the human eyes cannot distinguish whether the image was modified. BestPDF Optimizer enables you to select use 2 types of JPEG compression, standard JPEG, or Mozilla improved MOZJPEG, to achieve a high compression ratio yet with good quality.

4. **The complexity of the image contents** – Basically the compression ratio of a simple image should be much better than a photo type complex image

## Optimize Images Resources

BestPDF Optimizer offers the following capabilities to optimize the image resources:

- Downscale image resolution.
- Set the best compression type for each image.
- Provide options of pixel interpolation algorithm to downscale color images.
- Provide options of pixel quantization algorithm to compress color images.

# Relevant Factors of Font Resources

The size of a font resource is determined by three factors:

1. **Font Embedding** - Fonts in PDF can either be embedded as the font resources or not. If a font is not embedded inline in PDF, then the PDF viewer/reader has to select an equivalent from the system installed available fonts.

2. **Text Encoding** - An embedded font that contains the Latin glyphs may have a size up to 50 KB, and much larger if it contains a large Unicode range (e.g. East Asian Chinese, Japanese and Korean Characters).

3. **Font Type** – Embed fonts in OpenType PS format is recommended, OpenType PS font file size might be considerably smaller than TrueType font.

# Optimize Font Resources

BestPDF Optimizer offers the following capabilities to optimize the font resources:

- Automatically optimize and compress fonts.
- Automatically remove redundant fonts.
- Automatically merge compatible fonts.
- Automatically subset font to contain only the used glyphs.
- Remove embedded fonts entirely.
- Remove following embedded PDF standard fonts:

| Family name | Full name | PostScript name |
|---|---|---|
| Courier | Courier | Courier |
| Courier | Courier Bold | Courier-Bold |
| Courier | Courier Oblique | Courier-Oblique |
| Courier | Courier Bold Oblique | Courier-BoldOblique |
| Helvetica | Helvetica | Helvetica |
| Helvetica | Helvetica Bold | Helvetica-Bold |
| Helvetica | Helvetica Oblique | Helvetica-Oblique |
| Helvetica | Helvetica Bold Oblique | Helvetica-BoldOblique |
| Times | Times Roman | Times-Roman |
| Times | Times Bold | Times-Bold |
| Times | Times Italic | Times-Italic |
| Times | Times Bold Italic | Times-BoldItalic |
| Symbol | Symbol | Symbol |
| ZapfDingbats | ZapfDingbats | ZapfDingbats |

Above PDF 14 standard fonts are always supported by the Adobe PDF readers and most popular PDF viewers/readers, regardless of whether they're embedded or not.