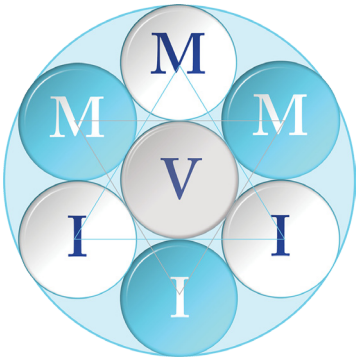
CPrint 4.0

Quick Installation and User Guide

Linux Version for Canon



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1 Introduction

CPrint 4.0 is a genuine, page oriented, driver for printing to Canon ImagePROGRAF printers on Linux platforms. It will be mostly used by system administrators, though once a queue is created, an ordinary user may benefit from *CPrint 4.0* by the possibility to adjust 'last minute' printing parameters from most common Linux applications (OpenOffice, LibreOffice, gimp, evince, acroread, etc.). In a more classical sense, *CPrint 4.0* allows for printing to a printer queue, including support for a number of command line options.

This manual provides details to enable a quick installation of *CPrint 4.0*. The package is compatible with Linux versions starting with kernel 4.1-2 and later. It has been tested on RedHat, Fedora, Debian, Suse and UBUNTU and should be compatible with other versions of Linux.

The *CPrint 4.0* package requires CUPS. A CUPS version 1.2.X or newer is recommended. The *CPrint 4.0* package also requires foomatic, which for recent Linux distributions is included in the CUPS package.

The *CPrint 4.0* package consists of ***one module*** for all supported Canon iPF TM or iPF TX printers. The previous version of CPrint (i.e. 1.1) would consist of a core package and a printer specific package. As of CPrint 4.0 this two package strategy has been abandoned.

To fully install CPrint you must be logged on either as *super-user* or *root* (*System Administrator*), or at least have these access rights during installation. A user who is not super-user (i.e. a *normal user*) will not have the rights to add or delete printer queues.

CPrint 4.0 for Linux comes without any licence key. It has its own licence statement to be subscribed at download time and it does not fall under the GNU/GPL licence conditions.

This manual does not cover details on the structure of files, scripts and environment variables concerning CPrint. It uses an example of a general installation and explains how to use CPrint under normal circumstances. For a more extensive and detailed description of CPrint please refer to the ***CPrint 4.0 Reference Manual***.

This manual describes both the *interactive installation* of *CPrint* on a graphical desktop and the installation on an alphanumerical terminal.

☞ ***Please note that as CPrint will add new PPD files to the Linux operating system it may restart the CUPS printer manager at the end of the installation!***
For details of known limitations, bugs or work arounds of specific operating systems, please always read the Appendix C: "Release Notes"!

1.1 Capabilities and Limitations of CPrint

As a genuine printer driver for Linux CPrint relies on foomatic and hence on ghostscript. The CUPS printer manager is driven by PPD files to allow for various options for the fine tuning of ghostscript. This release of CPrint uses *static* PPD files shipped at download time. A PPD file includes, amongst other things, media sizes and media types supported by the printer.

Media type and paper size
This version of CPrint does not query the printer to infer the paper sizes supported and/or loaded by the printer. This is a main difference with the Canon printer driver for MS Windows, which supports a tool to modify the media types supported by the printer.

Very large paper sizes
As the printer driver makes use of ghostscript (through foomatic) a potential limitation occurs for *very large paper sizes* and *colour images with a low compression rate*. In general very large paper sizes will print colour images correctly if optimisation for disk space is requested. If sufficient compression cannot be achieved, the only alternative is to use a pixel zoom or to print in 300 dpi. A list of paper sizes concerned is given in Appendix B.

Printing a multi-page document
The driver does support printing of documents of more than one page.

Mailbox and storage options
CPrint support most of the features of the Canon imagePROGRAF printers. If your Canon imagePROGRAF printer has a hard disk drive printing to mailboxes is supported, and printing multiple copies with storage on the disk driver is supported too.

Colour management
CPrint supports RGB and grey scale printing. ***CMYK images are not supported***. If you want to print CMYK data or mixed date files, i.e. for example a PDF file with both RGB and CMYK data, the CMYK part will not be printed in the correct colours. For such input, please transform the colour space for all data of the file to pure RGB before printing.
Also limited colour corrections like a gamma correction and separate R, G and B corrections are supported. CPrint is not a high quality RIP and hence does not support input and output colour profiles or other sophisticated colour management.

Computer resources
Especially when printing to large paper formats some resources of your Linux workstation will be required. Hence a reasonably powerful processor is required and please make sure that sufficient disk space is available. Temporary data files in the order of several gigabytes (for the larger paper formats) are no exception.

☞ ***Please note that as explained above CPrint only accepts RGB colour data as input.***

1.2 Before Installing CPrint 4.0

1.2.1 Compatibility with Graphics Libraries

The various packages of CPrint 4.0 are compatible with the following graphics Libraries:

CPrint distribution type*)	Graphics Libraries
RPM	❁ libjpeg.so.62 ❁ libtiff.so.5 ❁ libpng16.so
DEB	❁ libjpeg.so.62 ❁ libtiff.so.5 ❁ libpng16.so
TAR.GZ	❁ libjpeg.so.62 ❁ libtiff.so.5 ❁ libpng16.so
Ubuntu DEB	❁ libjpeg.so.8 ❁ libtiff.so.5 ❁ libpng16.so

Before installing select the package compatible with your system.

1.2.2 Using the web

CPrint 4.0 can be obtained by downloading from the web. If you were to need a hard-copy (i.e. CD-ROM) please contact your local Canon sales representative.

The package will install the driver as well as the printer specific PPD files into the system PPD directory. You can download the driver from the Canon web site for your country or directly from http://software.canon-europe.com.

There are three different archive formats:

- rpm: an rpm archive with extension: *.rpm.
- deb: a Debian deb archive with extension: *.deb.
- ubuntu deb: a Debian deb archive for Ubuntu with extension: *.deb.
- tar + gzip: a gzipped tar archive with extension: *.tgz.

As there exist many different Linux distributions and various package management systems too, it may happen that your distribution does not support rpm or deb packages by

default or that the RPM package claims to be incompatible. ***In that case we recommend using the *.tgz version of CPrint, which should run on all known Linux systems with the specified graphics libraries***.

If you downloaded a copy of CPrint 4.0 from the web in **.tgz* format the file will be in a compressed format. You will need to decompress the file, using an appropriate interactive package of gzip, and extract the contents to a designated directory on your system, for example ***/tmp***.

1.2.3 A note for Ubuntu and Debian Systems

Currently the CPrint package is compiled on a Linux system with a Fedora as well as an Ubuntu architecture. Therefore on recent Ubuntu and Ubuntu derived systems we suggest to install the Ubuntu version.
On Debian and Debian derived systems we suggest to install the regular DEB package.

1.2.4 Support

For support, please contact your local Canon service technician/representative.

2 Installing CPrint 4.0

Note: This section describes how to install CPrint 4.0. To *upgrade* or *uninstall* CPrint 4.0 refer to section 9 of this manual respectively.

First the different steps to unpack the files is described, either for the RPM package, the DEB package or the TGZ package. For the TGZ the setup program is described, which is the same in all cases, but for RPM and DEB packages setup is run automatically.

In this manual we take the example of a Canon iPF TX2000 imagePROGRAF printer, but the model number is completely irrelevant for the installation.

2.1 Installing a CPrint RPM Package

If you downloaded a copy of CPrint 4.0 from the web in **.rpm* format you will need to extract the files, using an appropriate interactive package of rpm.

If you use an interactive desktop, you may click on the rpm package icon.

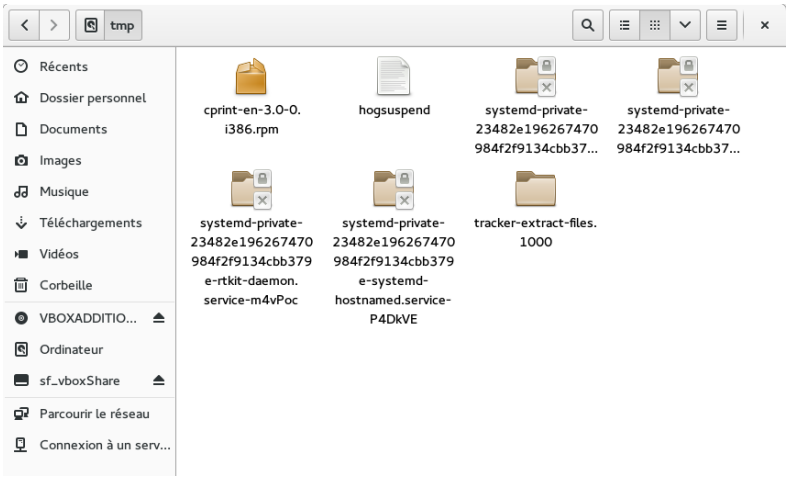

Fig. 1. Starting an RPM installation

If this does not open up, it is probable that your Linux system does not support the RPM packages. In that case we recommend to use the DEB or TGZ package, described in the next sections.

If the icon opens up you would see something like: You click ***"Install"*** to start the RPM installation.

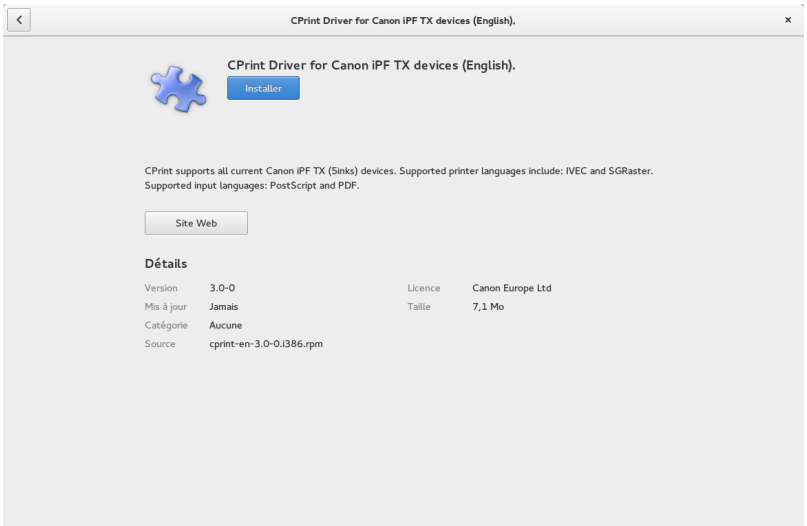

Fig. 2. Starting an RPM installation

Before the installation can continue you need to be authenticated with root privileges:

After entering the password the RPM installation will proceed.

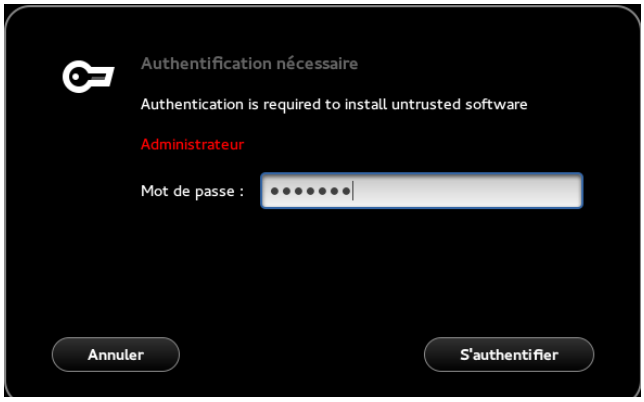

Fig. 3. Authentication before the RPM installation

This concludes the installation and no further steps are necessary.

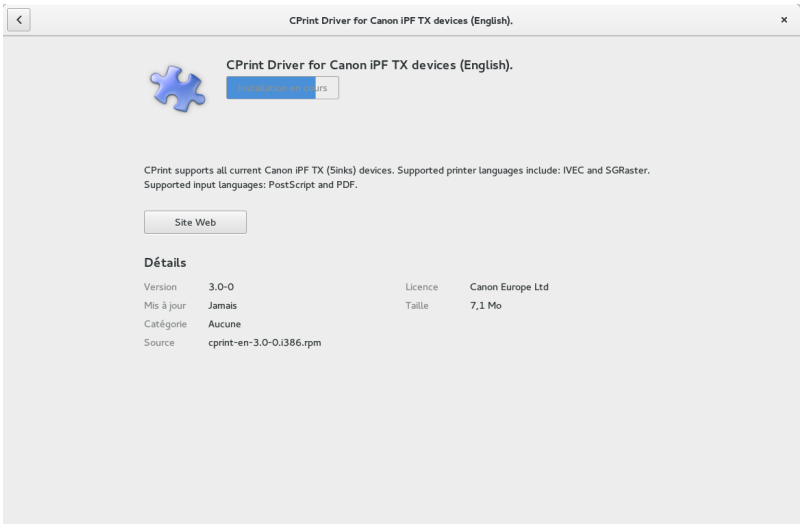

Fig. 4. Execution of the RPM installation

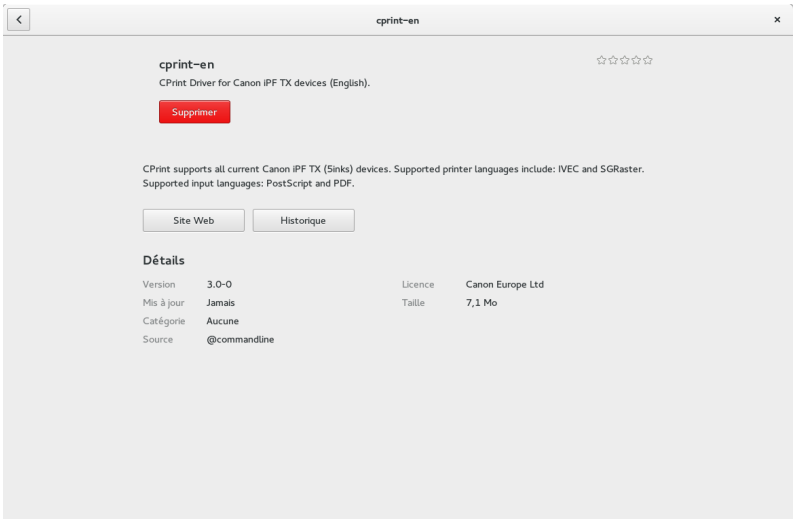

Fig. 5. End of the the RPM installation

If you cannot extract the files using this method you can extract the contents of the file using the following command

```
rpm  -Uhv  cprint-en-4.0-0.rpm
```

The rpm program will automatically extract the files to the directory:

/opt/cel/ivec

Thereafter it will install the necessary system components and PPD files. The installation of the package will restart CUPS.

The setup procedure leaves a log file in: ***/var/log/setup_cprint.log***, which you might consult in case of trouble.

NOTE: Currently the CPrint package is compiled on a Linux system with a Fedora as well as an Ubuntu architecture. Therefore on recent Ubuntu and Ubuntu derived systems we suggest to install the Ubuntu version.
On ***OpenSuse*** or OpenSuse derived systems - as well as other RPM base systems which refuse to install the RPM package - we suggest to install the *.tar.gz package, provided the correct graphics libraries are supported by your Linux system (see table in section 1.2.1 *Compatibility with Graphics Libraries*).

2.2 Installing a CPrint DEB or Ubuntu DEB Package

If you downloaded a copy of CPrint 4.0 from the web in **.deb* format you will need to extract the files, using an appropriate interactive package of deb.

If you use an interactive desktop, you may click on the deb package icon.

If this does not open up, it is probable that your Linux system does not support the DEB packages. In that case we recommend to use the RPM or TGZ package, described in the previous and next sections.

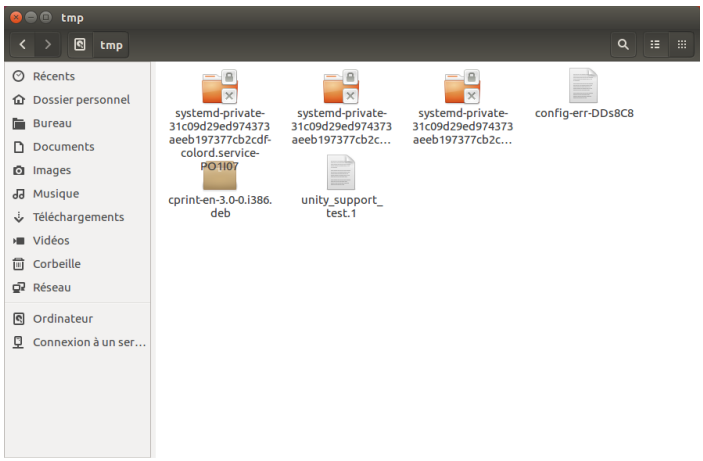

Fig. 6 Starting an DEB installation

If the icon opens up you would see something like:
You click ***"Install"*** to start the DEB installation.

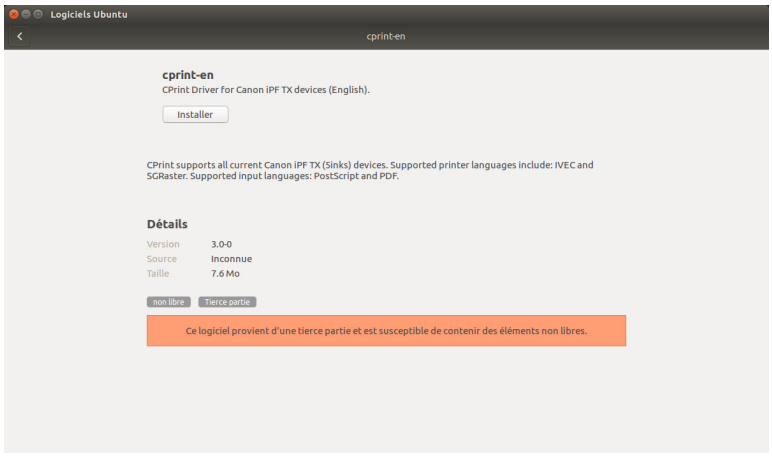

Fig. 7. Starting a DEB installation

Before the installation can continue you need to be authenticated with root privileges:

After entering the password the DEB installation will proceed.

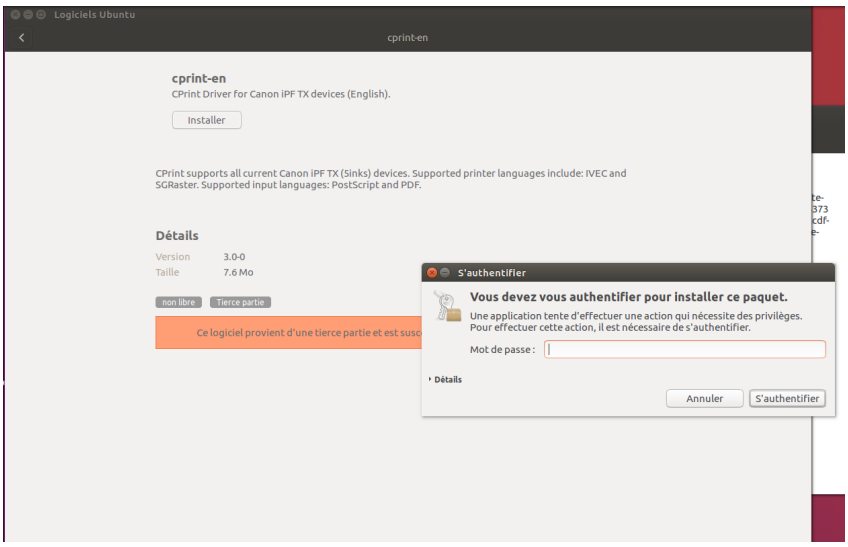

Fig. 8. Authentication before the DEB installation

This concludes the installation and no further steps are necessary.

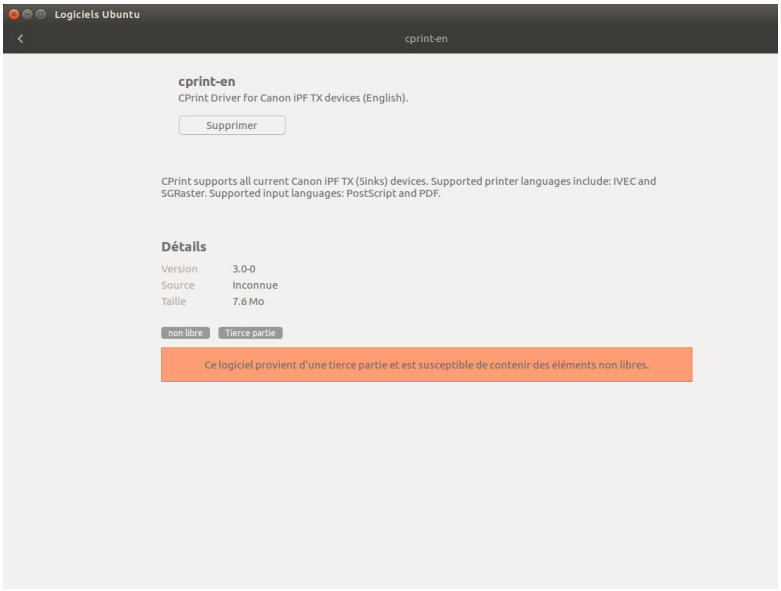

Fig. 9. Installation of the DEB package

If you cannot extract the files using this method you can extract the contents of the file using the following command

```
dpkg  --install  cprint-en-4.0-0.deb
```

The deb program will automatically extract the files to the directory:

/opt/cel/ivec

Thereafter it will install the necessary system components. The installation of the package will restart CUPS.

The setup procedure leaves a log file in: ***/var/log/setup_cprint.log***, which you might consult in case of trouble.

NOTE: Currently the CPrint package is compiled on a Linux system with a Fedora as well as an Ubuntu architecture. Therefore on recent Ubuntu and Ubuntu derived systems we suggest to install the Ubuntu version.
On Debian and Debian derived systems we suggest to install the regular DEB package. If none of these would work, we advise to use the *.tar.gz package, provided the correct graphics libraries are supported by your Linux system (see table in section 1.2.1 *Compatibility with Graphics Libraries*).

2.3 Installing from a CPrint TGZ Package

If you downloaded a copy of CPrint 4.0 from the web in **.tgz* format you will need to extract the files and then run setup.

1. To extract the files type:

```
cd /tmp
tar  -xvfz cprint-en-4.0-0.tgz
```

or

```
cd /tmp
gzip -d cprint-en-4.0-0.tgz
tar  -xvf cprint-en-4.0-0.tar
```

2. To start the installation, either double-click on the **setup** icon, or alternatively type:

```
cd /tmp/cprint-en-4.0-0
./setup
```

The start up may take a while when setup configures an SELinux module if necessary.

The CPrint package always installs into the directory ***/opt/cel/ivec***, which will be created if necessary.
The setup procedure leaves a log file in: ***/var/log/setup_cprint.log***, which you might consult in case of trouble.

2.4 Customising the Installation for Special Purposes

The setup program (executed either by the RPM or DEB package or manually) will in all cases install a configuration file in: **/opt/cel/ivec/etc/mviGSFilter.conf**.
The contents of this file is simple but allows for some customisation of the package.
By default it looks like:

```
%%CPRINT_CONFIGURATION_FILE
#
# Configuration file for CPrint version 3.0
#
#TMPDIR  /var/tmp
TMPDIR    /tmp
#OPTIMISEMODE      SPACE
OPTIMISEMODE       SPEED
%%CPRINT_CONFIGURATION_END
```

A line starting with '#' is considered as a comment.

By default the directory for temporary file is ***/tmp***. On some systems the free disk space in this directory may be limited and as CPrint requires sometime large (temporary) files, you may want to specify another directory for temporary storage. One possibility would be: ***/var/tmp***, provided such a directory does exist and would be accessible by all users. This can be set by the TMPDIR parameter of the configuration file. Please note: if your were to specify your own created directory, for example $HOME/tmp, then on systems where security mechanisms like SELinux are in place, you may run into security problems, which are not easy to solve

Also the package is optimised for speed (sometimes at the cost of some more disk space). If you were to prefer to optimise for disk space, please specify SPACE for the OPTIMISEMODE parameter.
If you were to prefer to optimise for speed in all (or most cases), please specify FORCED_SPEED for the OPTIMISEMODE parameter. If only SPEED is specified, CPrint may fall back to save SPACE for rather large images.

3 Non-standard Installations of CPrint 4.0

3.1 Upgrade Installation of CPrint 4.0

If a version of CPrint is already installed on your Linux workstation the setup program of the package will detect that. It will silently upgrade the necessary programs.

A review of the upgrade installation will be available in the file ***/var/log/setup_iPFTX2000.log***.

3.2 De-Installation of CPrint 4.0

If you want to de-install the package of an existing version of CPrint 4.0 from your Linux workstation, it depends to how you have installed it.

For an RPM based installation, please type:

dnf remove cprint-sgr-en-4.0-0

or

rpm -e cprint-sgr-en-4.0-0

For a DEB based installation, please type:

dpkg --remove cprint-sgr-en

For a TGZ based installation you would remove the directory (including subdirectories) ***/opt/cel/ivec***. And you would delete the links: ***/usr/bin/mviGSFilter*** and ***/usr/bin/zoomer***. More details about the files CPrint uses are given in the ***CPrint 4.0 Reference Manual***.

Appendix A: Command Line Options

The ***setup*** program of CPrint allows for only one option:

-v More verbose output to the terminal. This basically outputs all message to the terminal, which you would find in the log file too.

For the options supported by the program ***mviGSFilter***, which is the working horse of the package, please see the ***CPrint 4.0 Reference Manual***.

Appendix B: Limits on Large Paper Sizes

Due to internal size limitations of the ghostscript program, which underlies the driver of CPrint there is currently a limit on the size of temporary files which are generated during the rasterisation process.

For the following paper sizes please select ***optimisation for disk space***:

ISO B0
JIS B0
Poster 42inch x 60inch
Poster 44inch x 62inch
Poster 50inch x 70inch
Poster 54inch x 76inch
Poster 60inch x 84inch

For images with a very low compression ratio it may be necessary to use a zoom method different than 'direct zoom,' or eventually to select a resolution of 300 dpi.

When using *optimisation for disk space*
The intermediate file format used is PNG, a very compressed format, slower to process. For very large images with a low compression rate this may still fail.

When using *optimisation for speed or "forced speed"*
The intermediate file format used is TIFF, fast processing but little or no compression. For very large images this may fail.

When using a *non direct zoom*
In this case the scaling of the image is partially done on a pixel basis, with image compression activated automatically by the driver. For very large images with a low compression rate the driver will use a banding mechanism.

Appendix C: Release Notes

This Appendix describes some of the known limitations and bugs on specific releases of Linux operating systems. You may always have a look at the ***mviforum*** for more up-to-date information.

***Please note**: Further and more recent release notes may be found in the "**Release Notes**" section of the **CPrint Reference Manual**.*

1. *First release version 3.0: March 2018*

   This is the first official release of CPrint 4.0.

2. *SELinux*

   Several Linux distributions, including Debian and Fedora, come with the SELinux layer by default. If SELinux enforced then some CPrint log messages would generate a SE-Linux warning. Therefore the setup program will install a SELinux module if it detects the presence of enforced SELinux protection. This does not mean that some SELinux warnings during installation may not occur: sometimes the /var/log directory does not allow programs to write into. This is no serious problem and does not affect the proper installation at all.

3. *Very Large Paper Formats Limitation*

   This version suffers from a limitation on very large paper formats and images with a very low compression rate due to limitations on file sizes of some Linux operating systems.

4. *Image Libraries*

   This release uses recent graphics libraries, i.e.:
   - TIFF: version 5.2
   - JPEG: version 62.1
   - PNG: version 16.10

5. *Colour Spaces*

   This version only support RGB colour data. CMYK data ***are not supported*** and thus also mixed files with both RGB and CMYK colour data will not print correctly.

6. *Second release version 3.0: December 2018*

   This is the second official release of CPrint 3.0: version 3.0-1.

This release adds support for the LFP models iPF-TM200, iPF-TM205, iPF-TM300 and iPF-TM305.
Also some minor bugs have been corrected.

7. Release version 4.0-0: August 2020

The release of CPrint: version 4.0-0 adds the following LFP models: iPF-PRO4000S, iPF-PRO4100S, iPF-PRO6000S, iPF-PRO6100S. Also some minor bugs, including one for borderless printing, have been corrected.
Currently the CPrint package is compiled on a Linux system with a Fedora as well as on an Ubuntu architecture. The graphics libraries supported for this version are:

CPrint distribution type*)	**Graphics Libraries**
RPM	❁ libjpeg.so.62 ❁ libtiff.so.5 ❁ libpng16.so
DEB	❁ libjpeg.so.62 ❁ libtiff.so.5 ❁ libpng16.so
TAR.GZ	❁ libjpeg.so.62 ❁ libtiff.so.5 ❁ libpng16.so
Ubuntu DEB	❁ libjpeg.so.8 ❁ libtiff.so.5 ❁ libpng16.so

*) See section 1.2.2 for details on the various distribution types.