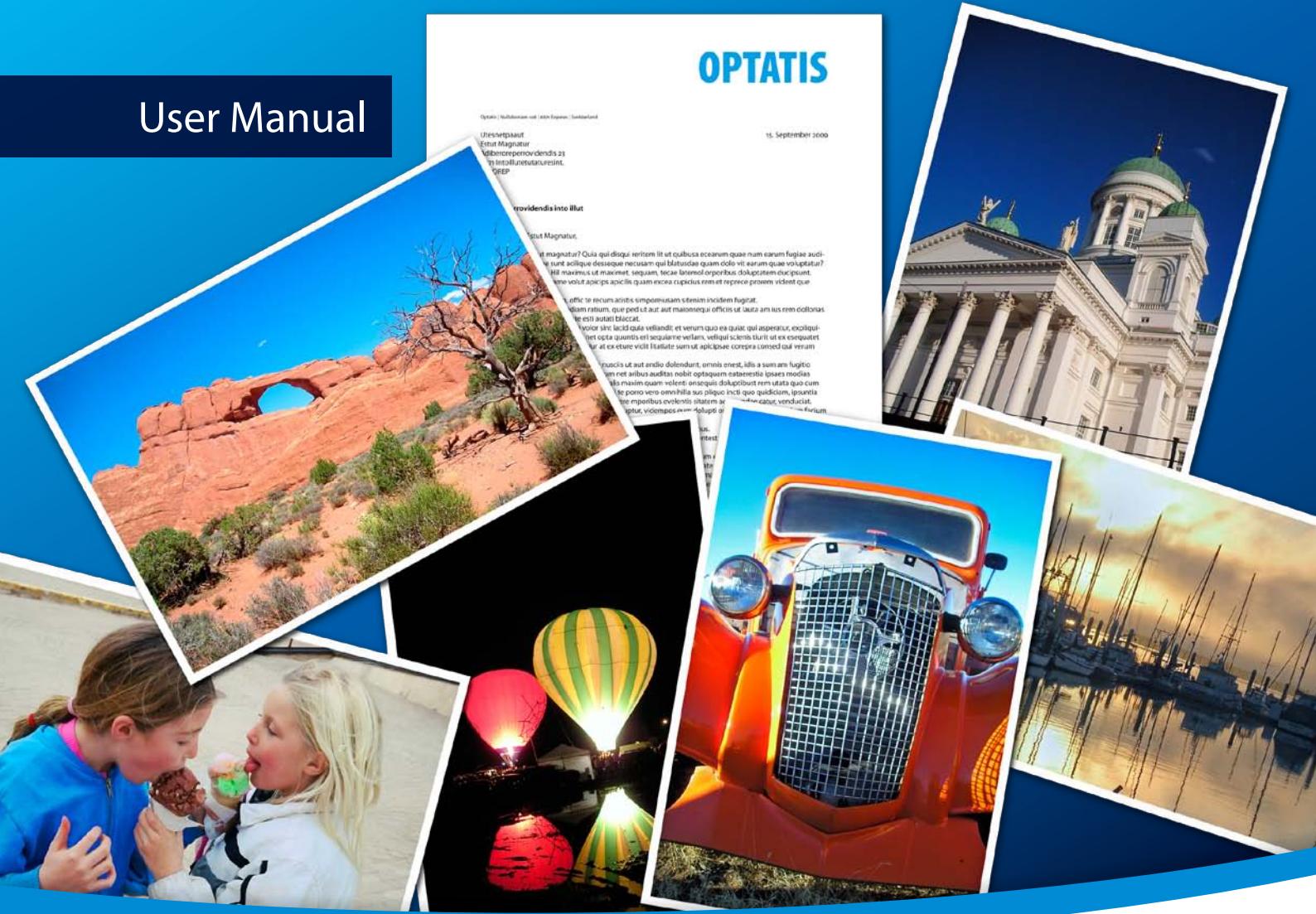


# User Manual



# 3-Heights® PDF to Image Converter Service

Rendering Engine 2.0

Version 6.18.1



**PDF-TOOLS.COM**  
Premium PDF Technology

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# 1 Introduction

## 1.1 Description

The 3-Heights® PDF to Image Converter Service converts PDF documents into single page or multi-page raster images such as TIFF or JPEG. It can also convert PDF files into rasterized PDF.

Its areas of use include the web, TIFF-based DMS solutions, archive and workflow systems and the protection of PDF documents. The Converter is characterized by its high speed and outstanding quality.

## 1.2 Functions

The 3-Heights® PDF to Image Converter Service merges pages from different input files to form one or more files. Color space and image size are defined automatically during the process. The Converter supports scaled and un-scaled conversions and a variety of image formats such as PNG, TIFF, JBIG2 or JPEG2000.

### 1.2.1 Features

#### PDF to Image

- Create single page and multi-page image files and rasterized PDF documents
- Convert individual pages
- Convert PDF files to CCITT fax files
- Define page dimensions in points or pixels
- Set rotation (Force portrait or landscape or inherit rotation from original document)
- Set resolution (DPI)
- Dithering (Floyd Steinberg, Halftone Block, Halftone Continuous, Atkinson)
- Set image filters
- Set color depth
- Set color space
- Set TIFF file compression
- Set the quality of lossy image compression
- Set bit filling order for fax files
- Add Watermark images

### 1.2.2 Formats

#### Input Formats

- PDF 1.x (PDF 1.0, ..., PDF 1.7)
- PDF 2.0
- PDF/A-1, PDF/A-2, PDF/A-3

## Output Formats

- TIFF (Tagged Image File Format)
- JPEG (Joint Photographic Expert Group)
- PNG (Portable Network Graphics)
- GIF (Graphics Interchange Format)
- BMP (Window Bitmap)
- EPS (Encapsulated PostScript)
- JBIG2 (Joint Bi-level Image Experts Group)
- JPEG2000
- Extended JPEG2000
- PBM (Portable Bitmap File Format)

## Conformance

Standards:

- ISO 32000-1 (PDF 1.7)
- ISO 32000-2 (PDF 2.0)
- ISO 19005-1 (PDF/A-1)
- ISO 19005-2 (PDF/A-2)
- ISO 19005-3 (PDF/A-3)

## 1.3 Service

The 3-Heights® PDF to Image Converter Service is a ready-to-use product that allows to install a Windows NT service process to automatically convert PDF documents into various types of images from watched folders.

The 3-Heights® PDF to Image Converter Service combines three programs in one executable.

1. A converting service, that can be run on Windows platforms (Windows 2000 or newer). The service can be started, paused, stopped via the Windows service control panel and reports to the application log of the Windows event log panel.
2. A command line interface to control the PDF to Image Converter Service. By means of this interface the service can be installed, started, stopped, paused, resumed and deleted.
3. A converter query program which can be used to retrieve information about available conversion options such as file type, compression, dithering, color depths, etc.

## 1.4 Operating Systems

The 3-Heights® PDF to Image Converter Service is available for the following operating systems:

- Windows Client 7+ | x86 and x64
- Windows Server 2008, 2008 R2, 2012, 2012 R2, 2016, 2019 | x86 and x64

'+' indicates the minimum supported version.

## 2 Installation

### 2.1 Overview

The PDF to Image Converter Service is configured by the file `Pdf2ImgSvrR2.ini`, which needs to be located in the same directory as the executable `Pdf2ImgSvrR2.exe`. Before starting the service, the configuration file needs to be adjusted. How this is done is described in the chapter [Configuration File Pdf2ImgSvrR2.ini](#).

Once configured, the service can be created, started, paused, continued, stopped and deleted via the command line. To use the create and delete functions, administrator permissions are required. To start and stop the service, operator permissions are required.

When the service is running, it processes PDF documents that are copied or moved into watched folders.

### 2.2 Windows

The 3-Heights® PDF to Image Converter Service comes as an MSI installer.

The installation of the software requires the following steps.

1. You need administrator rights to install this software.
2. Log in to your download account at <http://www.pdf-tools.com>. Select the product "PDF to Image Converter Service". If you have no active downloads available or cannot log in, please contact [pdfsales@pdf-tools.com](mailto:pdfsales@pdf-tools.com) for assistance.

You will find different versions of the product available. We suggest to download the version, which is selected by default. A different version can be selected using the combo box.

The product comes as an MSI (Microsoft Installer) package that provides an installation routine for installing and uninstalling the 3-Heights® PDF to Image Converter Service.

The package installs the 64-bit version, which runs on 64-bit platforms only.

3. Start the MSI package and follow the steps in the installation routine.
4. Ensure the cache directory exists as described in chapter [Special Directories](#).
5. Make sure your platform meets the requirements regarding color spaces and fonts described in chapters [Color Profiles](#) and [Fonts](#) respectively.

### 2.3 Uninstall

If you have used the MSI for the installation, go to Start → 3-Heights® PDF to Image Converter Service... → Uninstall  
...

### 2.4 Note about the Evaluation License

With the evaluation license the 3-Heights® PDF to Image Converter Service automatically adds a watermark to the output files.

## 2.5 Special Directories

### 2.5.1 Directory for temporary files

This directory for temporary files is used for data specific to one instance of a program. The data is not shared between different invocations and deleted after termination of the program.

The directory is determined as follows. The product checks for the existence of environment variables in the following order and uses the first path found:

#### Windows

1. The path specified by the %TMP% environment variable.
2. The path specified by the %TEMP% environment variable.
3. The path specified by the %USERPROFILE% environment variable.
4. The Windows directory.

### 2.5.2 Cache Directory

The cache directory is used for data that is persisted and shared between different invocations of a program. The actual caches are created in subdirectories. The content of this directory can safely be deleted to clean all caches.

This directory should be writable by the application, otherwise caches cannot be created or updated and performance will degrade significantly.

#### Windows

- If the user has a profile:  
%LOCAL\_APPDATA%\PDF Tools AG\Caches
- If the user has no profile:  
<TempDirectory>\PDF Tools AG\Caches

where <TempDirectory> refers to the [Directory for temporary files](#).

### 2.5.3 Font Directories

The location of the font directories depends on the operating system. Font directories are traversed recursively in the order as specified below.

If two fonts with the same name are found, the latter one takes precedence, i.e. user fonts will always take precedence over system fonts.

#### Windows

1. %SystemRoot%\Fonts
2. User fonts listed in the registry key \HKEY\_CURRENT\_USER\Software\Microsoft\Windows NT\CurrentVersion\Fonts. This includes user specific fonts from C:\Users\<user>\AppData\Local\Microsoft\Windows\Fonts and app specific fonts from C:\Program Files\WindowsApps
3. directory Fonts, which must be a direct sub-directory of where Pdf2ImgSvrR2.exe resides.

# 3 Getting Started

## 3.1 Configuration

Before starting the PDF to Image Converter Service for the first time, the file `Pdf2ImgSvrR2.ini` needs to be modified. Editing this file while the PDF to Image Converter Service is running has no impact. The service first needs to be stopped and restarted after the modification. When opening this file with a text editor, it looks like this:

```
[Pdf2ImgSvrR2]
AutoDelete=True
Threads=3
Thread1=-w C:\Pdf2ImgSvr\ToTiff -e .tif
Thread2=-w C:\Pdf2ImgSvr\ToJpeg -e .jpg -1
Thread3=-w C:\Pdf2ImgSvr\ToGif -e .gif -1 -i
```

The meaning of these keys and values in this example is as follows:

**AutoDelete=True** This option automatically deletes a PDF file after it is processed successfully. When set to **False**, the processed file will be copied to the sub directory `Succeeded`.

**Threads=** The given value stands for the total number of concurrent threads. Each thread can have its own assigned settings. One thread corresponds to one watched folder.

**Threads1=** Sets the options such as name of watched folder and settings etc. for thread 1.

**-w C:\Pdf2ImgSvrR2\ToTiff** Creates a watched folder with the given name for this thread. The path must be an absolute path. Network mapped drive letters or relative paths or driver letters mapped via the `subst` command are not recognized, because the service process per default runs under the "LocalSystem" account. (The user can be changed as described in chapter [Managing the Service](#).)

**-e .tif** (required) Sets the image type. The extension of the image defines the created image type.

**-1** (optional) Creates one page per document. This is required for formats that do not support multi-pages.

**-i** (optional) Uses indexed color instead of grey-scale.

This means that any PDF document that is moved or copied to the folder `C:\ProductBinary\ToTiff` will be processed by the service and converted to a TIFF image.

**Note:** Any string, such as a file name, that contains spaces must be enclosed in quotation marks. E.g. if the watched folder contains spaces in its path, the entire path needs to be quoted: `-w "C:\A path\with spaces"`.

### 3.1.1 Retrieve Information about Available Options and Settings

A quick overview over all configuration options and service control commands that the 3-Heights® PDF to Image Converter Service supports can be output in the form of a usage message on the command line.

To display this information, first open a Windows command line (`cmd .exe`) and then type:

```
Pdf2ImgSvrR2
```

(See also [Service Control Commands](#).)

A short overview over all the options that can be configured in the `Pdf2ImgSvrR2.ini` is displayed when typing the following in a Windows command line:

```
Pdf2ImgSvrR2 -i
```

(See also [Configuration Options](#).)

## 3.2 Managing the Service

Once the configuration is done, the service can be started and controlled by executing `Pdf2ImgSvrR2.exe` on the command line. The path can be omitted if the `Pdf2ImgSvrR2.exe` is included in the `%PATH%` environment variable.

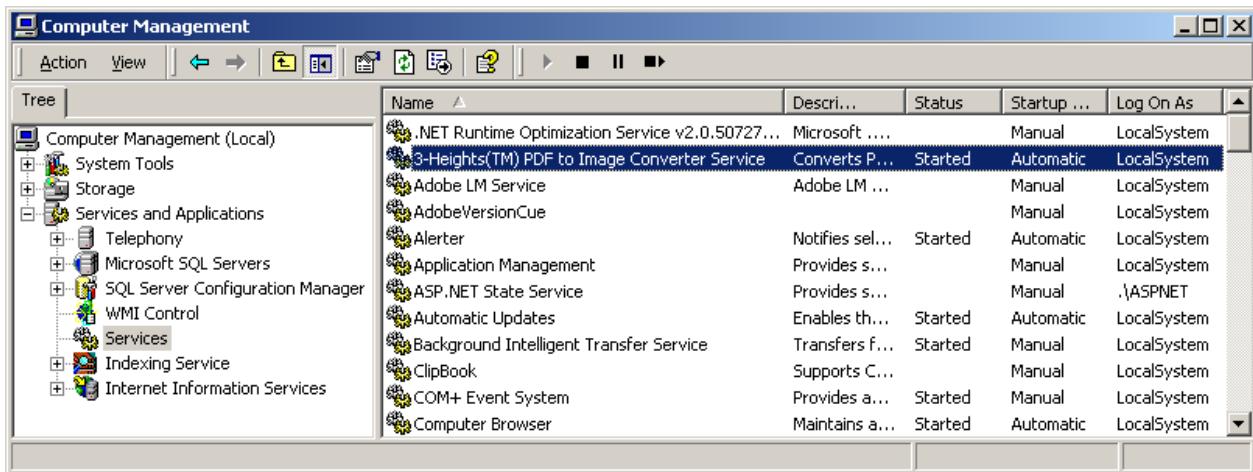
**Note:** It is essential that the executable `Pdf2ImgSvrR2.exe` and the configuration file `Pdf2ImgSvrR2.ini` be on a non-mapped drive.

**Note:** To create or delete the service, administrator permissions are required.

1. To create the service, use the option `-c`.

```
Pdf2ImgSvrR2 -c
```

After executing this command, the service is created. It is now visible in the “Computer Management” window under “Services”. To open the “Computer Management” window, go to Start → Control Panel → Administrative Tools → Computer Management or simply right-click the icon “My Computer” on the desktop and select “manage”. If the services was created correctly it appears as “3-Heights® PDF to Image Converter Service” as shown in the image below.



2. By default, the 3-Heights® PDF to Image Converter Service runs in the “LocalSystem” account. After the service has been created, the user can be changed.

This will be required in a situation where a network share is used as a watched folder and the process needs to run under a user with the appropriate access permission rights, since the account “LocalSystem” does not have any permissions on remote systems.

To change the user, right-click the service in the Services window and select "Properties". Then change the user in the tab "Log On".

3. After its creation, the service can be started with the option [-s](#).

```
Pdf2ImgSvrR2 -s
```

4. Now the 3-Heights® PDF to Image Converter Service is up and running, and files can be moved, copied or drag-and-dropped into the watched folder.
5. To stop the service, use the option [-t](#).

```
Pdf2ImgSvrR2 -t
```

To restart use [-s](#) again.

6. To delete the service use the option [-d](#).

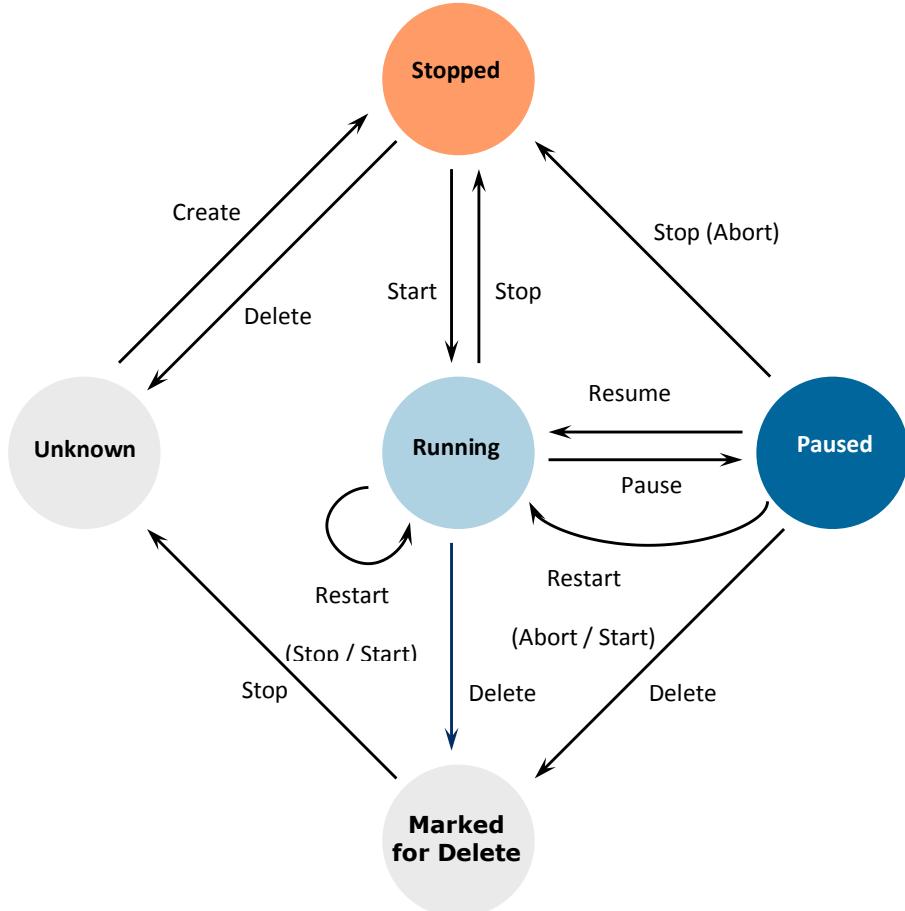
```
Pdf2ImgSvrR2 -d
```

### 3.2.1 State Diagram of the Service

The 3-Heights® PDF to Image Converter Service behaves as described in the state diagram below:

If "Stop" is called when the service is in the state "Paused", the current job is aborted. This means the current page is finished processing, then the job is terminated.

If "Stop" is called when the service is in the state "Running", the current job (all pages) is finished. Then the service is stopped.



## 3.3 Using the Service

Once the service is created and started, the watched folders configured in Pdf2ImgSvrR2.ini are created automatically. In each watched folder, the following sub-folders are created:

- Jobs
- InProgress
- Succeeded
- Failed
- Images
- Logs

When a file is moved, copied, or drag-and-dropped into the configured watched folder, the service will do the following:

1. Each file is moved to the sub folder Jobs. While moving, the file is renamed by adding a 16 character long job-number prefix. This ensures a well defined processing order and unique file names.
2. A worker-thread takes the file from the folder Jobs and moves it to InProgress. The file is then processed.
3. Depending on the outcome of the processing, the following is done:

### **The file was processed successfully**

- The input file is moved to the folder Succeeded or it is deleted, depending on whether `AutoDelete` or `AutoDeleteAll` is set to `true` or `false` in the configuration file Pdf2ImgSvrR2.ini.
- The converted document is stored in Images.

### **The file was not processed successfully**

- The input file is moved to the folder Failed or it is deleted, depending on whether `AutoDeleteAll` is set to `true` or `false` in the configuration file Pdf2ImgSvrR2.ini.

4. In any case, an entry in the log file of this thread is created.

## 3.4 Log Files

There are two types of log files.

**The log file per thread** Each thread (watched folder) has a log file. The log file resides in the same directory as the executable Pdf2ImgSvrR2.exe and the configuration file Pdf2ImgSvrR2.ini. It is named Pdf2ImgSvrR2-log-`<n>`.txt, where the number of the log file `<n>` is increased whenever the service is re-started. The log file is locked by the service as long as the service is running.

- The log file contains general messages (including a time stamp that is not shown here) such as:

```
- [1] Worker thread for directory C:\Pdf2ImgSvrR2\Folder started.
```

- Error messages such as:

```
* Error 0 while opening file C:\Pdf2ImgSvrR2\Folder\InProgress\Job-...
```

## 4 License Management

The 3-Heights® PDF to Image Converter Service requires a valid license in order to run correctly. If no license key is set or the license is not valid, then an error message will be printed to the service log.

More information about license management is available in the [license key technote](#).

# 5 User's Guide

The 3-Heights® PDF to Image Converter Service provides one service-executable.

**Pdf2ImgSvrR2** is used to convert PDF files to raster images, such as TIFF, JPEG, etc. The functionality of this service is documented in this manual.

All switches are described in the usage of the tool. Type “`Pdf2ImgSvrR2 -i`” to list the usage.

## 5.1 Using the Service

When the service is created and started, there are so called watched folders. When a PDF document is placed into a watched folder, the service will do the following:

1. Grab the file, give it a unique file name by adding a conversion job number prefix and move it to the subfolder `Jobs/`. (The job number prefix can be disabled.)
2. When a job is converted successfully, the PDF file will be moved to the folder `Succeeded/` or deleted, depending on whether `AutoDelete` is set to `True` or `False` in the configuration file. The converted image file(s) will be stored in the folder configured output folder (option `-o`, per default in the `Images/` folder).
3. When a job fails to convert, e.g. when the file is not a valid PDF document, the file will be copied to the folder `Failed/` or deleted according to the `AutoDelete` setting. There is a log file created for every job where an error occurred. The log file is in the `Failed/` folder and has the same name as the document, which failed to convert.

Subfolders are created automatically, and used by the PDF to Image Converter Service. All subfolders except the output folder `Images/` are marked hidden. None of the subfolders should be modified, nor should any files be copied into any of them directly.

## 5.2 Output File Name

If no output directory is specified (option `-o`), the generated output file will be copied to the folder `Images/` which resides within the watched folder. The output file name will be automatically generated, for example:

`Images\Job-01C57E37-3ED94B7A_file.tif`

If the created image is a multi-page image (for example a multi-page TIFF), the image is created directly in the `Images` folder and is called:

`Images\Job-01C57E37-3ED94B7A_file.tif`

For multi-page PDF documents, which are converted to multiple image files, there is a subfolder created which corresponds to the name of the job, for example:

`watched_folder\Images\Job-01C57E37-3ED94B7A_file`

For each image there is then a file created within that folder with the corresponding page number, for example:

`Images\Job-01C57E37-3ED94B7A_file\Job-01C57E37-3ED94B7A_file1.tif`

`Images\Job-01C57E37-3ED94B7A_file\Job-01C57E37-3ED94B7A_file2.tif`

## 5.3 Single-Page or Multi-Page Images

For image types which do not support multi-paging, the option `-1` has to be set to create one image file per page in the PDF. This option can also be used to create single page TIFF images.

## 5.4 Color Profiles

A PDF document may contain graphical objects using various different color spaces and the output file of 3-Heights® PDF to Image Converter Service may yet use another color space. Therefore often colors have to be converted between different color spaces.

For calibrated color spaces (such color spaces with an associated ICC color profile) the color conversion is well defined. For the conversion of uncalibrated device color spaces (DeviceGray, DeviceRGB, DeviceCMYK) however, the 3-Heights® PDF to Image Converter Service requires appropriate color profiles. Therefore it is important, that the profiles are available and that they describe the colors of the device your input documents are intended for.

**Note:** When setting an alternative color management system such as Neugebauer, no color profiles are required.

If no color profiles are available, default profiles for both RGB and CMYK are generated on the fly by the 3-Heights® PDF to Image Converter Service.

### 5.4.1 Default Color Profiles

If no particular color profiles are set default profiles are used. For device RGB colors a color profile named "sRGB Color Space Profile.icm" and for device CMYK a profile named "USWebCoatedSWOP.icc" are searched for in the following directories:

#### Windows

1. %SystemRoot%\System32\spool\drivers\color
2. directory Icc, which must be a direct sub-directory of where the Pdf2ImgSvrR2.exe resides.

### 5.4.2 Get Other Color Profiles

Most systems have pre-installed color profiles available, for example on Windows at %SystemRoot%\system32\spool\drivers\color\. Color profiles can also be downloaded from the links provided in the directory bin\Icc\ or from the following websites:

- <http://www.pdf-tools.com/public/downloads/resources/colorprofiles.zip>
- <http://www.color.org/srgbprofiles.html>
- [https://www.adobe.com/support/downloads/iccprofiles/iccprofiles\\_win.html](https://www.adobe.com/support/downloads/iccprofiles/iccprofiles_win.html)

## 5.5 Fonts

PDF documents may contain both embedded and non-embedded fonts. When rendering non-embedded fonts the best result can be achieved, if the font is available on the system. Therefore it is important to make sure the [Font Directories](#) contain all fonts required.

For more information on how to cope with font issues, please refer to section [Font and Text Issues](#).

Note that on Windows when a font is installed it is by default installed only for a particular user. It is important to either install fonts for all users, or make sure the 3-Heights® PDF to Image Converter Service is run under that user and the user profile is loaded.

## 5.5.1 Font Cache

A cache of all fonts in all [Font Directories](#) is created. If fonts are added or removed from the font directories, the cache is updated automatically.

In order to achieve optimal performance, make sure that the cache directory is writable for the 3-Heights® PDF to Image Converter Service. Otherwise the font cache cannot be updated and the font directories have to be scanned on each program startup.

The font cache is created in the subdirectory <CacheDirectory>/Installed Fonts of the [Cache Directory](#).

## 5.5.2 Font Configuration File fonts.ini

The font configuration file is optional. It can be used to control the mapping of fonts used in the PDF to fonts pre-installed on the system.

The file `fonts.ini` must reside at the following location :

**Windows:** In a directory named `Fonts`, which must be a direct sub-directory of where `Pdf2ImgSvrR2.exe` resides.

It consists of two sections: `[fonts]` and `[replace]`. Both sections are used to map fonts in the PDF to fonts in the installed font collection on the operating system. This comes into play when the font in the PDF document does not have an embedded font program, or the embedded font is not usable.

The mapping only works if the font types of the specified fonts are matching; e.g. if the font in the PDF is a symbolic font, such as "Symbol" or "ZapfDingbats", the mapped font must be symbolic too.

The section `[fonts]` is only considered if the font-matcher does not find an appropriate font amongst the existing installed fonts. It is suggested to only use this section.

The section `[replace]` is stronger and applied before the font-matcher. This means a font will be replaced as defined, even if the correctly installed font is available on the system.

**Syntax:** The syntax of the mapping file is as follows

```
[fonts]
PDF_font_1=installed_font_1[,font_style]
PDF_font_2=installed_font_2[,font_style]
[replace]
PDF_font_n=installed_font_n[,font_style]
```

`PDF_font_*` is the name of the font in the PDF.

This name can be found in one of the following ways:

- Use any tool that can list fonts. Such as 3-Heights® PDF Extract or 3-Heights® PDF Optimizer. Ignore possible prefixes of font subsets. A subset prefix consists of 6 characters followed by the plus sign. For example "KHFOKE+MonotypeCorsiva", in this case only use "MonotypeCorsiva" as font name in the mapping file.
- Open the document with Adobe Acrobat, use the "MarkUp Text Tool", mark the text of which you would like to know the font name, right-click it, select "Properties..."

`installed_font_*` is the font family name of the installed font.

To retrieve this name, find the font in the Windows' font directory and open it by double-clicking. The first line in the property window displays the font family name (this may vary depending on the operating system). The font family name does not include font styles; so an example of a font family name is "Arial", but not "Arial Italic".

**font\_style** is an optional style, that is added coma-separated after the font family name.

The style is always one word. Examples of font styles are "Italic", "Bold", "BoldItalic". Omit the font style, if it is "Regular" or "Normal".

Remove blanks from all font names, i.e. in both the **PDF\_font\_\*** and the **installed\_font\_\***.

**Example:**

```
[fonts]
Ryumin-Light=MSMincho
GothicBBB-Medium=MSGothic
[replace]
ArialIta=Arial,BoldItalic
```

## 5.6 How to Reduce the File Size

There are different ways to reduce the file size of an image. One needs to be aware that from a certain point on, a smaller file size results in a poorer visual quality.

The main factors on which the file size of an image depends are:

- Dimensions in pixel (width and height)
- Bits per pixel
- Compression Type
- The content of the image (influenced by dithering)

### 5.6.1 Dimensions

Reducing the dimensions and therefore the amount of the total pixels reduces also the file size. Obviously a 1024x768 pixel image has a larger file size than an equivalent 600x480 image.

**Example:** Set the dimensions in pixels.

```
-sp 600 480 -f
```

**Example:** Set the dimension in points.

```
-s 600 480 -f
```

If the dimensions are set in points, the dimensions in pixel are computed depending on the resolution.

### 5.6.2 Resolution

The resolution in dots per inch (DPI) lets you specify how detailed the image is. The default value is 150 DPI, which generates an image that looks sharp when not zoomed into. A larger value generates a more detailed image, but also will increase the file size, because it requires more pixels. On the other hand, a lower resolution generates a file with a smaller file size, but the image is also of lower visual quality.

**Example:** Setting the resolution value to 75 DPI instead of 150 DPI reduces the file size to about one quarter.

```
-d 75
```

### 5.6.3 Bits per Pixel

Using 1-bit (black/white) or 8-bit grey scale instead of 24-bit true color will reduce the file size. Keep in mind that not all formats support all color depths.

8-bit grey scale images are a third as large in size as 24-bit color images. With 1-bit images that use dithering, the size heavily depends on the content. It can be as small as 1% of the 8-bit image.

**Example:** Create a gray scale image.

```
-b 8
```

**Example:** Create a bi-level image with Atkinson dithering.

```
-b 1 -h 6 -oq
```

### 5.6.4 Format/Compression Type

The 3-Heights® PDF to Image Converter Service supports various image formats. For most formats the compression is given. For example a PNG image is always Flate-compressed, a JPEG image is always JPEG-compressed. However for TIFF, the compression type is selectable.

Images formats that are supported by most Internet browsers are JPEG, GIF and PNG.

There are two fundamentally different types of compression: Lossless and lossy.

**Lossless compression** The transformation from the original to the compressed state of the image does not change the content. Thus the transformation is reversible and the original image can be regained from the compression state.

Lossless compression is normally used for artificial images or scanned text. It is applied to the following types of images: GIF, PNG, BMP, JPEG2000 if quality is set to 100, JBIG2 and TIFF compressed with G3, G4, LZW or Flate.

**Lossy compression** The compression algorithm alters the content of the image in a way that it compresses better. Thus a lossy compressed image cannot be reverted back to its original state. It also means multiple applications of lossy compression to the same image alter the image every time and thereby reduce the quality every time. How much the image may be altered to improve the compression rate is controlled by a quality index ranging from 1 to 100 and normally defaulted at 75.

Lossy algorithms usually provide a better compression rate, at the cost of visual quality. Lossy compression is normally used for photographs.

It is applied to the following types of images: JPEG, and JPEG2000 if quality is less than 100.

There are various compression types supported for the TIFF image format. These are:

**CCITT Group 3, Group 3-2D** CCITT Group 3 is the predecessor to CCITT Group 4, it is a simpler algorithm that normally results in a lower compression ratio.

**CCITT Group 4** CCITT Group 4 is the standard compression for bi-level TIFF images (i.e. facsimile).

**LZW** LZW (Lempel-Ziv-Welch) compression is a lossless compression algorithm for images.

Please consult the copyright laws of your country prior to using this compression algorithm.

**JPEG** TIFF allows images to be compressed with JPEG, which is a lossy compression algorithm. JPEG provides a high compression ratio for 8 and 24 bit images. It is best suited for TIFFs containing photographs and little or no text.

**ZIP (Flate)** ZIP is a lossless compression algorithm. It is useful for the compression of large images with no loss in quality.

Flate compression (also used by the ZIP format) and JPEG compression can be used for color or grey scale images. CCITT Group 3, 3-2D and 4 as well as Flate can be used for black and white images.

**Example:** Apply Flate compression to a TIFF image.

```
-z
```

## 5.6.5 Image Content, Dithering

The content of the image itself has a direct impact on how well it compresses. It seems quite obvious that a plain white image compresses much better than a page filling photograph.

Dithering is an algorithm that arranges the pixels of an image in a way that it creates a visual effect of colors that do not exist in the available colors of the image, such as different grays in a 1-bit black and white image. This complex arrangement of pixels however does not compress well and increase the file size. Disabling dithering therefore reduces the file size. In the 3-Heights® PDF to Image Converter Service, dithering is also implemented for color images.

**Example:** Disable dithering (e.g. for scanned text).

```
-h 0
```

For more information, see chapter [Dithering](#).

## 5.7 Options for Best Results on a Printer

Regular laser printers use a resolution of 600-1200 DPI. For best results on printers, choose a resolution of the same value. In this case, it is also important to generate black and white image and thus set the bits per pixel to 1. So the command would look like this:

**Example:** Create a bi-tonal, 1200 DPI, CCITT G4 compressed TIFF.

```
-b 1 -d 1200 -g4
```

An A4 black and white image with a resolution of 1200dpi will be about 1MB in size.

**Note:** that using such a high resolution in combination with 8bit grey scale or 24bit color images will generate huge files (several hundreds of Megabytes un-compressed, and around 10 Megabytes using JPEG compression).

DPI values larger than 2400 will take a lot of CPU power and memory, we recommend not using values above 2400 for A4 paper size PDF documents.

## 5.8 Dithering

Dithering is a common means used in images to simulate colors that are not available as actual colors. Its use is best observed in image with a low color depth, where colors or shades of grey need to be simulated with other colors (e.g. only black/white pixels).

### 5.8.1 Remarks

1. All images below have quite a low resolution. As a result the effects of the different dithering types become more obvious. The higher the resolution and the larger the number of colors is, the higher the quality of the image.
2. The rendering filter and current zoom level of the PDF viewing application may have an additional impact on how the images below are displayed.

### 5.8.2 Color Images

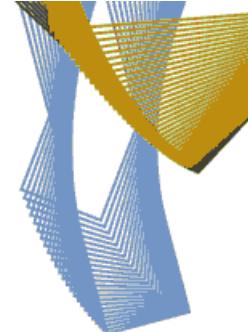
Color Space	RGB (24 bit)
Dithering	None
File Size as PNG	129 kB
+	Highest quality
-	Highest file size



## Green Text

A 24 bit RGB color image can have up to 16.7 millions of different colors. Dithering does not need to be applied since all required colors exist and none need to be simulated.

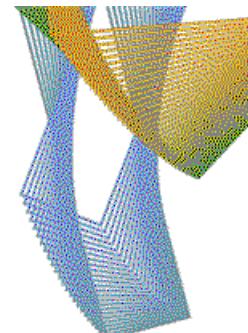
Color Space	16 colors (4 bit)
Dithering	None
File Size as PNG	16 kB
+	Small file size
+	Works well for images with a small number of colors (artificial images, text)
-	Does not work well for images with lots of colors (photographic images) - parts of the image can become plain-colored and details get lost



Black Text	Black Text	White Text
Grey Text	Grey Text	Grey Text
Blue Text	Blue Text	Blue Text
Red Text	Red Text	Red Tex

## Green Text

Color Space	16 colors (4 bit)
Dithering	Floyd-Steinberg
File Size as PNG	18 kB
+	Renders details better
+	Usually better overall quality, especially in photographic images than without dithering
-	Sometimes generates unwanted artifacts (striking pixels)
-	Larger file size than without dithering



Black Text	Black Text	White Text
Grey Text	Grey Text	Grey Text
Blue Text	Blue Text	Blue Text
Red Text	Red Text	Red Tex

## Green Text

### 5.8.3 Bi-tonal Images

(The 8 bit image just acts as reference.)

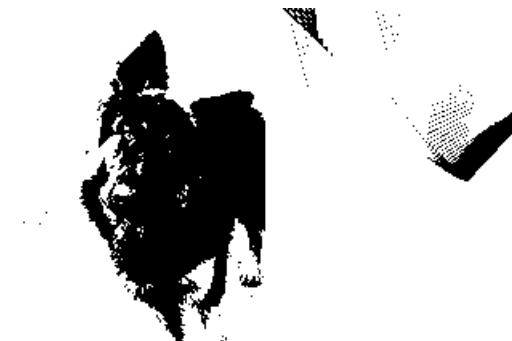
Color Space      Grayscale (8 bit)  
Dithering      None  
File Size as PNG 46 kB



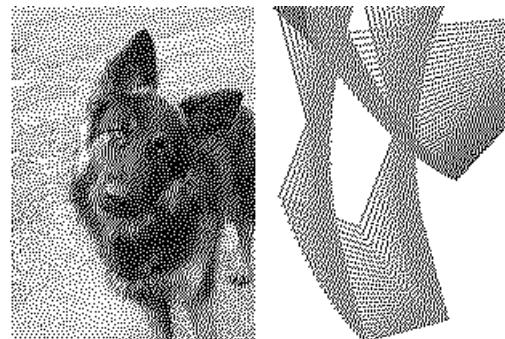
## Green Text

Color Space      Grayscale (1 bit)  
Dithering      None  
File Size as PNG 2.6 kB

+                  Smallest File Size  
+                  Works well for documents with high contrast (black text on white background)  
+                  Does not generate artifacts  
-                  Details get lost, because shades of gray are not approximated, but converted to either black or white (in fact images or part of them can become completely black or white)

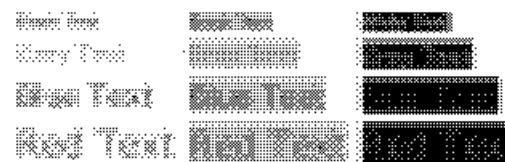
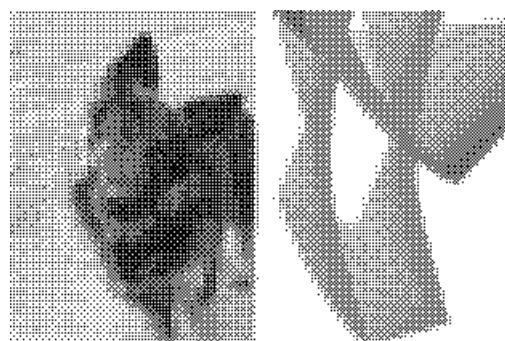


Color Space	Grayscale (1 bit)
Dithering	Floyd-Steinberg
File Size as PNG	9 kB
+	Generally higher quality, specially of photographic images
+	Can approximate any shade of gray
-	Larger file size than without dithering
-	Generates artifacts (e.g. a very bright gray paper is approximated by far-spread single black pixels)
-	Not well suited for text, unless the color of the text must be reflected



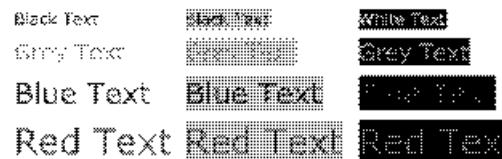
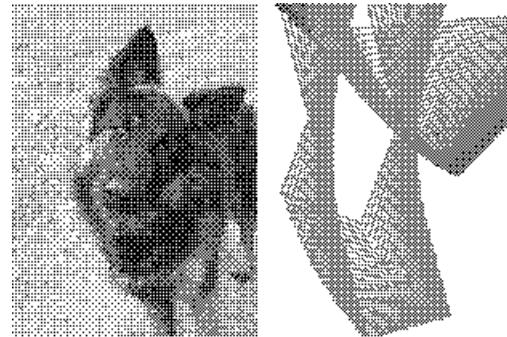
Green Text

Color Space	Grayscale (1 bit)
Dithering	Halftone
File Size as PNG	4 kB
+	Small file size
+	Approximates shades of gray
-	Not well suited for text or artificial images



Green Text

Color Space	Grayscale (1 bit)
Dithering	Pattern
File Size as PNG	5 kB
+	Works acceptable for all types of content (text, photographic images, artificial images)
-	Is not excellent in any type of content



**Green Text**

## 5.8.4 Guidelines

As seen in the examples above, different types of dithering behave different for different types of content. Below are some suggestions, which dithering type is normally best for a give type of content:

**Text, OCR** No dithering

**Artificial images with few colors and no bright colors** No dithering

**Artificial images with many colors** Test which dithering type yields the best result

**Photographic images** Floyd-Steinberg

**Mixed content** Test which dithering type yields the best result

**Mixed content, high-resolution** For resolutions above 300 DPI, Floyd-Steinberg almost always yields the best result (exception: for pure black text on white background, use no dithering)

Keep in mind that dithering should only be applied for images with a low color depth, such as black and white (1 bit). Dithering for images with a color depth of 8 bit or higher (256 colors or grey scale) has little to no visual impact.

# 6 Interface Reference

## 6.1 Service Control Commands

These options are used to control the service. The create and delete functions require administrator rights. The start and stop functions require operator rights.

### 6.1.1 -a Pause Service

```
Pause Service -a
```

This option pauses the service.

```
Pdf2ImgSvrR2 -a
```

### 6.1.2 -c Create Service

```
Create Service -c
```

The 3-Heights® PDF to Image Converter Service is created using the option **-c**.

```
Pdf2ImgSvrR2 -c
```

**Important:** It is essential that Pdf2ImgSvrR2.exe is on a non-mapped drive.

### 6.1.3 -d Delete Service

```
Delete Service -d
```

The 3-Heights® PDF to Image Converter Service can be deleted with the option **-d**. It is best used after the service has already been stopped.

```
Pdf2ImgSvrR2 -d
```

### 6.1.4 -i List the Usage

```
List the Usage -i
```

The option **-i** lists the current version and date of the service along with all available settings.

```
Pdf2ImgSvrR2 -i
```

## 6.1.5 -o Continue Service

```
Continue Service -o
```

This option resumes the service.

```
Pdf2ImgSvrR2 -o
```

## 6.1.6 -q Query Current Status of Service

```
Query Current Status of Service -q
```

This option returns the current status of the service.

```
Pdf2ImgSvrR2 -q
The service starts automatically during system startup.
The service is stopped.
[Pdf2ImgSvrR2] QueryService: The operation completed successfully.
```

## 6.1.7 -s Start Service

```
Start Service -s
```

Once created, the 3-Heights® PDF to Image Converter Service can be started with the option -s.

```
Pdf2ImgSvrR2 -s
```

## 6.1.8 -t Stop Service

```
Stop Service -t
```

To stop the service, use the option -t.

```
Pdf2ImgSvrR2 -t
```

If “stop” is called while the service is “running”, the current job (all pages) will be finished, after that the service is stopped.

If the service was “paused” before calling “stop”, the current page will be finished processing. After that page, the job is aborted.

## 6.1.9 -x Run as Executable

```
Run as Executable -x
```

With this option, the PDF to Image Converter Service runs as an executable instead of as a Windows Service. It provides the same functionality as long as the executable is “running”.

```
Pdf2ImgSvrR2 -x
```

## 6.2 Supported Codecs

The following table lists which capabilities of the different codecs are supported by the 3-Heights® PDF to Image Converter Service.

Codec Capabilities						
Codec	Bits per Pixel	Gray	Indexed	Quality	Compression	
TIFF	1,2,3,4,8,24 <sup>1</sup>	Yes	Yes	Yes	Raw, Flate, LZW(default), JPEG, Group3, Group3_2D, Group4	
JPEG	8, 24	Yes	No	Yes	JPEG (lossy only)	
BMP	1, 2, 4, 8, 24 <sup>1</sup>	Yes	Yes	No	Raw	
GIF	2-8	Yes	Yes	No	LZW	
PNG	1-8, 24	Yes	Yes	No	Flate	
JBIG2	1	Yes	No	No	JBIG2 (lossless only)	
JPEG2000	8, 24	Yes	Yes	Yes	JPEG2000 (lossless: Q = 100) <sup>2</sup>	
PBM	1-8, 24	Yes	No	No	Raw	
EPS	1, 2, 4, 8, 24 <sup>1</sup>	Yes	No	No	Raw	

**Codec** The **Compression/Decompression Type**.

**Bits Per Pixel** The supported values for bits per pixel. 1 = bi-tonal, 8 = 256 colors/grey scales, 24 = True Color

**Gray** This format supports grey scale.

**Indexed** This format supports indexed colors.

**Quality** This format supports the setting of a quality parameter.

**Compression** Supported compression types.

<sup>1</sup> For palette creation: The number of palette entries is equal to  $2^{\lceil \text{BitsPerPixel} \rceil}$  where BitsPerPixel is smaller or equal to 8. This means it is possible to create a 3 bits per pixel TIFF or BMP, but the palette size is equal as for 4 bits. However the 3 bits per pixel image will compress better than the 4 bits per pixel image.

<sup>2</sup> To create lossless JPEG2000 images, set the quality parameter to 100. For values <100, a lossy compression algorithm is applied.

## 6.3 Configuration Options

### 6.3.1 Configuration File Pdf2ImgSvrR2.ini

The Pdf2ImgSvrR2.ini configuration file defines the setting for the watched folders. It is read upon starting the service.

[Pdf2ImgSvrR2]	required	
AutoDelete=...	optional	true or false
AutoDeleteAll=...	optional	true or false
LogPath=...	optional	Either a path like C:\mypath\log or the keyword EventLog
PollingInterval=...	optional	Value in milliseconds, default 1000
JobPrefix=...	optional	true or false
LogLevel=...	optional	0 or 1
Threads=n	required	The number of threads
Thread1=-w ...	required	Options for the first thread
Thread2=-w ...		Options for the second thread
Threadn=...		There must be exactly as many threads as defined in Threads=n.

**Example:**

```
[Pdf2ImgSvrR2]
AutoDelete=true
LogPath=EventLog
JobPrefix=false
Threads=2
Thread1=-w C:\Pdf2ImgSvrR2\ToTiff -e .tif
Thread2=-w C:\Pdf2ImgSvrR2\ToJpeg -e .jpg -1
```

### Autodelete of Successfully Processed Files

When a conversion process has been completed, the input file is handled in the following way depending on the settings in the Pdf2ImgSvrR2.ini file. The option **AutoDelete**, controls whether successfully printed documents are moved to the Succeeded folder (**AutoDelete=False**) or are being automatically deleted. Failed documents are not affected by this setting.

```
[Pdf2ImgSvrR2]
AutoDelete=true
```

To delete failed documents as well use the following setting:

```
[Pdf2ImgSvrR2]
AutoDeleteAll=true
```

## Job Number Prefix

Every time a document is copied from the watched folder to the `Jobs` sub folder, it is renamed by adding a 21 character prefix containing a time-stamp of the form `Job- <8 digits>-<8 digits>_.` For example

`Job-01C61DD4-E72E1BCE_`

**Note:** When `JobPrefix=False` then the incoming documents must have unique file names.

The job number prefix ensures that several documents with the same name can correctly be processed. Adding the prefix can be prevented with the following line in the configuration file:

```
[Pdf2ImgSvrR2]
JobPrefix=false
```

## Logpath

Log-messages created by the service are by default written to the sub-directory `log`. To alter the directory, add a line similar as shown below to the configuration file:

```
[Pdf2ImgSvrR2]
LogPath=C:\path\log
```

Messages created by the service can be added to the system's application event log instead of written to a log file. This is achieved by adding the following line to the configuration file:

```
[Pdf2ImgSvrR2]
LogPath=EventLog
```

The system's application log event will then log messages similar as shown below:

- `CreateService`: The operation completed successfully.
- `StartService`: The operation completed successfully.

**Note:** The messages are only fully accessible while the service is created.

Otherwise a message as shown below is displayed:

- The description for Event ID (1) in Source (`Pdf2ImgSvrR2`) cannot be found. The local computer may not have the necessary registry information or message DLL files to display messages from a remote computer. The following information is part of the event: `DeleteService`: The operation completed successfully.

## Polling Interval

The polling interval defines the time in milliseconds that the polling-thread pauses between two polls. The time passing until the same watched folder is polled again (maximum pick-up time) is: The value of `PollingInterval`

plus the actual time it takes to poll all watched folders. The higher the polling interval, the lower the network traffic, and the longer it takes until documents are picked up.

Suggested values for the polling intervals are 1000 to 10000 milliseconds.

```
[Pdf2ImgSvrR2]  
PollingInterval=5000
```

### 6.3.2 -w Specify the Path to the Root Directory

```
Specify the Path to the Root Directory -w <dir>
```

This option sets the path to the root directory.

**Note:** This parameter must always be the first parameter of a thread.

#### Parameter:

**<dir>** The given path should not contain mapped drives, since other users (such as LocalSystem) do not recognize them.

#### Example:

```
-w C:\Pdf2ImgSvrR2\Root
```

The service supports path lengths including file name of up to 258 characters. This includes the 21 characters of the job ticket.

If a file name exceeds this value, its file name is truncated at the end of the file name and before the file extension. It is therefore suggested that watched folder names are kept reasonably short.

### 6.3.3 -o Specify the Output Directory for Converted Images

```
Specify the Output Directory for Converted Images -o <dir>
```

Default: \Path\{Images\}

This option sets the path for the output directory, where converted images are saved to.

#### Parameter:

**<dir>** The given path should not contain mapped drives, since other users (such as LocalSystem) do not recognize them.

### 6.3.4 -wfs Process only Files with Certain Extensions

```
Process only Files with Certain Extensions -wfs <exts>
```

By default, the service tries to process all files dropped into the drop directory, regardless of the extension. With this option, the processing can be restricted to a set of known file extensions.

**Example:** Restrict the processing to PDF and FDF files.

```
-wfs .pdf.fdf
```

### 6.3.5 -wfi Ignore Files with Certain Extensions

**Ignore Files with Certain Extensions** `-wfi <exts>`

By default, the service tries to process all files dropped into the drop-in folder, regardless of the extension. With this option, files with certain file extensions can be ignored.

**Example:** Ignore temporary files.

```
-wfi .temp.tmp
```

### 6.3.6 -wd Specify the Drop Path

**Specify the Drop Path** `-wd <dir>`

This option sets the path of the drop directory. If this option is not set, then the drop directory equals the root directory [-w](#). The drop directory is the watched folder, where input files are picked up and processed by the service.

#### Parameter:

**<dir>** The drop directory can be at any existing (network-) location with the following conditions:

- The directory exists (it is not automatically created unlike the root directory).
- The user under which the service runs has access permissions to this directory.

**Example:**

```
-wd C:\Path\DropFilesInHere
```

### 6.3.7 -1 Create one Image File per PDF Page

**Create one Image File per PDF Page** `-1`

By default, the 3-Heights® PDF to Image Converter Service generates multi-page images if the TIFF format is selected (unless the input PDF document has only one page). To create one TIFF file per PDF page, simply use the option **-1**. This option should also be used for all formats which do not support multi-paging if the input PDF document has more than one page.

This will generate a subfolder in the Image folder which contains a list of one-page images that have a number added to their file name.

### 6.3.8 -b Set the Bits per Pixel

**Set the Bits per Pixel** `-b <n>`

The argument for this parameter depends on the image format (see table [Codecs](#)).

For JPEG this option has two allowed values: 8 for grey scale and 24 for TrueColor.

**Example:** The following command creates a grey scale JPEG image.

```
-b 8
```

When using 1 bit per pixel, it is suggested to disable anti-aliasing (option [-oq](#)) and set a suitable dithering algorithm (option [-h](#)).

### 6.3.9 -c Compression Type of TIFF Images

**Compression Type of TIFF Images** `-c <compression>`

Compression options can only be set for TIFF images. For all other image types the compression is defined through the image format (.gif, .jpg, etc.).

The default compression is 1 (LZW).

**Note:** Not all image viewer support all compression types for TIFF.

**Compression Table**

Compression	Description
f	<b>Flate compression (ZIP)</b> is a lossless compression algorithm. It is useful for the compression of large images with no loss in quality.
g3	<b>CCITT Fax Group 3</b> is the predecessor to CCITT Fax Group 4, it is a simpler algorithm that normally results in a weaker compression level.
g3_2D	<b>CCITT Fax Group 3 2D</b> is a 2-dimensional version of the CCITT Group 3 Huffman encoding algorithm.
g4	<b>CCITT Fax Group 4</b> is the standard compression for bi-level images (i.e. facsimile).
j	<b>Joint Photographic Expert Group (JPEG)</b> is a lossy compression algorithm. JPEG provides a high level compression of 8 and 24 bit images. It is best suited for pictures, but not for text images. The option <a href="#">-q</a> can be used to set an image quality.

### Compression Table

j6	<b>TIFF embedded JPEG (6)</b> is an older version of JPEG. Certain (older) image software may support this compression, but not the newer version of JPEG (e.g. Photoshop 8). Allowed in pdf2img only.
1	<b>Lempel-Ziv-Welch (LZW)</b> is a lossless compression algorithm for images. Please consult the copyright laws of your country prior to using this compression algorithm.
raw	<b>No compression</b>

## 6.3.10 -cn Center Mode

### Center Mode -cn

Center the PDF. This option is useful in combination with setting page dimensions.

```
-s 800 600 -cn
```

## 6.3.11 -cms Set the Color Management Engine

### Set the Color Management Engine -cms <engine>

The transformation of colors from one color space to another is performed using a color management engine.

Supported engines are:

**none** The algorithms specified in the PDF reference are used. This results in the maximum possible contrast.

**neugebauer** The Neugebauer algorithm efficiently converts CMYK to RGB. It does not need any color profiles. The results, however, look similar to conversion using color profiles.

**lcms** (default): Use ICC color profiles. Default profiles are used for all unmanaged device color spaces as described in section [Color Profiles](#).

**<FileName>** When providing a file name, a configurable version of the Neugebauer algorithm is applied. The coefficients can be defined in the text file. The default Neugebauer coefficients are listed below (Red, Green, Blue; Color):

```
1.000000, 1.000000, 1.000000; White
0.000000, 0.682353, 0.937255; C
0.925490, 0.000000, 0.549020; M
1.000000, 0.949020, 0.000000; Y
0.137255, 0.121569, 0.125490; K
0.180392, 0.188235, 0.572549; CM
0.000000, 0.650980, 0.313725; CY
0.000000, 0.054902, 0.137255; CK
0.929412, 0.109804, 0.141176; MY
0.137255, 0.000000, 0.000000; MK
0.105882, 0.098039, 0.000000; YK
0.211765, 0.211765, 0.223529; CMY
0.000000, 0.000000, 0.003922; CMK
```

```
0.000000, 0.070588, 0.000000; CYK  
0.133333, 0.000000, 0.000000; MYK  
0.000000, 0.000000, 0.000000; CMYK
```

The Neugebauer algorithm mixes the colors based on the amount of color and the corresponding weighted coefficient. Altering the values for a pure color specifically changes the result for this pure color.

The color transition remains smooth.

**Example:** The following command selects the neugebauer color management engine.

```
-cms neugebauer
```

### 6.3.12 -cs Set the Color Space

**Set the Color Space** -cs <n>

This option sets the color space. Supported values are:

Color Space	
Value	Description
0	Grey-Scale
2	RGB
4	CMYK
7	Indexed
9	CMYK with K only

### 6.3.13 -d Set the Resolution in DPI

**Set the Resolution in DPI** -d <dpi>

The default resolution is set to 150 DPI (dots per inch).

This switch is redundant to the specialized options [-dx](#) and [-dy](#), meaning the last option set on the command takes precedence.

**Example:** To set the DPI value to 100 use the option -d like this:

```
-d 100
```

### 6.3.14 -dx Set the X-Resolution in DPI

**Set the X-Resolution in DPI** -dx <dpi>

Set the resolution only for the X-axis. The default resolution is set to 150 DPI.

**Example:** Set the resolution in X to 72 DPI.

```
-dx 72
```

### 6.3.15 -dy Set the Y-Resolution in DPI

**Set the Y-Resolution in DPI** `-dy <dpi>`

Set the resolution only for the Y-axis. The default resolution is set to 150 DPI.

**Example:** Set the resolution in Y to 72 DPI.

```
-dy 72
```

### 6.3.16 -e Specify the Image Type/Extension

**Specify the Image Type/Extension** `-e`

The image type of the output file can be specified using the parameter `-e`. The following table shows a list of supported extensions and the corresponding file type:

File Formats	
Extension	File Format
.tif, .tiff	Tagged Image File Format
.jpg, .jpe, .jpeg	Joint Photographic Expert Group
.png	Portable Network Graphics
.gif	Graphics Interchange Format
.bmp	Window Bitmap
.jb2	Joint Bi-level Image Experts Group
.jp2	JPEG2000
.jpx	Extended JPEG2000
.pbm, .pgm, .pnm, .ppm	Portable Bitmap File Format
.eps	Encapsulated PostScript (Output only)

```
-w D:\output\watchfoldergif -e .gif
```

If this parameter is omitted, .tif is selected.

### 6.3.17 -f Fit Page Mode

#### Fit Page Mode -f

Make the PDF fit the page (in either width or height). This option is useful in combination with setting page dimensions.

**Example:** Convert a PDF to a 800 by 600 pixel TIFF image and scale the page of the PDF to fit the page of the image.

```
-s 800 600 -f
```

### 6.3.18 -fax Convert to Class F

#### Convert to Class F -fax <class F>

This option creates a Class F TIFF which is used by fax machines. There are two types:

##### Class F TIFF

Value	Description	Equal to these settings
s	standard	-rp -sp 1728 0 -dx 204 -dy 98 -c g3
h	high resolution	-rp -sp 1728 0 -dx 204 -dy 196 -c g3

**Example:** Convert a PDF to a standard Class F TIFF.

```
-fax s
```

### 6.3.19 -fo Bit Fill Order

#### Bit Fill Order -fo <n>

Set the fill order of bits used in fax compressions.

##### Bit Fill Order

Value	Description
1 (default)	Most Significant Bit (MSB) first.
2	Least Significant Bit (LSB) first.

## 6.3.20 -fs Filter Size

**Filter Size** `-fs <n>`

This setting is used to enable and parameterize super-sampling, a technique to initially render the image at a higher resolution and then sample it down to the target resolution. As a result of that process the final image appears smoother, i.e. anti-aliased.

Applying super-sampling improves the image quality when rendering at low target resolutions (72 DPI or less); the higher the target resolution the less the visual impact.

This setting requires memory and CPU time quadratically to the ratio, therefore only small values, such as 2 or 3 should be used.

If a too high value (in combination with the original image size) is set, it is ignored.

## 6.3.21 -g Gray Color Space

**[Deprecated] Gray Color Space** `-g`

Deprecated: Use the option [-cs](#) instead.

## 6.3.22 -h Dithering Mode

**Dithering Mode** `-h <mode>`

Set the dithering mode. Allowed values are:

**Dithering Mode**

Value	Description
0	no dithering
1	(Default) Floyd-Steinberg
2	Halftone block
3	Halftone continuous
6	Atkinson dithering is very fast and produces images that can be compressed really well with reasonably good image quality.

Dithering provides a better image quality, especially for 1 bit images, at the cost of a larger file size.

**Example:** Disable dithering for a bi-tonal image.

`-h 0 -b 1`

### 6.3.23 -i Indexed Color Mode

**[Deprecated] Indexed Color Mode** -i

No longer supported: Use option [-cs](#) instead.

### 6.3.24 -oc Disable black point compensation (BPC)

**Disable black point compensation (BPC)** -oc

This option disables the use of black point compensation (BPC).

### 6.3.25 -oh Disable Hinting

**Disable Hinting** -oh

In the context of text rendering, **hinting** refers to the process of distorting glyph outlines with the goal of producing a clearer and more easily readable rendered image. E.g., horizontal and vertical lines may be moved slightly such that they fall on the pixel grid.

Normally, the rules for performing hinting and a threshold for switching off hinting at low resolutions are contained in a font program. When specifying this option then hinting is switched off entirely.

### 6.3.26 -ohs Manual Character Size Limit for Hinting

**Manual Character Size Limit for Hinting** -ohs <size>

This option allows to override the threshold for switching off hinting at low resolutions.

Hinting is only enabled if the size (vertically or horizontally) of a character to be rendered exceeds the given <size> in pixels.

See also [-oh](#).

### 6.3.27 -op Set print mode

**Set print mode** -op

This switch enables the print mode.

### 6.3.28 -oq Disable High Quality Rendering

**Disable High Quality Rendering** -oq

This option disables anti-aliasing.

## 6.3.29 -p Read an Encrypted PDF File

```
Read an Encrypted PDF File -p <password>
```

When the input PDF file is encrypted and has a user password set (the password to open the PDF), the password can be provided with the option **-p**.

**Example:** If the user password were userpwd, then the command to read and process the encrypted PDF would look like this:

```
-p userpwd
```

When a PDF is encrypted and the user password is not provided or is incorrect, the 3-Heights® PDF to Image Converter Service cannot decrypt and read the file.

## 6.3.30 -pg Set Page Range

```
Set Page Range -pg <first> <last>
```

With this switch the page range to be converted can be set. Note that the output image format must support multi-page. TIFF and JBIG2 support multi-page.

**Example:** Convert only pages 1 through 3.

```
-pg 1 3
```

## 6.3.31 -pgs Set of Pages

```
Set of Pages -pgs <page_set>
```

A set of pages can be defined using single pages, ranges of pages and comma-separated combinations thereof.

**Example:** Convert pages 1, 2-4, 6 and 10.

```
-pgs 1,2-4,6,10
```

## 6.3.32 -q Set Image Quality

```
Set Image Quality -q <n>
```

Set the image quality of lossy image compressions (such as JPEG). Default: 80. If a compression algorithm supports both lossy and lossless compression, a quality value of 100 will apply lossless compression.

### 6.3.33 -rl Rotate Pages to Landscape

**Rotate Pages to Landscape** -rl

This option rotates all pages to landscape.

### 6.3.34 -rp Rotate Pages to Portrait

**Rotate Pages to Portrait** -rp

This option rotates all pages to portrait.

### 6.3.35 -s Set Width and Height of Image in Points

**Set Width and Height of Image in Points** -s <w> <h>

When not specified, the image will have the same dimensions as the input PDF (specifically its CropBox). To set the dimensions manually, use this option, where <w> is the width and <h> the height. If either of the dimensions is set to 0, the value will be computed proportionally based on the other value.

**Example:** The following command will generate an image that is 400x300 points.

```
-s 400 300
```

### 6.3.36 -sa Set Width and Height in Pixel and Preserve Ratio

**Set Width and Height in Pixel and Preserve Ratio** -sa <w> <h>

The option -sa has the same effect as [-sp](#), but the aspect ratio is preserved. This means you can specify the maximum size allowed, the image will then be scaled to fit one of the dimensions. (Example: a 400 by 400 points PDF is converted with the option [-sa 600 800](#). The ratio of the input file is preserved, which is 1:1. The maximum that fits in 600 by 800 pixels is therefore a 600 by 600 pixel image).

### 6.3.37 -sp Set Width and Height of Image in Pixel

**Set Width and Height of Image in Pixel** -sp <w> <h>

This option can be used to set the dimensions of the image in pixels manually. If either of the dimensions is set to 0, the value will be calculated proportionally based on the other value.

**Example:** The following command creates a file with a width of 1024 pixels, the height is calculated proportionally.

```
-sp 1024 0
```

# 7 Troubleshooting

## 7.1 Output

### 7.1.1 Images Are of Too Low Quality

Increase the resolution to increase to pixel mass. This is done using the option [-d](#).

### 7.1.2 Image Does Not Contain the Whole Content

This can happen when the option [-s](#) is used to set dimensions that have a different ratio than the original dimensions. To automatically make the page fit the new dimensions, use the option [-f](#).

Alternatively ensure the page dimensions of the image are large enough to hold the complete page.

### 7.1.3 Colors Are Gone

The option [-b](#) allows you to set the bits per pixel. JPEG 8 bit is always grey scale, since indexed colors are not supported for this format. For TIFF and GIF, the indexed colors need to be enabled if 8 bit is selected. This is done with the option [-cs](#) 7.

## 7.2 Font and Text Issues

1. For issues with text using non-embedded fonts:
  1. Ensure the required fonts are available on the system (see Chapter [Fonts](#)).
  2. See Section [Handle Non-Embedded Fonts](#).

### 7.2.1 Handle Non-Embedded Fonts

#### Font Replacement Strategy

This section describes the exact behavior of font handling of the rendering engine. It is rather technical and it is not required to be understood in order to properly use the software.

The following steps are performed sequentially in the search of a font. If a font is found, the search is stopped; otherwise the next step is performed.

1. If the font is not embedded:
  - a. If the font name appears in the `[replace]` section in the configuration file `fonts.ini` the name is replaced and looked up in the installed font collection.
  - b. If it is a standard font<sup>3</sup> it is replaced by the equivalent TrueType font name and it is looked up in the installed font collection.
  - c. If the font name appears in the `[fonts]` section in the configuration file `fonts.ini` the name is replaced and looked up in the installed font collection.

<sup>3</sup> e.g. Times-Roman, Helvetica, Courier

- d. If the font has "Italic" or "Bold" in its name the font without these styles is looked up in the installed font collection.
2. If a font name is looked up in the installed font collection then the name comparison is performed as follows:
  - a. PostScript name.
  - b. TrueType name without blanks (a missing style is interpreted as "Regular" or "Normal").
  - c. TrueType name without modifications.
3. If a font from the installed font collection matches the metrics of the font, the installed font is used.
4. If the font is a CID font using a specific character collection, e.g. "Japan1", an installed font that contains the required code pages is used.
5. If the font is a non-symbolic simple font, a font program with the font metrics required is created dynamically.

## 7.3 The Watched Folders Are Not Created

Most commonly this happens when the user under which the service is running does not have write permissions to create the watched folder. By default the service starts under the user LocalSystem. Make sure this user has the required access permissions or use a dedicated user instead.

Another possibility is an invalid configuration file, i.e. it contains paths that do not exist or syntax errors.

# 8 Version History

## 8.1 Patches in Version 6.18

### Patch 6.18.1

- **Fixed** a crash that occurred during PDF rendering in rare circumstances.
- **Improved** performance reading files with excessive number of compressed object streams.

## 8.2 Changes in Version 6

- **Improved** search algorithm for installed fonts: User fonts under Windows are now also taken into account.

## 8.3 Changes in Version 5

- **New** additional supported operating system: Windows Server 2019.

## 8.4 Changes in Version 4.12

- **Improved** the rendering quality of small text using Type3 fonts (bitmap fonts).
- **Improved** the quality of low-pass filtered images, if the default Gauss algorithm is used. Note that for creating bitonal output images, the option `-ofb` is recommended.
- **Improved** the rendering speed for documents that have resources with circular references.
- **New** HTTP proxy setting in the GUI license manager.

## 8.5 Changes in Version 4.11

- **New** support for reading PDF 2.0 documents.
- **Improved** search in installed font collection to also find fonts by other names than TrueType or PostScript names.

## 8.6 Changes in Version 4.10

- **Improved** rendering engine R2 performance when using Type 3 fonts.
- **Improved** robustness against corrupt input PDF documents.
- **Improved** annotation appearance generation for polyline, squiggly, and stamp annotations.
- **Removed** the font `ZapfDingbats.ttf` from the product kit as it is not required anymore.

## 8.7 Changes in Version 4.9

- **Improved** support for and robustness against corrupt input PDF documents.
- **Improved** repair of embedded font programs that are corrupt.

- **New** support for OpenType font collections in installed font collection.
- **Improved** metadata generation for standard PDF properties.

## 8.8 Changes in Version 4.8

- **Improved** creation of annotation appearances to use less memory and processing time.
- **Added** repair functionality for TrueType font programs whose glyphs are not ordered correctly.
- **New** option `-o` to set the output directory for generated images.

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