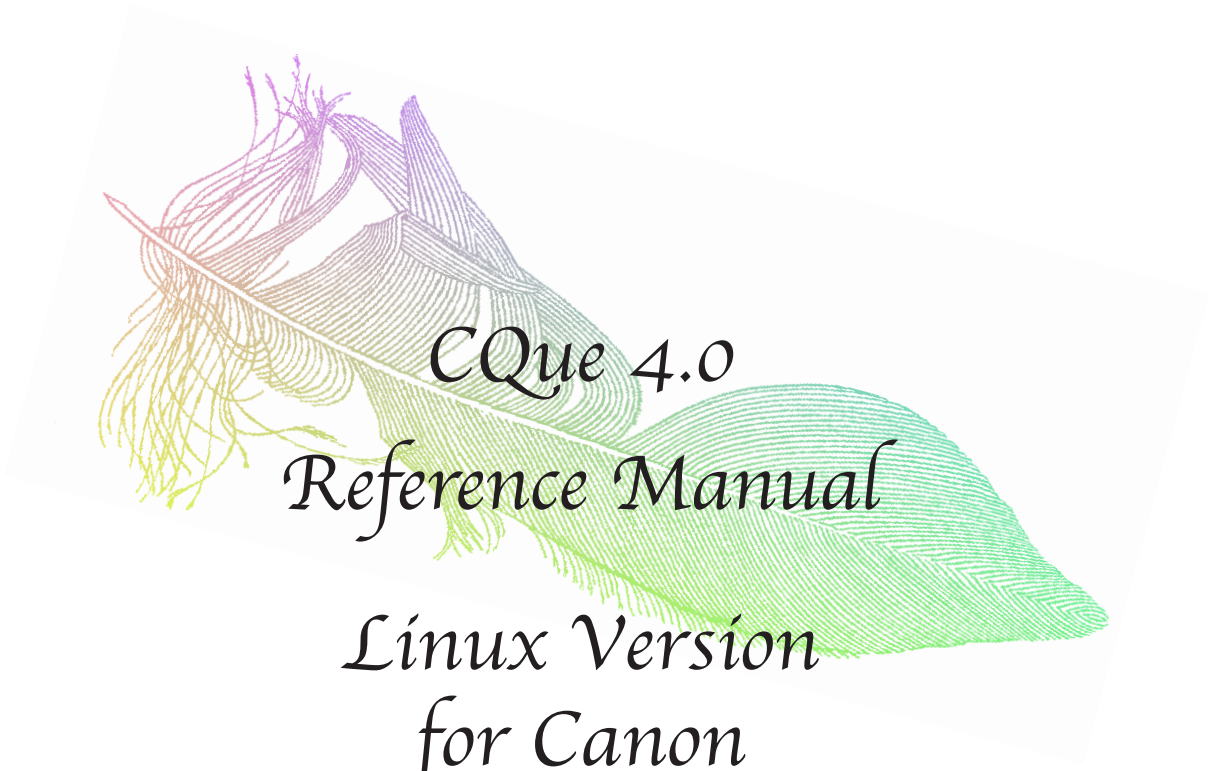
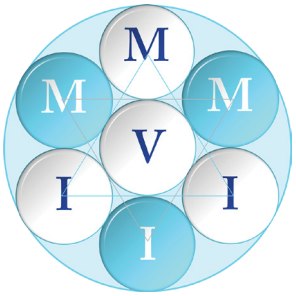


CQue 4.0
Reference Manual

Linux Version
for Canon



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

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1 Introduction of CQue

1.1 Introduction

CQue 4.0 is a tool to create and manage printer queues on Linux platforms. It will be mostly used by system administrators, though once a queue is created, an ordinary user may benefit from *CQue 4.0* by the (optional) possibility to adjust 'last minute' printing parameters. In a more classical sense, *CQue 4.0* allows for the creation of dedicated printer queues.

This manual provides details on all aspects of *CQue 4.0:* Installation, maintenance, scripts, etc. Parts of this document are rather technical and will not be required for a first approach to CQue. These pages may contain valuable information, however, for more advanced features of CQue, or for the system administrator who wants to customise CQue. These pages are indicated with a  sign on the bottom of the page, and may be skipped by the occasional reader.

The manual *CQue 4.0 Quick Installation and User Guide* for *Linux* provides enough details to enable a quick installation of *CQue 4.0.* Some parts of this guide will be present in this reference manual too.

The manual is organised as follows:

The *Introduction* gives general information.
The *General Concept* section gives information about the way CQue is designed and how it works. Even though this might look technical, it is recommended reading for an effective and efficient installation of CQue. It also gives some suggestions for various types of usage of CQue.
The *Installing CQue* section presents an example of an installation, much in the same way as the *CQue 4.0 Quick Installation and User Guide*.
The *Setting up a Queue* section presents various ways of how to create a printer or printer queue (CUPS, lpadmin).
The *Printing with a Queue of CQue* section helps to set default and running options when printing with a queue of CQue.
The *What to do with Problems* section helps to answer questions that may arise if things do not work as expected.
The *Program Description s*ection gives detailed information about the various programs making up the CQue package.
The *Scripts and Configuration* section gives an outline of the various scripts of CQue and how to customise them.

As of the version 4.0-0 CQue does ***not*** include an *interactive interface* of its own. To create a printer queue, please use the CUPS interface or the Linux system tool for printers. CQue is independent of any graphics libraries like X11, PNG or TIFF.

To install CQue you must be logged on either as *super-user* or *root* (*System Administrator*). A user who is not super-user (i.e. a *normal user*) will not have the rights to add or delete printer queues. The setup program will not run if you are not super-user.

1.2 Compatibility

The package - up to version 4.0-0 - is compatible with and tested on the *Linux versions* shown in the following table.

Linux Workstation Type	**32 Bits Operating System**	**64 Bits Operating System**
RedHat (and Fedora)	7.2 (FC2) and newer	kernel 2.6-27 and newer
Mandriva	9.0 and newer	kernel 2.6-27 and newer
Suse (NOVELL)	8.0 and newer	kernel 2.6-27 and newer
Debian	2.0 and newer	kernel 2.6-27 and newer
Ubuntu	2.0 and newer	kernel 2.6-27 and newer
Oracle Linux	6.0 and newer	kernel 2.6-27 and newer
Knoppix	3.0 and newer	kernel 2.6-27 and newer
Linux (Intel) in general	kernel 2.4-7 and newer	kernel 2.6-27 and newer

CQue is compiled on a Linux kernel version 4.1 in both 32 and 64 bits versions.

The *Printer Manager* must be CUPS. As CUPS has become the standard printer manager for most of the current Linux distributions, CQue relies on the file and directory structure of Printer Description Files (PPD) as used by CUPS. Many main applications on Linux do the same, so that CQue and these main applications may share printer options through CUPS. For this reason no other printer managers, especially LPRng, are supported.

Standard CUPS installations will include the foomatic package by default. CQue explicitly relies on the foomatic-rip package for the transformation of one printer description language (PDL) to another. (CentOS may not (yet) bundle foomatic-rip within CUPS).

We note that CQue is not a replacement of a printer manager. It is a separate layer fully compatible with the above mentioned CUPS printer manager. It does not modify any of the components of the native printer manager either.

CQue provides support for the following type of Canon devices:

Printer Description Language of Canon device
PostScript
PCL (PCL5e and/or PCL5c)
PXL (or PCL6)

Of course the Canon device itself would need the necessary hardware, if available, to support any of these PDLs.

2 The General Concept

2.1 Some Terminology

In this manual we will talk about different kinds of queues. For clarity we give the following description of how various terms will be used within this manual.

Physical Printer Queue

A *physical printer* queue corresponds with a printer queue, in the classical meaning of the word, assuring the connection of a computer with a printer. The files, sent to this queue, will be processed the one after the other. A physical printer queue may send the files as is, or in certain cases it is possible that the queue includes a *filter,* which processes the file passing through the queue. For example a transformation of the file from one format to another may be applied. The connection with the printer may be a network port, a parallel or USB port or yet another type of port. If the connection is through a network, then we speak about a *remote queue*. Otherwise we are talking about a *local queue*.

Logical Queue

A *logical queue* also has the property that the files will be processed the one after the other. But these files will not necessarily go directly to the printer. It is possible – as a matter of fact this is the task of a logical queue – to apply a specific processing of the files passing through this queue. After processing the files may be redirected to a physical printer queue in order to be output on the printer.

Filter

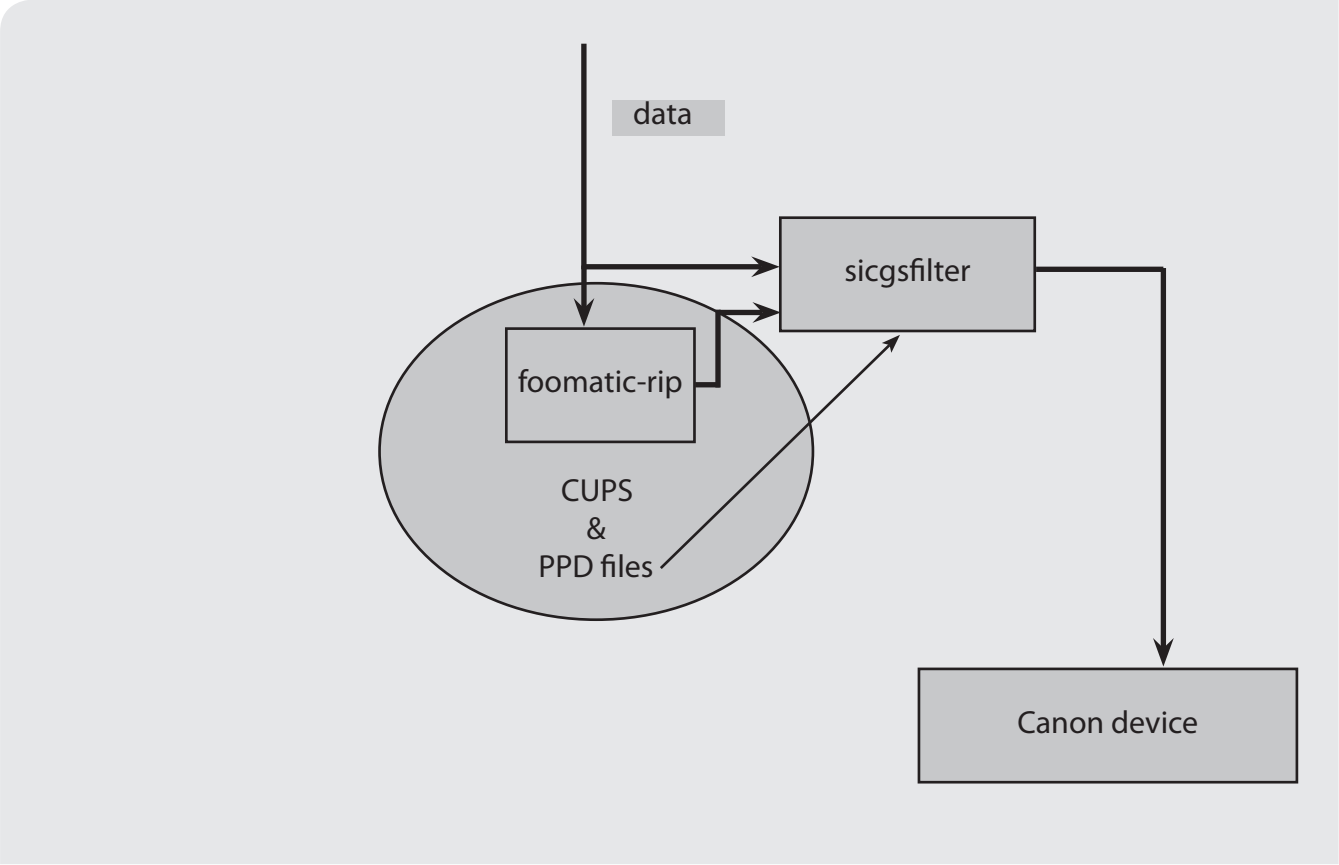
A *filter* is a program or executable file (script), which will be executed inside a printer queue. The syntax of such a filter is strictly defined by the print manager of the UNIX system and is therefore strongly system dependent. Filters of CUPS for example allow the user to pass user specific arguments to the filter. This is not possible (or very limited) for printer queues of the classical B.S.D. type of workstations.

CQue Queues

A queue of the *CQue type* is in principle a genuine CUPS physical queue with a filter that executes the CQue driver *sicgsfilter*. The program *sicgsfilter* will be described shortly. All of the printer options may be managed by CUPS compatible tools, including advanced options like mailbox printing, secured printing and printing with department accounting.

2.2 The Modules of CQue

The CQue package consists basically of the following modules:



- The program ***sicgsfilter***, which is the driver taking care of the output of the queue.
- The ***foomatic*** package, which is not part of CQue itself. Yet CQue relies on the foomatic package especially for the transformation of printer description languages, if necessary. Foomatic is integrated into more recent versions of CUPS, and thus not a separate package anymore. (Note: CentOS may not yet integrate foomatic-rip into CUPS, so then it would be required seperately).

The print jobs of a CQue queue are processed by the program ***sicgsfilter***.

If no PDL transformation is necessary, then the data are directed straight to the ***sicgsfilter*** program. Otherwise CUPS will call foomatic-rip to perform the transformation and then send the resulting data to ***sicgsfilter***.

On recent Linux distributions the GTK+ package as well as LibreOffice may also read PPD information and thus format the data, for example for advanced options like mailbox and secured printing, etc.

2.3 What Happens when Printing?

CQue may process various file types, depending on the type of printer queue.

If a queue of CQue type has been configured for a ***PostScript Canon device***, then it will accept:

- ◊ *PostScript files*. This type of files is mainly considered as raw PostScript, i.e. without any printer specific PostScript code like duplex printing, stapling etc. It is the job of sicgsfilter to include these PostScript codes into the file. If the PostScript file itself includes already features of this kind, then the result may not be defined in a unique way.
- ◊ *Non-Postscript ASCII files*, which will automatically be transformed to PDF and then to PS through a filter. This filter will be a standard filter supplied by CUPS.
- ◊ *PDF files*. CQue will automatically convert the PDF data to PS. Thereafter it will insert any printer specific PostScript finishing code like duplex printing, stapling into the data stream. It will normally not sent the PDF file as is.
- ◊ *Image files* like TIFF, JPEG, X11, PNG, etc., which will also be transformed to a PostScript format internally. They will be printed 'as is' at standard printer resolution.

If a queue of CQue type has been configured for a ***PCL Canon device***, then it will accept:

- ◊ *ASCII files*, to which the appropriate header with PCL/PJL data will be added. The ASCII data may be formatted so that the data will print more sophisticated than simply A4 and the default values of the copier or printer.
- ◊ *PostScript files*. CQue will automatically convert the PS data to PCL. Thereafter it will insert any printer specific PCL finishing code like duplex printing, stapling into the data stream. CQue can generate both black-white and colour PCL depending on the Canon device.
- ◊ *PDF files*. CQue will automatically convert the PDF data to PCL. Thereafter it will insert any printer specific PCL finishing code like duplex printing, stapling into the data stream. CQue can generate both black-white and colour PCL depending on the Canon device.
- ◊ *Image files* like TIFF, JPEG, X11, PNG, etc., which will also be transformed to a PCL format internally. They will be printed 'as is' at standard printer resolution.

Please note that ***genuine PCL files***, i.e. files including specific PCL and/or PJL code for page layout, fonts etc. ***are not supported by CQue***. They will be send "as is" to the Canon device, and no printer or finishing options may be set through CQue.

If a queue of CQue type has been configured for a ***PXL Canon device***, then it will accept:

- ◊ *ASCII files*, to which the appropriate header with PXL/PJL data will be added. The ASCII data may be formatted so that the data will print more sophisticated than simply A4 and the default values of the copier or printer.
- ◊ *PostScript files*. CQue will automatically convert the PS data to PXL. Thereafter it will insert any printer specific PXL finishing code like duplex printing, stapling into the data stream. CQue can generate both black-white and colour PXL depending on the Canon device.
- ◊ *PDF files*. CQue will automatically convert the PDF data to PXL. Thereafter it will insert any printer specific PXL finishing code like duplex printing, stapling into the data stream. CQue can generate both black-white and colour PXL depending on the Canon device.
- ◊ *Image files* like TIFF, JPEG, X11, PNG, etc., which will also be transformed to a PXL format internally. They will be printed 'as is' at standard printer resolution.

Please note that ***genuine PXL files***, i.e. files including specific PXL and/or PJL code for page layout, fonts etc. ***are not supported by CQue***. They will be send "as is" to the Canon device, and no printer or finishing options may be set through CQue.

Please note that the copier should support the PDL: if you send PCL data to a copier which does not support PCL, then the job will not print.

2.4 Before Installing CQue

This section presents some concepts to be considered before installing CQue.

2.4.1 Linux versus Windows Printing

There is an important difference between the printing concept in a Linux environment and a MS Windows environment.

For UNIX each program has its own way of preparing and formatting the data to be printed. For Linux the situation is slightly better: many programs make use of the integrated print interface of GTK+, but unfortunately not all programs do so. For these latter a printer queue is basically a concept largely independent of the main program.

For MS Windows there exists a layer of Windows itself, that is highly involved in the printing. In this way each program (with a few exceptions) relies on the same driver with the same behaviour for each program. Thus, there is for each printer driver a *Properties* button, allowing for the modification of the printer parameters.

CQue tries to imitate the behaviour of Windows printing, if desired by the customer. Therefore, in a first approach, and independent of the PDL (Postscript, PCL or PXL), the UNIX printer queues in general can be divided into three categories:

1. *Raw printer queues*. This type of queue can be created by Linux printer managers. Such a queue would typically print A4 only.

2. *System (or foomatic) printer queues*. This type of queue will, when processing a job, take into account finishing options and advanced options specified at the time a job is submitted. It will also automatically transform the job data to the correct printer format (PostScript, PCL or PXL). If the GTK+ or LibreOffice print interface is used even advanced options (mailbox, secured printing, printing with department account) will be taken into account properly.

3. *Dedicated printer queues*. This type of queue would, when processing a job, always apply the same finishing properties, without bothering the user. This type of queues is excellent when the user knows what he or she wants and needs only a limited number of different finishing options. Many UNIX users, for example, are quite happy with dedicated printer queues for: A4 (the default), A4 Duplex, A4 Duplex + Staple and possibly A3. The creation and configuration of these queues is very well possible with CQue.

The decision of the type of queue to create should always be made. This is actually one of the first steps before creating a printer or printer queue.

2.4.2 Linux Printing: A Cook Book Approach

A printer (or printer queue) is in general characterised by:

1. The ***queue name***, or printer name.
2. The ***port or URL***, normally depending on the IP address of the printer.
3. The ***type of queue*** i.e. PostScript, PCL5, PCL6 or PXL.
4. The ***model of the printer*** (once we know the type).
5. The ***device options*** - the optional hardware installed on the printer.
6. The ***printer options***.

Before creating a printer queue the items 1. to 4. should be known. Once the printer queue is created the items 5. and 6. will take on default values and can always later be modified. Please note that on Linux and with CQue printer queues it is not possible to query the device (the printer) for possible installed optional hardware.

2.4.3 Linux Printing: When will CQue not work?

Even though the aim of this manual is to explain how CQue does work, there are some known situations where it will not be able to function correctly.

> For Linux programs where the main program does highly sophisticated page formatting, especially for PCL printing. In that case the CQue formatting may conflict with the PCL formatting of the main program with undefined end results.

As of version 4.0-0 CQue is independent of any graphical interface and or graphics libraries. It works equally well on a desktop as in an alphanumerical terminal.

2.4.4 Linux Printing: CQue and LibreOfTce, acroread, gimp, FireFox, GTK+

Recent user interfaces of programs like OpenOffice, the gimp, acroread etc. on Linux support a printer interface allowing for the setting of printer options like paper format, duplex printing etc. CQue is compatible with these interfaces as long as these interfaces rely on the standard CUPS PPD files.
Some of these main applications rely on the printer tool of the GTK+ library, which is also compatible with the CUPS PPD mechanism, including the CUPS PPD extensions. There are exceptions, explained below.

Please note that the user interface structure for the passing of accounting user IDs and passwords currently is supported by print interfaces using the ***latest GTK+ release*** (version 2.2 and newer) only.

All programs making use of this GTK+ print interface benefit from this feature, bringing Linux printer a step closer to what one is used to on MS Windows. Some programs, like Adobe acroread, however, maintain their own printer interface and are as yet not compatible with the CUPS PPD extensions. This is an unfortunate limitation of current printer dialogs on Linux. Adobe discontinued support for acroread as of version 9.4. Many alternatives exist, making use of GTK+ thus gradually phasing out Adobe's acroread.

OpenOffice or LibreOffice use their own printer interface too, but advanced options like secured printing and printing with accounting are available: Select the "custom" setting from the PPD file and enter the password or ID string in the available text field.

If you are using CUPS on a server, including the broadcasting mechanism of CUPS, then any CQue queue (which is also a genuine CUPS queue) will be broadcast and thus be known on all CUPS clients.



3 Installing CQue

3.1 Obtaining CQue 4.0

CQue 4.0 can be obtained by:

- Downloading from the web.

or

- Obtaining a copy on CD-ROM.

There are three different archive formats:

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

As there exist many different Linux distributions and various package management systems too, it may happen that your distribution does not support rpm nor deb packages by default. In that case we recommend using the *.tgz version of CQue, which should run on all known Linux systems.

In general we recommend to use either the ***rpm*** or ***deb*** package, as the installation of such a package is fully automatic.

3.1.1 Using the web

You can download the driver from the Canon web site for your country or directly from http://software.canon-europe.com.

3.1.2 CD-ROM

To obtain a copy of CQue 4.0 on CD-ROM please contact your local Canon Sales Office.

On the CD-ROM the package will be available in both *.tgz, *.rpm and *.deb formats.

3.1.3 Support

For support, please contact your local Canon service technician/representative.
This chapter will describe the general installation of CQue for Linux environments.

☞ ***Both the RPM, DEB and the setup program will restart the CUPS printer manager after finishing.***

3.2 Starting the Installation CQue 4.0

3.2.1 Introduction

The following sections will describe an installation of CQue on a workstation which does not have any CQue installed. For a description of an upgrade installation of CQue or of a de-installation of CQue, please refer to the sections 6.1 and 6.2 respectively of this manual.

3.2.2 Installing a TGZ package

If you downloaded a copy of CQue 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***.
If you cannot decompress the file using this method you can extract the contents of the file using the following commands (we recommend doing this from the /tmp directory):

```
gzip  -d  cque-xx-4.0-0.tgz
tar  xvf   cque-xx-4.0-0.tar
```

or in one sweep (with the GNU version of tar):

```
tar  xzvf  cque-xx-4.0-0.tgz
```

where the 'x' depends on the language of the version of CQue.

The first line will decompress the archive, the second line will extract all files from it.

The extracted the files from a **.tgz* version you will need to start setup from the directory where you extracted the files to. Normally a subdirectory: cque-xx-4.0-0 will have been created.
The section 8.2. describes all options supported by setup.

To start a ***default*** installation, either double-click on the **setup** icon, or alternatively from a terminal window type:

```
./setup
```

The installation will silently start and will terminate with a restart of the CUPS printer daemon. The start up may take a while when setup configures an SELinux module if necessary.

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

Upgrade installations of CQue will not modify any existing printer queues.
Of course setup never modifies a non-CQue printer queue.

Please have a look at the log file: ***/var/log/CQue4.0_UpdateLog*** after running setup.

3.2.3 Installing an RPM package

The rpm package appears with its specific icon in a file browser as in fig. 1. The "look and feel" of the menus may differ among different Linux distributions, but the general way will resemble the example we present here (Fedora).

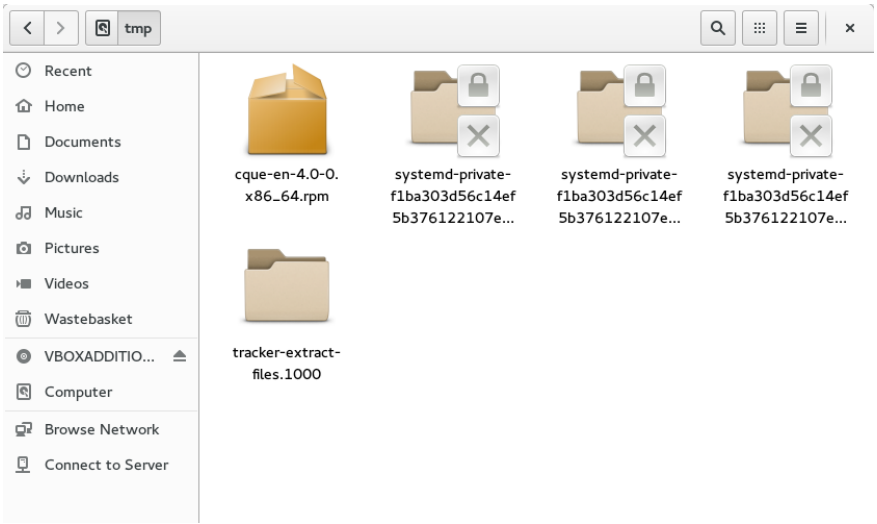


Figure 1 The CQue rpm package.

To have more control over the installation you may prefer to use the non-interactive method to install CQue described at the end of this section.

When you double click on the icon, the following menu opens up:

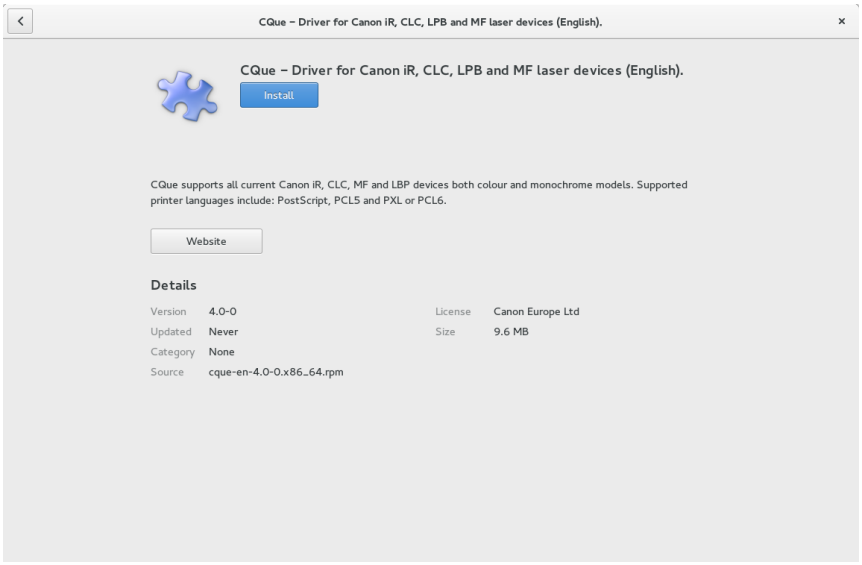


Figure 2 Confirm CQue rpm package installation.

As the CQue driver is not bound to a specific Linux distribution, the package has not been signed. It is, however, completely safe to continue with the installation.
If you agree to continue with the installation, click on *Install*.

You may now be queried to identify yourself with the ***root*** password. Only the ***root*** has the right to add system software.

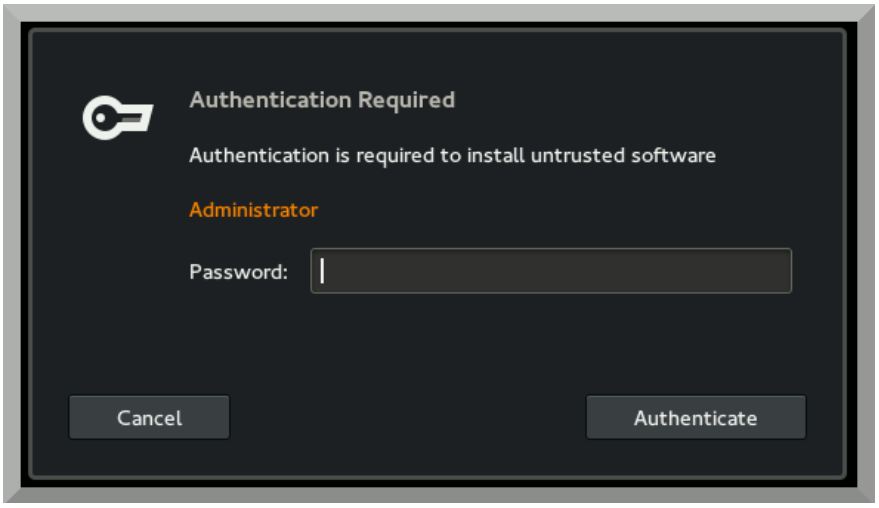


Figure 3 Authentication required for the CQue rpm package.

The rpm manager checks any package dependencies. And finally the package will be installed.
During installation you might see:

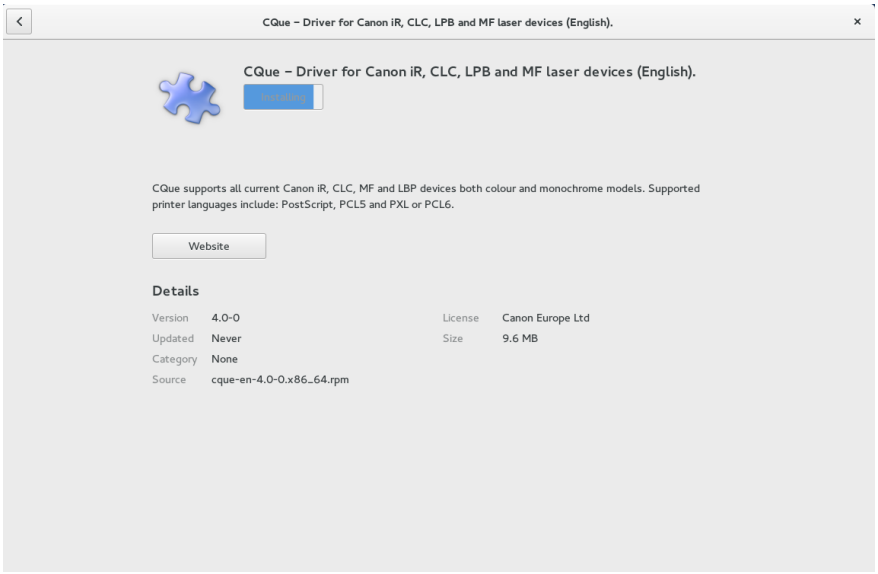


Figure 4 During the installation of the CQue rpm package.

Thereafter the following window displays:

A review of the full installation procedure will be found in the file: ***/var/log/CQue4.0_UpdateLog***.

The documentation will be installed into the directory ***/usr/share/doc/CQue4.0***.

Please note that if you upgrade from a previous version of CQue any existing printer queues will not be affected.

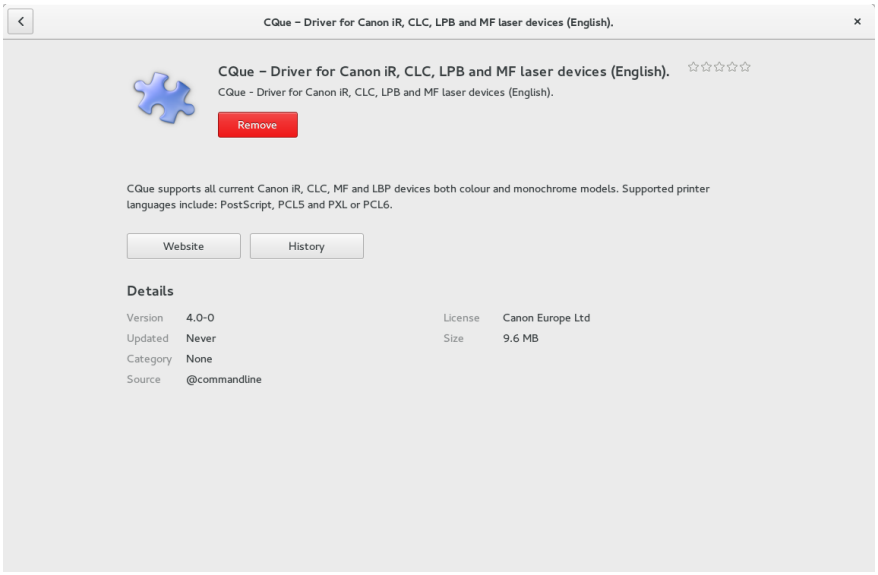


Figure 5 After installation of the CQue rpm package.

If you do not want to extract the files and install them using this interactive method you can extract and install the contents of the file using the following command from a terminal window:

dnf install cque-xx-4.0-0-i386.rpm

or (older approach)

yum install cque-xx-4.0-0-i386.rpm

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

/opt/cel

and run the setup program in the same manner as described above. At the end de CUPS daemon will be restarted.

Depending on the Linux distribution used (i.e. not supporting ***yum*** or ***dnf***), you may also try one of the following commands:

rpm -Uhv cque-xx-4.0-0-i386.rpm

If (obvious) dependency conflicts would arise (see release notes, appendix F), you may run:

rpm -Uhv --nodeps cque-xx-4.0-0-i386.rpm

The installation will be the same and you may check the file ***/var/log/CQue4.0_UpdateLog*** to verify whether the installation was successfully.

3.2.4 Installing a DEB package

The deb package appears with its specific icon in a file browser as in fig. 6. The "look and feel" of the menus may differ among different Linux distributions, but the general way will resemble the example we present here (Ubuntu).

To have more control over the installation you may prefer to use the non-interactive method to install CQue described at the end of this section.

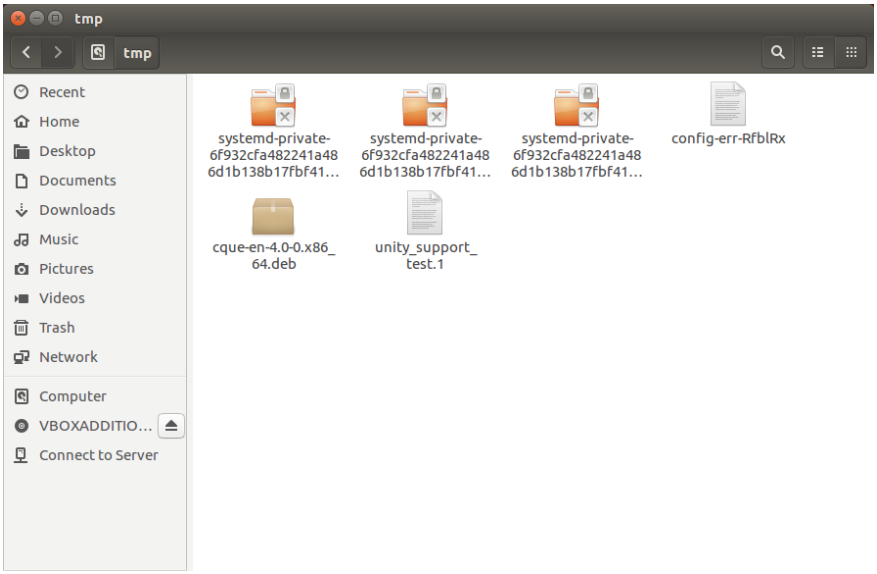


Figure 6 The CQue deb package.

When you double click on the icon, the following menu opens up:

A review of the package to install appears. To continue the installation, please click ***Install***.

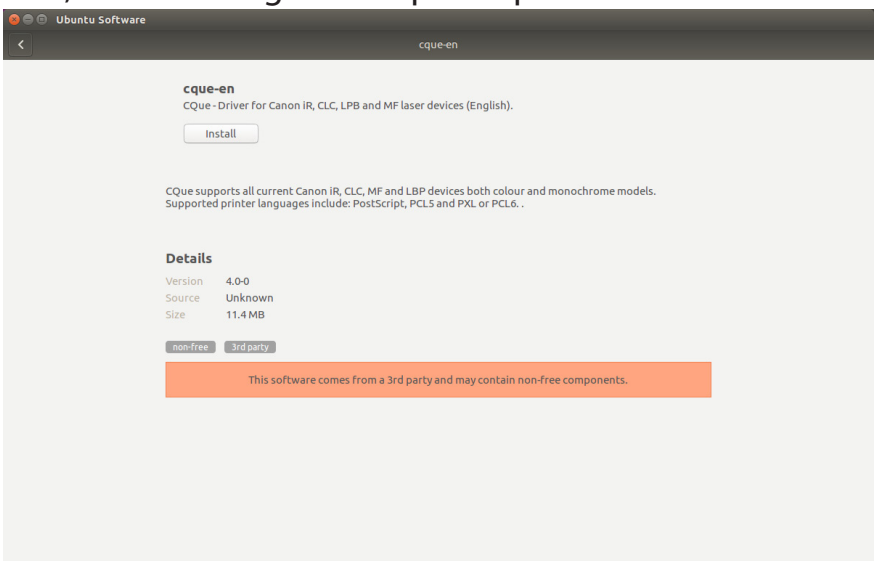


Figure 7 Confirm CQue deb package installation.

Before the installation can start you will have to authenticate yourself.

On Ubuntu (and other .deb oriented Lunix system) you should type here ***your own password*** (not the root password, which often is not even available).

Then the installation of *CQue* will start.

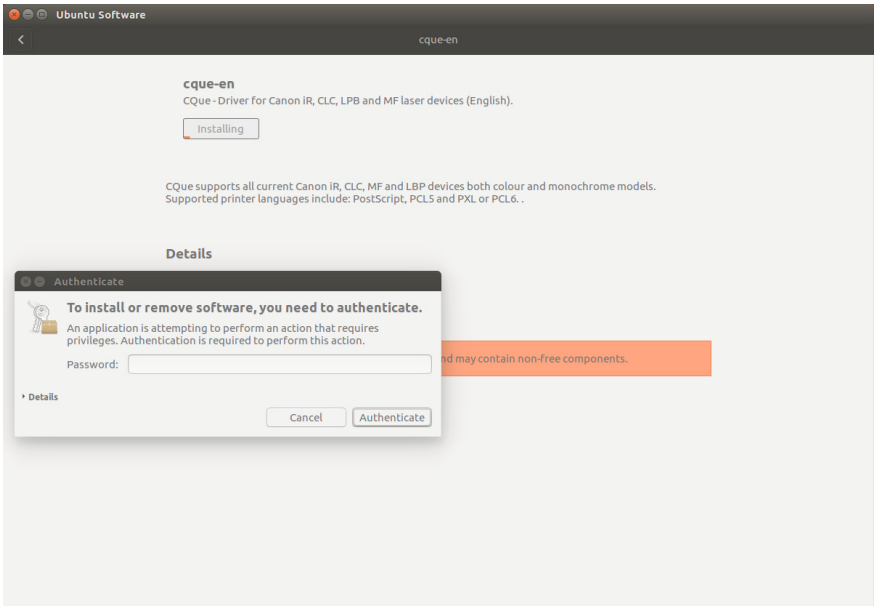


Figure 8 Authentication for the CQue deb package.

At the end of the installation of *CQue* this window will display.

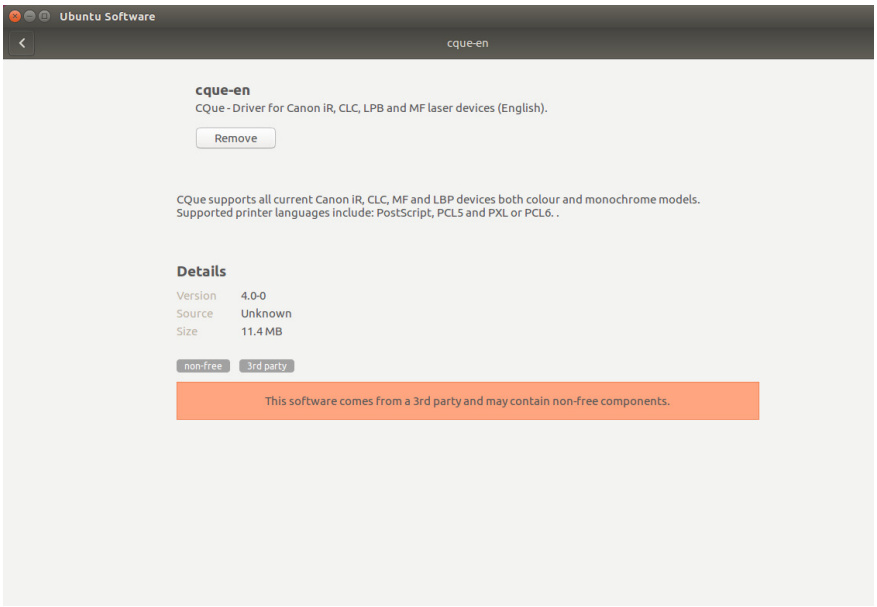


Figure 9 End of the installation of the CQue deb package.

If you do not want to install the package using this interactive method you can extract and install the contents of the file using the following command from a terminal window.

You can install the package for example with dpkg:

sudo dpkg -i cque-xx-4.0-0-i386.deb

The *dpkg* program will automatically extract the files to the directory:

/opt/cel

and run the setup program in the same manner as described above.
At the end de CUPS daemon will be restarted.

On Debian you may also use the recommended program ***aptitude*** to install CQue, which is a more user friendly interface to ***dpkg***.

The installation will be the same and you may check the file ***/var/log/CQue4.0_UpdateLog*** to verify whether the installation was successfully.

4 Setting up a Queue of CQue 4.0

4.1 General considerations

A printer (or printer queue) is in general characterised by:

1. The queue name, or printer name.
2. The port or URL, normally depending on the IP address of the printer.
3. The type of queue i.e. PostScript, PCL5, PCL6 or PXL.
4. The model of the printer (once we know the type).
5. The device options - the optional hardware installed on the printer.
6. The printer options.

Before creating a printer queue the items 1. to 4. should be known. Once the printer queue is created the items 5. and 6. will take on default values and can always later be modified. Please note that on Linux and with CQue printer queues it is not possible to query the device (the printer) for possible installed optional hardware.

For the type of queue the following options are available, depending on the hardware installed on the printer:

4.1.1 A PostScript Queue

A *PostScript queue* handles PostScript data, but it will also try converting non-PostScript data to PostScript data, if necessary.

4.1.2 A PCL Queue

A *PCL queue* will print PCL data, including plain ASCII text. Input from applications generating PostScript will automatically be converted to PCL. In general PCL5e is used. Most Canon colour devices, if supporting PCL, will be compatible with this type of PCL too.

4.1.3 A PXL Queue

A *PXL queue* will print PXL or PCL6 data, including plain ASCII text. Input from applications printing in PostScript will automatically be converted into PXL. Most recent Canon colour devices, if supporting PXL, will be compatible with this type of PCL. Note that older Canon colour devices may not support this type of PCL.

Linux comes with various methods to create a printer queue:

1. The ***CUPS browser interface***. As CUPS is available on virtually all Linux distributions this method is ***strongly recommended***.
2. The ***lpadmin*** command line. This is also always available on all Linux distributions and rather standard.
3. The Linux system printer manager. This is rather system dependent and may vary from one system to another.

In this manual we will discuss the ***CUPS method*** and the ***lpadmin method***.

The Linux system printer manager method is not discussed. Due to different approaches depending on different versions of the Linux distribution a printer queue created by this tool will work, but it may not always find the correct CQue PPD file for the printer.
Often this approach will default to for example an UFR II printer driver, which simply is not supported nor managed by CQue.

It is an unfortunate fact of life with Linux that different Linux distributions propose different printer managers and each of these tries to automate a maximum of things at the cost of proper control of what printer queue we really want to set up

4.2 Setting up a Queue with CUPS

4.2.1 Starting the CUPS interface

The CUPS interface is launched by typing in any browser:
http://localhost:631

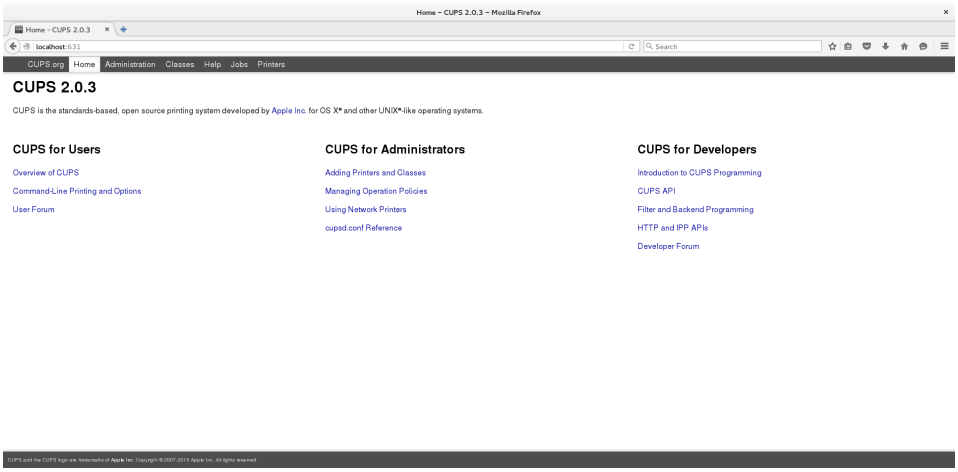


Figure 10 The CUPS interface

Depending on the version of CUPS the following interface will display (details may differ but the general method is always the same):

To arrive at the administration interface click on "Adding Printers and Classes".
This opens the Administration interface where you can manage printers and jobs.
To create a new printer click on "Add Printer".

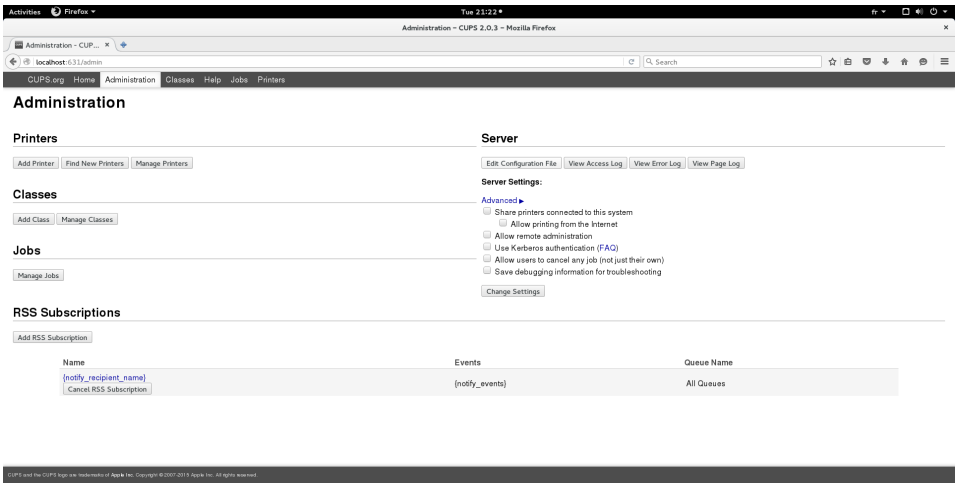


Figure 11 The CUPS Administration interface

It is possible that the CUPS program will ask for authentication as root (Fedora) or your own account (Ubuntu, Debian).

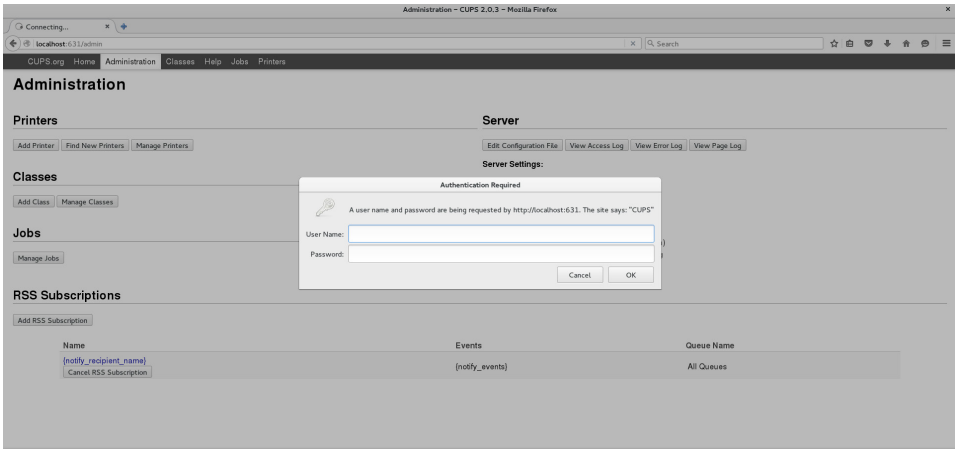


Figure 12 The CUPS Authentication interface

4.2.2 Add a printer - specify printer port

To specify the port of the printer various options are offered (also sometimes called URL's). In this example we select a TCP/IP 9100 port, which for CUPS is: "AppSocket/HP JetDirect".

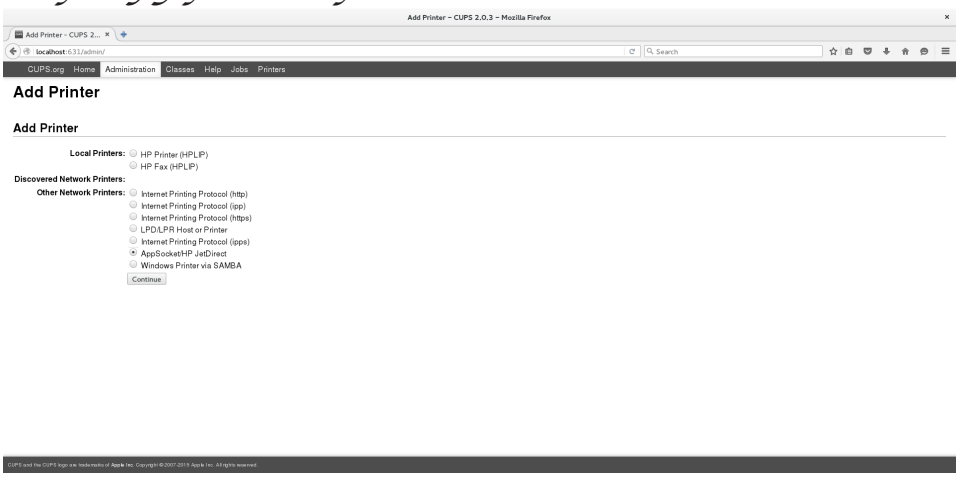


Figure 13 The CUPS "Add Printer" interface – Specify port type

When clicking "Continue" the full URL should be specified. Note that CUPS proposes the syntax with various examples.
Clicking "Continue" again gives the following interface:

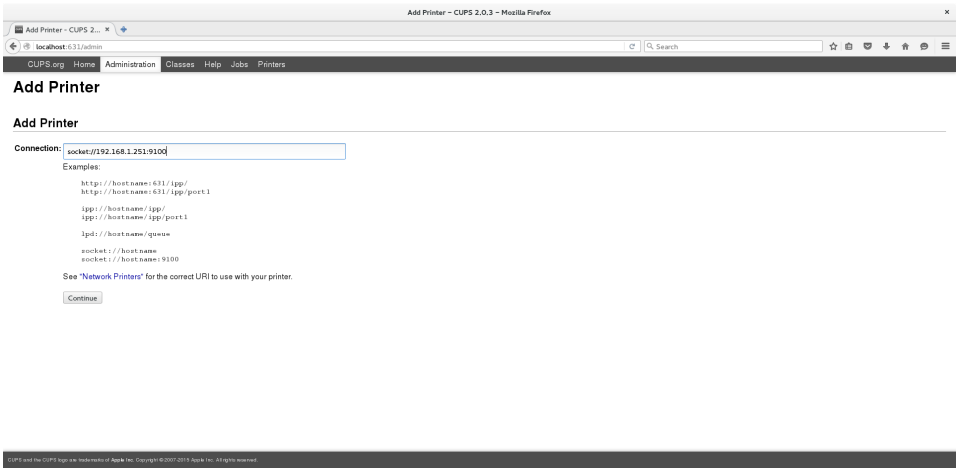


Figure 14 Specify the CUPS URL or port

4.2.3 Add a printer - specify printer name

The printer name should be specified here. It is recommended to use a name without spaces.
Optionally you may specify a description and a location but that is not necessary.
Click "Continue" again.

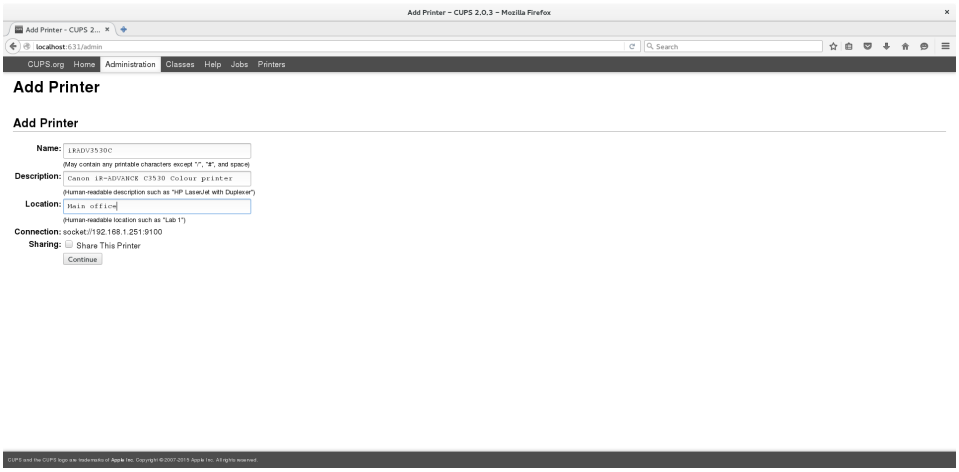


Figure 15 Specify the CUPS printer name

4.2.4 Add a printer - specify printer model

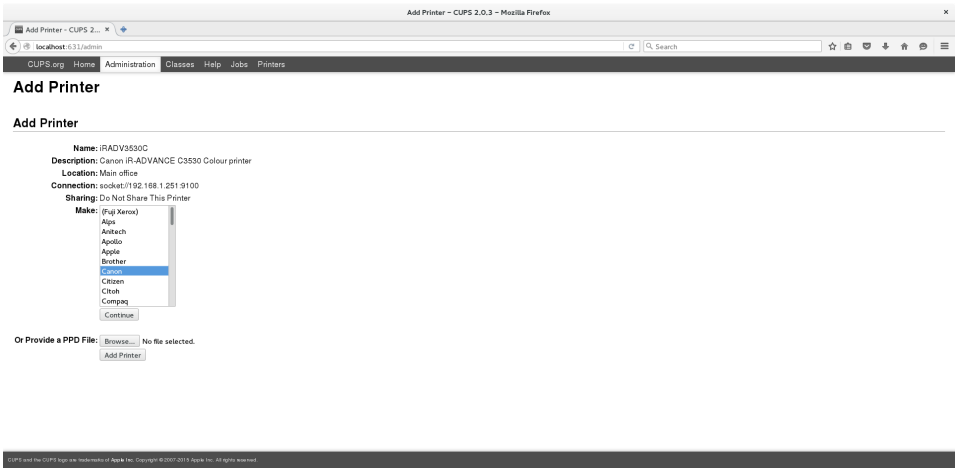


Figure 16 Specify the CUPS printer model (brand - Canon)

The printer model should be defined in two steps. First specify the brand, i.e. "Canon" and hit "Continue".

NOTE: Optionally you might specify here a specific PPD file, if you were to install a special printer for which a PPD file is supplied.

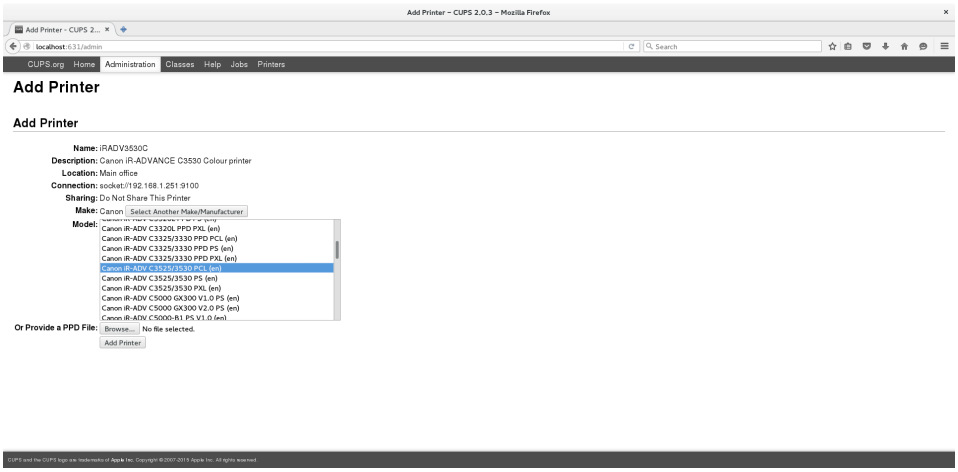


Figure 17 Specify the CUPS printer model

The list of printer models may be very long. In general it is arranged in alphabetical order. In our example we specify as model: ***Canon iR-ADV C3525/3530 PCL (en)***.
In general CQue printer models have the following syntax: ***Canon*** followed by the model (***iR-ADV C3525/3530***), followed by the PDL (***PS, PCL, PXL***) followed by the language (***en***).
Now the printer can be created by hitting "***Add Printer***".

4.2.5 CUPS - Set Printer Options

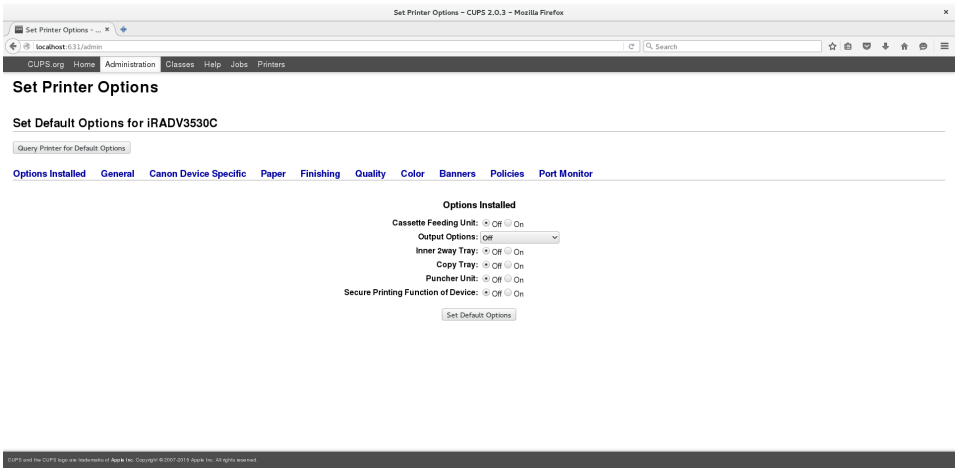


Figure 18 Specify the CUPS printer options - Overview

Once the printer has been created various options can be specified. These depend on the printer model, but in general will include ***Installed Options***, ***General***, ***Canon Device Specific***, ***Paper***, Finishing, etc. The options *Banners*,

Policies and *Port Monitor* are CUPS specific and independent of the printer model.

An example of Installed Options could be:

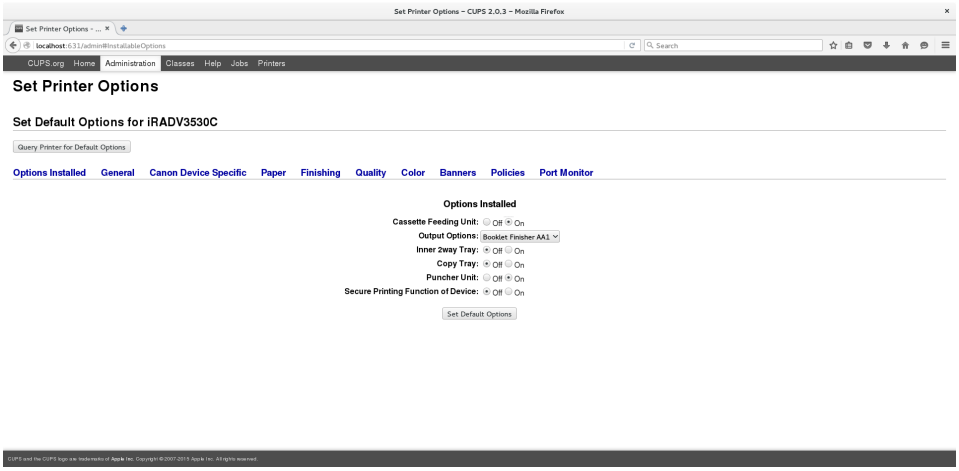


Figure 19 Specify the CUPS printer options – Options Installed

The ***General*** section normally contains options not found in other sections.

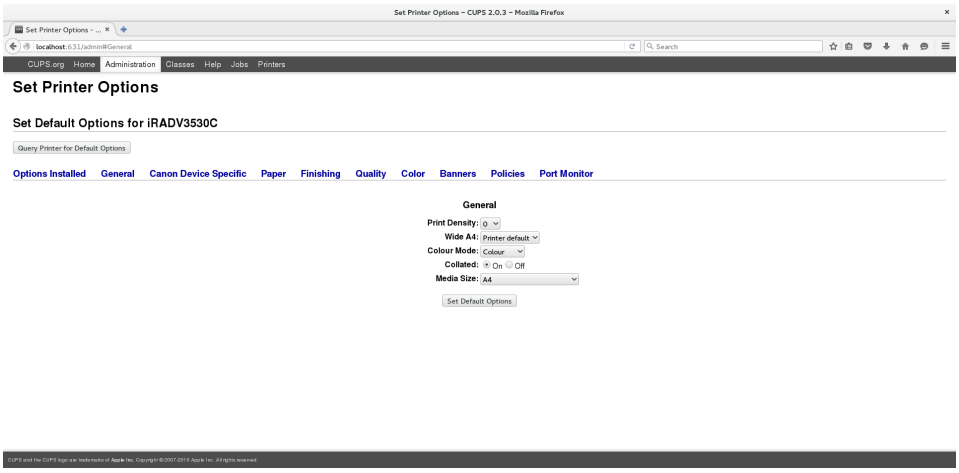


Figure 20 Specify the CUPS printer options – General Options

The ***Canon Device Specific*** section normally contains options like ***mailbox printing***, ***secured printing*** and ***printing with department accounting***. The ***Repeat Job*** is a special option for printing the same job with finishing (like stapling) a multiple number of times.

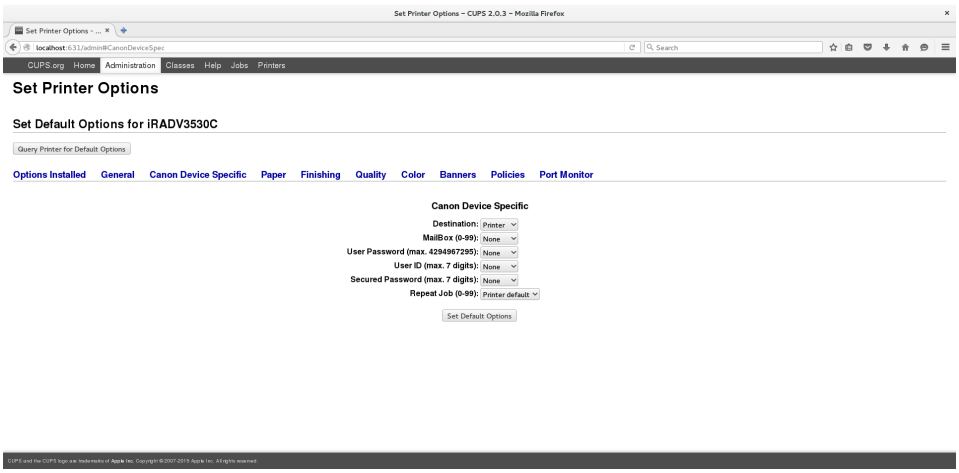


Figure 21 Specify the CUPS printer options – Canon Device Specific Options

The ***Paper*** section normally contains options like paper trays and media types.

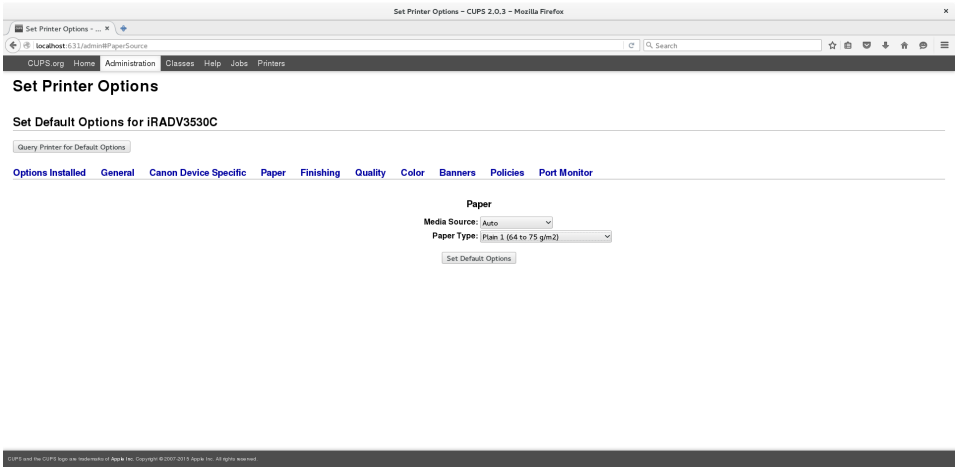


Figure 22 Specify the CUPS printer options – Paper Options

The ***Finishing*** section normally contains options like duplex printing, stapling and of course finishing. These options will depend on the Installed Options specified previously.

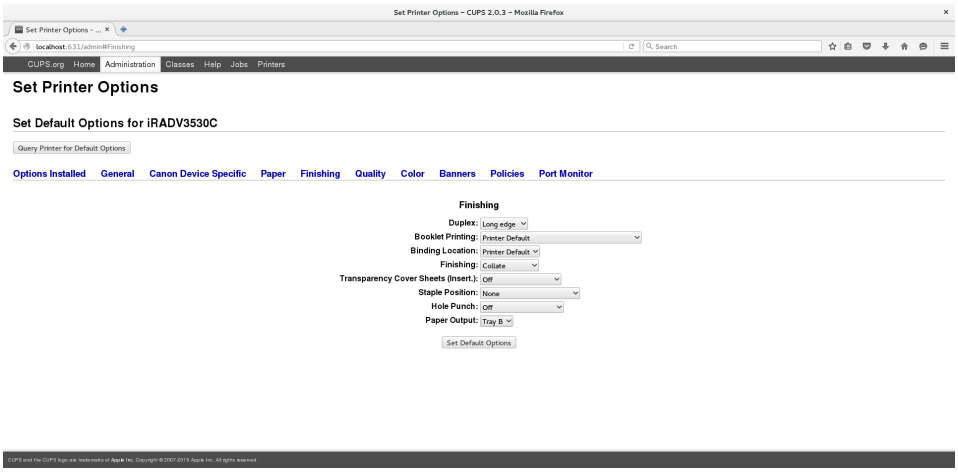


Figure 23 Specify the CUPS printer options – Finishing Options

The ***Quality*** section (if available) normally contains options like resolution, toner save etc.

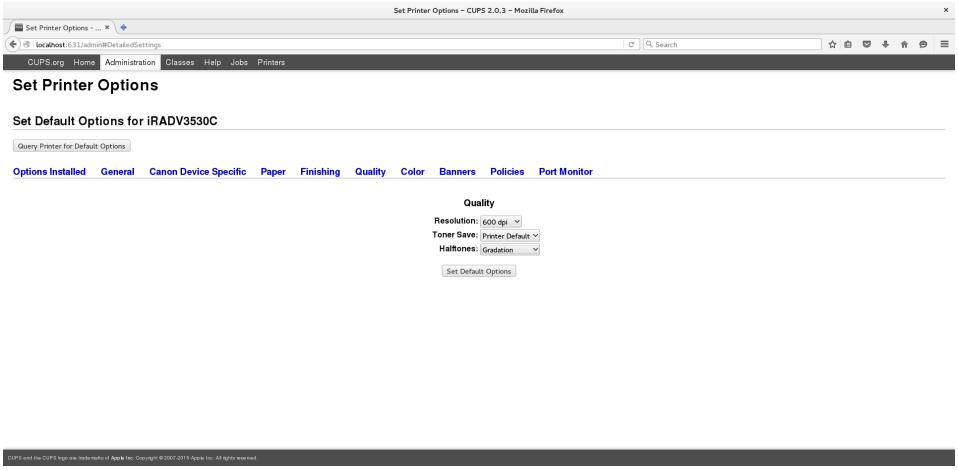


Figure 24 Specify the CUPS printer options – Quality Options

Once the ***Set Default Options*** button is hit a review of the printer queue appears. From this menu several maintenance and administrative options can be accessed.

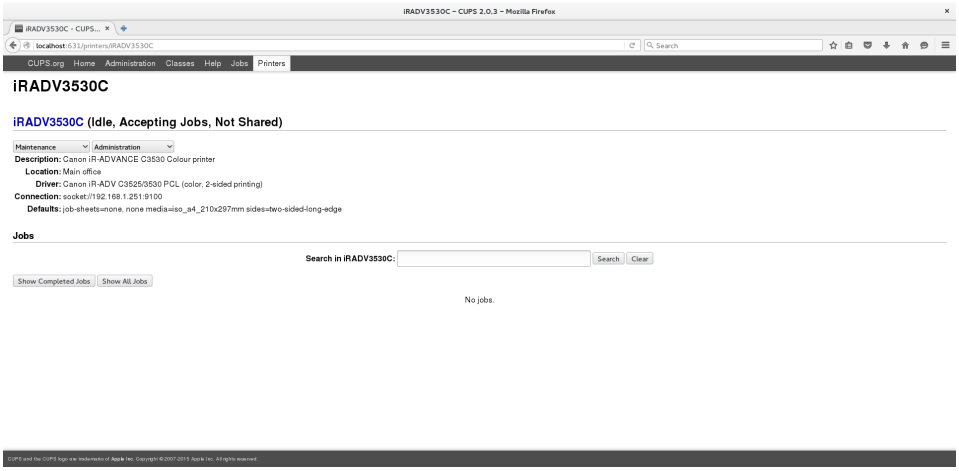


Figure 25 CUPS Review of printer queue

4.3 Setting up a Queue with lpadmin

Although the description of the previous section is the preferred one, you may also create a printer queue with the CUPS ***lpadmin*** command. You should know two things:

- The PPD file and its location.
- The IP address or host name of the Canon printer.

The PPD file will be installed by the setup program into the system PPD folder. Or, into a subdirectory, called cel. But for the purposes of lpadmin you may also use the PPD file which is always stored in the folder: ***/opt/cel/ppd***.

If you want to know which file corresponds to your model (if this is not clear from the file name) you may run, for example:

zgrep ModelName /opt/cel/ppd/* | grep ***pattern***

where ***pattern*** is specific for your printer. As an example:

zgrep ModelName /opt/cel/ppd/* | grep 3530

will show that the PPD file for this model is:

/opt/cel/ppd/ppd/cel-iradvc3525-pcl-en.ppd

If we suppose that the name of the printer queue to create is 'iRADV3530C' and its IP address is 192.168.1.251 then you may run the following commands:

```
lpadmin  -p iRADV3530C \
        -i /opt/cel/ppd/ppd/cel-iradvc3525-pcl-en.ppd \
        -v socket://192.168.1.251:9100  -E
```

These three lines, starting with lpadmin, form actually one line. If you type it on one line, please leave out the backslashes.
The -E option the equivalent of:

```
accept iRADV3530C
cupsenable iRADV3530C
```

The PPD file will now be copied into **/etc/cups/ppd/iRADV3530C.ppd** and the CUPS printer manager will have added an entry into the file **/etc/cups/printers.conf**. CUPS will use this latter PPD file, and will never modify the original PPD file from the /opt/cel/ppd directory.

If you want to know all PPD options of the printer you may type:

lpoptions -p iRADV3530C -l

This will show all PPD options supported. Without the option **-l** only the currently set default values will be shown.

Default options may be specified by either the lpadmin command or the lpoptions command.
For example to set simplex printing instead of the default duplex printing for our iRADCVC3530C queue, we could launch:

lpadmin -p iRADV3530C -o Duplex=None

The same could be achieved by:

lpoptions -p iRADV3530C -o Duplex=None

Note: the lpoptions allows for the setting of default printer values per user:
When lpoptions is run as the root user (administrator) it sets default values for all users. When, however, lpoptions is run as a non-root or regular user, then the options specified will hold only for that user.

5 Printing with a Queue of CQue

5.1 Printing in General

The CQue PPD files are fully compatible with CUPS and thus any printer interface relying on the CUPS syntax will support all provided options. This is especially true for program using the GTK+ printer manager - which nowadays most applications do.

5.1.1 Advanced Options

The following advanced options are available - depending on the printer type of course - some low end printers may not support all or any of these options:

1. *Mail box printing*: The job will be sent to one of the file boxes of the copier and will stay there to be printed at a later time.
2. *Printing with (department) accounting*. In this case the user should have a valid user ID and password on the Canon device. The job to be printed will be credited on the account of the user.
3. *Secured printing*. The job will be sent to a public mail box (with a password) to be printed at a later time. The user will be required to type in the password on the Canon device panel to start the printing of the document.

In many cases the above operations require user intervention locally on the Canon device or through a web browser having access to the Canon device, for example to specify user id's and passwords, or to print a job once it arrived in a mailbox, etc.
You will find more information in the documentation of the Canon device itself as well as in the section 5.4.

5.2 Printing with the GTK+ Interface

The GTK+ interface is supported by most applications. In this example it is called from LibreOffice. To access the printer options, please click ***Properties***... (A similar interface opens up when called from other applications).

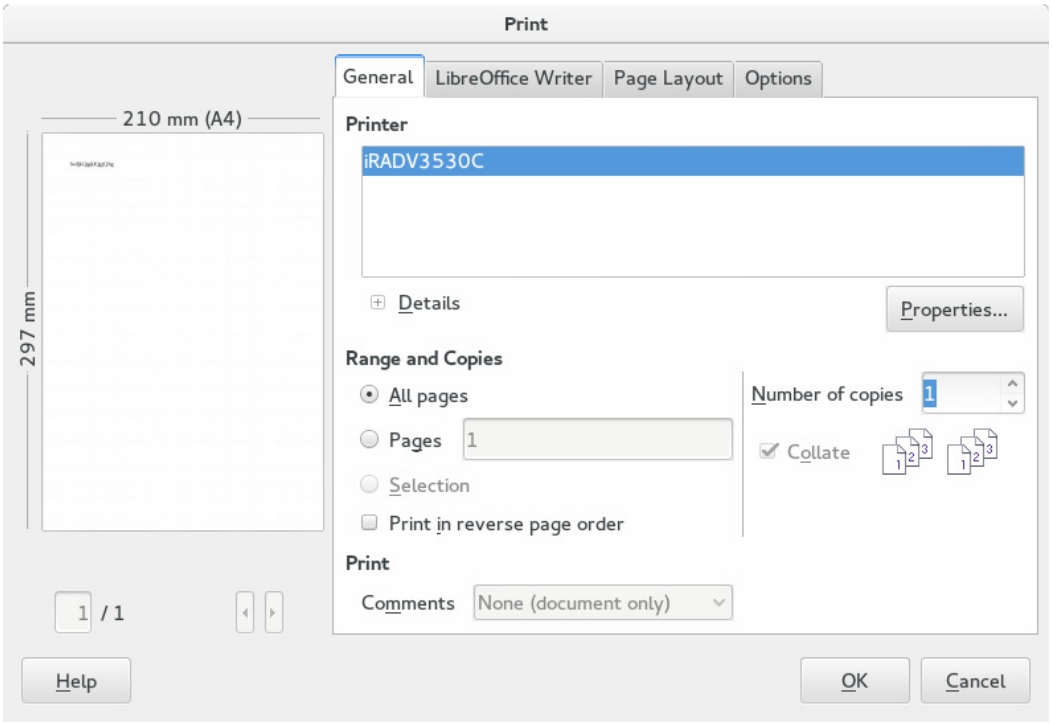


Figure 26 GTK+ user interface

The following interface opens up:
The ***Paper*** options are relatively straight forward.

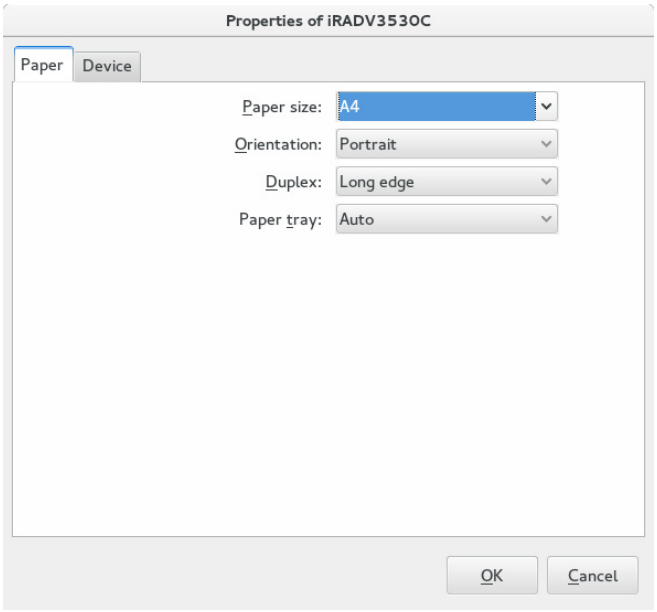


Figure 27 GTK+ user interface

When clicking ***Device***, the following interface (as an example) opens up - see next page.

Here all device specific options from the PPD file for the Canon printer can be specified.

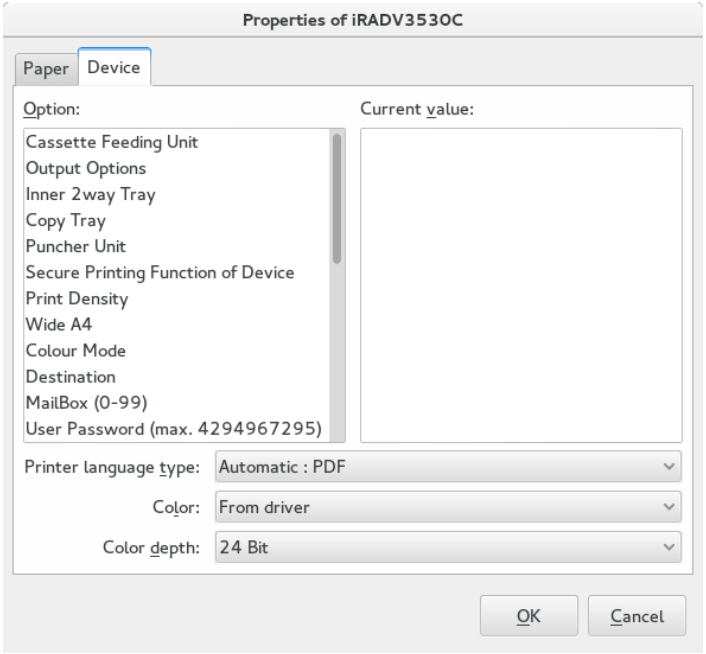


Figure 28 GTK+ user interface: Device specific options

For example for mailbox printing select as ***Destination***: ***MailBox***.

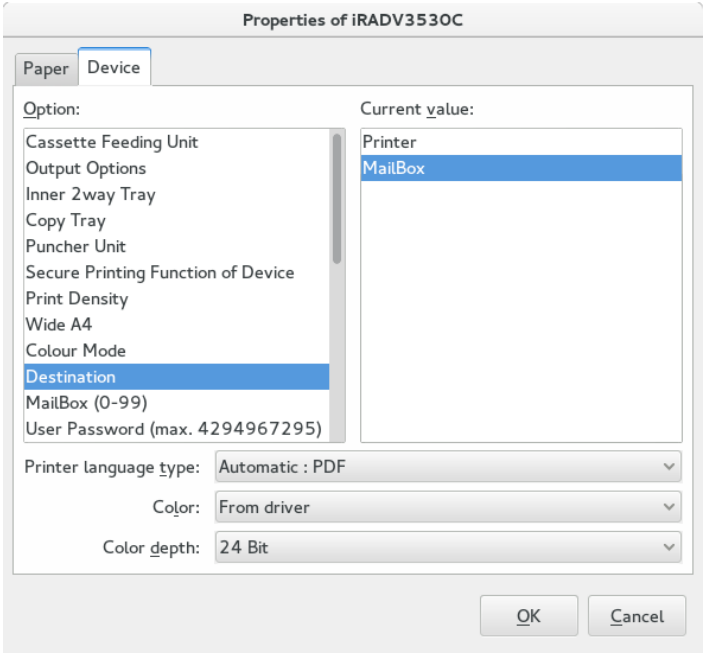


Figure 29 GTK+ user interface: Mailbox printing

And then specify a mailbox number (from 0 - 99). First click on ***Custom*** and then fill in the field above with the requested number.

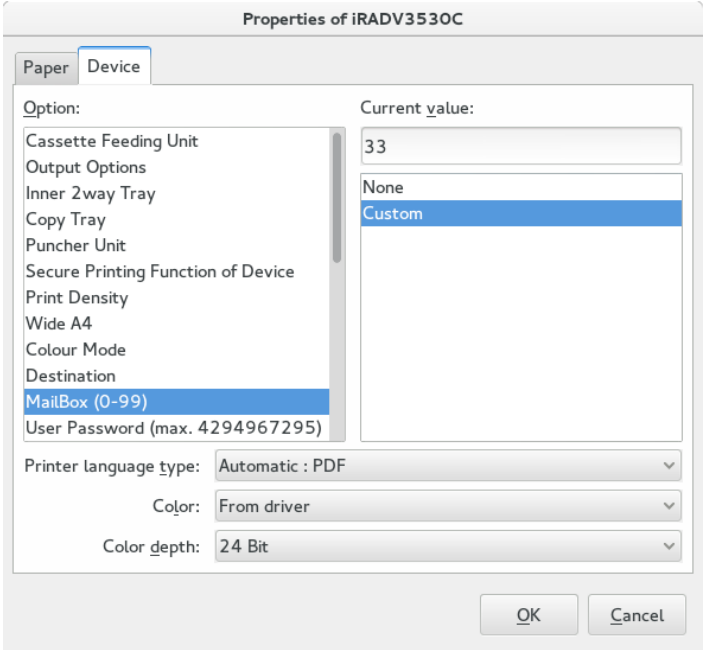


Figure 30 GTK+ user interface: Mailbox printing

For ***Secured Printing*** a similar procedure holds.
The same is true for printing with department accounting (User ID and User Password).

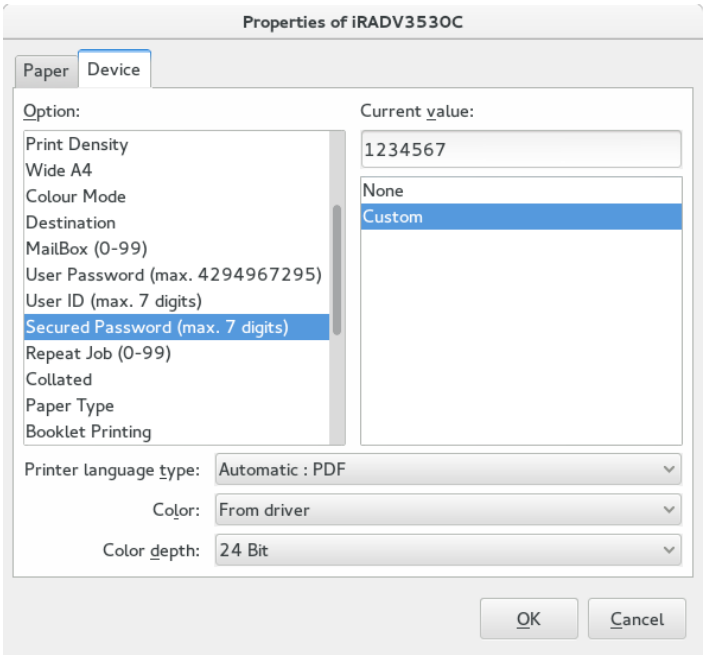


Figure 31 GTK+ user interface: Secured printing

5.3 Printing Multiple Copies of a Document with Stapling

When printing multiple copies (say N copies) of a document with stapling most CUPS implementations will concatenate the output N times and then staple the resulting concatenated file. To prevent this CQue PPDs support a feature: ***Repeat Job*** within the ***Canon Specific Options*** section. This allows you to specify from 1 to 99 copies for applications with the GTK+ print interface and 1 to 25 otherwise, with proper stapling of each copy. This feature is supported for PostScript, PCL5 and PCL6 Canon devices allowing PJL headers, i.e. some pure PostScript EFI devices are excluded.
Note: N copies of a document may generate N separate entries in the log file of the Canon device.

5.4 Advanced Options

The following advanced options are available:

1. *Mail box (or file box) printing*: The job will be sent to one of the file boxes of the copier and will stay there to be printed at a later time. A mailbox may contain a limited amount of documents (most Canon devices support a maximum of 100 documents). There is also a limit to the number of total pages being stored (please refer to the documentation of your Canon device). An advantage of printing from a mailbox is that most of the finishing features may still be modified once the document is received in the mailbox. A mailbox may be protected by a password.
   Documents stored in a mailbox will automatically be purged after a time period to be specified on the Canon device.
2. *Printing with (department) accounting*. In this case the user should have a valid user ID and password on the Canon device, on which department accounting should be activated. The job to be printed will be credited on the account of the user.
   The user ID and password have to be registered on the Canon device. For each account a maximum quota of pages (sometimes different for black/white and colour pages) may be specified.
   Accounting feed back is only possible through the Canon CPCA protocol. For the PostScript, PCL and PXL queues we therefore cannot give any user friendly feedback. If a job is not accepted on the Canon device, for example because of exceeded quota, the job will silently be ignored.

3. *Secured printing*. The job will be sent to a public mail box (with a password) to be printed at a later time. The user will be required to type in the password on the Canon device panel to start the printing of the document.
   In contrast to habits in MS Windows environments no pop-op window is used to confirm the password. In general the password is fixed by the GTK+ interface.

The following table shows which combinations of options are allowed:

Combination	**Supported**
Mailbox + Accounting	Yes
Mailbox + Secured Printing	No
Accounting + Secured Printing	Yes

In many cases the above operations require user intervention locally on the Canon device, for example to specify user id's and passwords, or to print a job once it arrived

in a mailbox, etc. Yet most of these operations can also be performed through a web browser having access to the Canon device, i.e. knowing the required passwords.
You may find more information in the documentation of the Canon device itself.

5.4.1 Advanced Options and GTK+

The latest GTK+ interface supports advanced options directly from the PPD. Hence applications using the GTK+ interface will allow for setting of advanced options directly from an application when printing. Fig. 30 shows an example of setting such print options.

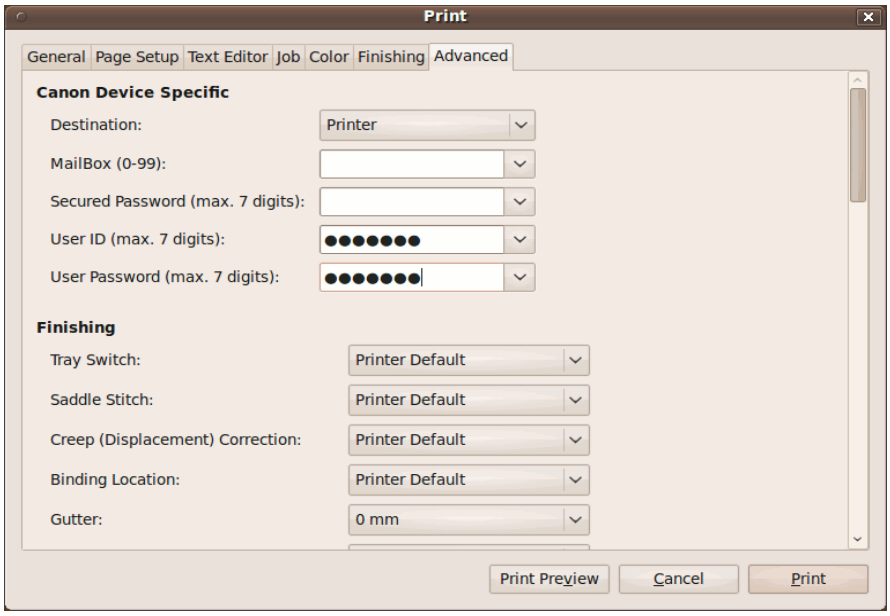


Figure 32 Advanced Options: GTK+ user interface

When re-printing or re-opening an older session and then printing, the GTK+ interface does not always show advanced options in a correct way. If, for example in the text editor ***gedit***, like in fig. 31 you would have activated department accounting with a user ID and a user password, these would not be shown again by the GTK+ interface! But they would still be active.

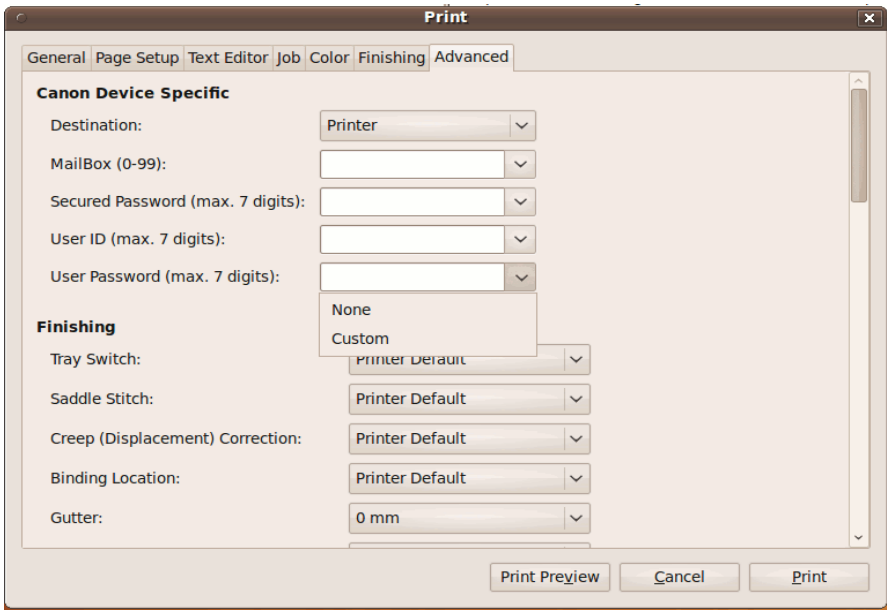


Figure 33 Advanced Options: GTK+ user interface

This may be a limitation of the current GTK+ implementation. Please note that ***gedit*** maintains a hidden file ($HOME/.gnome2/gedit/gedit-print-settings) into which all printer settings are stored and thus retrieved when restoring a previous session.
Other applications, which also use the GTK+ print interface, do not have this behaviour.

If you want to reset an advanced option, i.e. de-activate it, please click on the right drop down menu of the option you want to reset, and there select “NONE”. If you were to select “CUSTOM,” then you must specify a value (password or ID).

6 Non-standard Installations of CQue 4.0

6.1 Upgrade Installation to CQue 4.0

If a version of CQue is already installed on your Linux workstation the setup program will detect that. The setup program of CQue will install the full package but will not touch any existing printer queues.
These printer queues will continue to work with the newly installed package.

A review of the upgrade installation will be available in the file */var/log/CQue4.0_UpdateLog*.

6.2 De-Installation of CQue 4.0

If you want to de-install an existing version of CQue 4.0 from your Linux workstation, you may do so with a system tool if you installed CQue as an rpm or deb package. Such a de-installation, however, will not remove any CQue printer queues. This means that these printer queues most probably will not function correctly any more. A CQue printer queues relies on the existence of the filter ***sicgsfilter***. If that program is removed because of a de-installation, the queues will not work properly, and in the best case continue to print in A4 only.

Alternatively you may runs ***setup*** from a terminal window with the options -d:

```
/opt/cel/bin/setup  -d
```

The program will ask for confirmation and then delete any CQue queues, as well as (most of) the CQue programs and tools. As you run ***setup***, it is probable that the Linux system will prevent to delete the program setup itself! This means that eventually you would have to remove the program /opt/cel/bin/setp and possibly the directory /opt/cel/bin.

A review of the actions taken can be found in */var/log/CQue4.0_UpdateLog*.

7 What to do with Problems of CQue 4.0

7.1 Introduction

If you installed a version of CQue 4.0 on your Linux workstation, and things are not functioning as you expected, this chapter tries to outline some debugging strategies.
Section 7.2 discusses problems related to printer queues in a first approach.
Section 7.3 discusses debugging in a more detailed manner.

7.2 A Created Queue Does Not Print

If you created a queue and for one reason or the other it does not print, perhaps the following suggestions may help. Some topics seem rather obvious, though experience learned that sometimes they are enough to solve the problem...

1. Check that the Canon device (and possibly the printer controller) are both powered up and connected with the appropriate cables. Of course there should be paper or media in to the paper trays.
2. To check the connection with the Canon device do a *ping* on the system. I.e. from a Linux terminal window type:

   ```
   ping  pName
   ```

   We suppose here that the Canon device is known by the network as *pName*.
   The system should respond with something like:

   ```
   pName is alive
   ```

   or it could return an infinite loop of sequences reported to be send and received. (You may stop this by *Ctrl-C* or the *break* key of the keyboard).
   If the system does not respond like that, there is a network connectivity problem, which must be resolved first. *There is no point in doing any other tests, before the connection with the printer is established.*
   Check the cables, check also the IP address of the Canon device to be the same as entered by the installation. The file */etc/hosts* contains the IP address entry on the Linux system, in the most simple case. If your system uses DNS or NIS check the main databases. To get the IP address of the Canon device you might print the configuration page.

3. Check that the printer manager is running. On Linux systems the command

   ```
   lpstat  -r
   ```

should respond with

```
scheduler is running.
```

If it is not running for one reason or the other you may restart it by the command

```
/etc/init.d/cups  start          (or possibly:  /etc/init.d/cupsys)
```

or

```
sysctl  start  cups.service
```

4. Send a test print to the printer by hand. For example the command

```
lp  -dqName  /etc/hosts
```

should print a short text file on the printer.
For older versions of CUPS you may check the file

/var/log/cups/error_log

Please verify its contents, which may give a clue to the problem.
For newer versions of CUPS these files are not used anymore, but CUPS uses the system log file.

5. You may also verify the details of the created printer queue in the CUPS printer data base: /etc/cups/printers.conf.
For the printer queue qName you would see something like:

```
<Printer qName>
Info CQue 4.0 LPD Queue
DeviceURI lpd://192.168.1.152/lp
State Idle
StateTime 1199811929
Accepting Yes
Shared Yes
JobSheets none none
QuotaPeriod 0
PageLimit 0
KLimit 0
OpPolicy default
ErrorPolicy retry-job
</Printer>
```

Finally the general command:

```
lpstat –t
```

should give an answer like:

```
scheduler is running
device for qName: lpd://192.168.1.152/lp
```



```
printer qName is idle. enabled since Mon Oct 30 22:21:21 WET 2015. available.
printer remPrinter is idle. enabled since Mon Oct 30 22:21:22 WET 2015. available.
```

7. If you activated file or mail box support check that the document has the correct destination. Sometimes it happens that printing to a certain mailbox is applied, and thus no output to the copier will appear. You will see the communication indicator of the copier flicker, but no printing will occur. In such cases verify that no mailbox is activated.
8. You may also use the print manager of the Linux operating system. This tool, however, may be used to delete printers or to (re-)create *raw* printers, but it should *not* be used to (re-)create the *qName* CQue printer because the Linux print manager is not capable of handling this kind of printer queues. You may modify printer options through making use of the Linux print manager for a CQue printer queue.
9. It may also help to have a look at possible mail that might be send by the printer managers if a problem arises.

The next section describes a more detailed approach activating some of the debugging features of CQue.



7.3 Introduction to Debugging an Installation of CQue

If a queue does not print as expected and the suggestions of the previous sections did not help, you may activate debug flags too.
The most important program is the ***sicgsfilter*** which will be started in a script run by the CUPS printer scheduler. To see how this program is run by CUPS you need to activate the debug mode of CUPS. This can be done either by the HTML interface at localhost:631 (port 631) and then under the administrator window activate debug mode. Or you may edit the file ***/etc/cups/cupsd.conf*** or on some newer systems: ***/etc/cups/cups-files.conf***.

Search for the line:

LogLevel info

and modify it to

LogLevel Debug

On more recent Linux versions you may run:

cupsctl LogLevel=debug2

After editing the file ***cupsd.conf*** you must restart the CUPS printer scheduler:

services cups restart
or ***/etc/init.d/cups restart***
or ***/etc/init.d/cupsys restart***
or ***sysctl restart cups.service***

On older versions of Linux the useful place to look for log files is the directory /var/log/cups.
There are three types of files:

access_log:	reporting all access events of all CUPS printers.
page_log:	reporting all pages printed by CUPS printers.
error_log:	reporting a full history of each print process of a CUPS printer. This file is by far the most important one.

Of course the file *error_log* will be of most interest.

To view the log messages on more recent Linux versions (which do not support the /var/log/cups files anymore, but use the system log file) you would type:

journalctl -u cups -e

or:

journalctl -u cups --since=...

To filter out messages relating to a specific job ID, use:

journalctl -u cups JID=...

To turn off the debugging of CUPS, you may use:

cupsctl --no-debug-logging

Or of course edit the file /etc/cups/cupsd.conf (or cups-files.conf).

7.4 Printing to a File with CQue 4.0

For debug purposes you might want to print to a file to inspect the PDL output.
The CUPS printer manager, however, may not agree with such a strategy. By default CUPS does not allow to print to data files on the file system.
To modify this you must edit the file: /etc/cups/cupsd.conf (we recommend to make a backup of the file first).

Add a line with:

FileDevice Yes

and then restart thee CUPS printer manager so that the modified configuration file will be taken into account.
Restarting CUPS can be done by:

sysctl restart cups.service
or:
service cups restart
or
/etc/init.d/cupsys restart
or
/etc/init.d/cups restart

depending on the type of Linux system you are using.
Please remember the existing port of the printer queue.
Then, for the printer ***foo***, type:

lpadmin -p foo -v file:/tmp/foo.prn

And print a job to the printer ***foo***. The result will now be in the file **/tmp/foo.prn**.

After debugging reset the printer port (URL) to the original one!

8 Program Description of CQue 4.0

8.1 Introduction

This chapter describes some of the programs or modules of CQue 4.0. For the occasional reader this chapter will be far too technical, but for a Linux system administrator it may contain valuable information. It will mainly explain the command line options of driver program sicgsfilter of CQue. For debugging purposes, for example, it may be useful to know the meaning of the various command line options.

8.2 The Program sicgsFlter

The program or printer driver *sicgsfilter* - the main working horse during printing next to foomatic - supports a number of options, which are simply listed without much technical explication. The following options are supported:

-ax : set booklet mode to x.
-bx : set back cover mode to x.
-dx : set duplex to x; (0=simplex,1=duplexLong,2=duplexShort) [0].
-ex : set line refine mode to x.
-fx : set front cover mode to x.
-lx : set binding location to x.
-mx : set media type to x.
-px : set paper size to x.
-qx : set staple mode to x.
-rx : set long/short offset registration [1].
-r xfl,yfl[,xbl,ybl][,xfs,yfs[,xbs,ybs]] : set fixed PCL offsets (see below).
-sx : set sorter mode to x.
-tx : set input tray to x.
-ux : set user to x.
-Ax : set destination to x (0=prt,1=mailbx,2=mailb+proof,3=Secure,4=Form) [0].
-Bxy: set mailbox to y,x='B':iR, x='N':EFI, [-1].
-Cx : set back cover source to x [0].
-Dx : set debug flag to x [0].
0: standard mode; [*default*]
1: debug mode without actions;
2: debug mode with actions;
-Fx : set front cover source to x [0].
-Gx : set punch mode to x [0].
-Hx : set halftone mode to x [0].
-Kx : set colour mode to x [0].

-Lx : set slip sheet mode to x [0].
-Mx : set work mode to x (MPS=PS,MPCL=PCL5,MPXL=PXL) [PS].
-Nx : set flag to keep PaperSize (x=P), or paper tray (x=T).
-Ox : set output bin x [0].
-Px : set PCL level to x [5].
-Qx : set print density to x.
-Rx : set resolution to x [600].
-SPW=x : set secured print password to "x".
-Tx : set toner reduction to x [0].
-UID=x : set account user id to "x".
-UPW=x : set account print password to "x".
-Wx : set wideA4 mode to x [0].

The option –M (for the printer description language) and –P (for the name of the printer queue) are the most important ones and are almost required options.

The -r option allows for fixed PCL offsets. The unit of dimension is decipoint, which means 1/720". The meaning of the variables is:
xfl,yfl = (x,y) offset for front page (simplex or long edge duplex).
xbl,ybl = (x,y) offset for back page (long edge duplex).
xfs,yfs = (x,y) offset for front page (simplex or short edge duplex).
xbs,ybs = (x,y) offset for back page (short edge duplex).
Appendix C gives some more details on applying these options.

The program ***sicgsfilter*** supports the following environment variables:

SICPSBINDIR :	The directory where binary files related to PostScript processing would be located. For example: CQue 4.0 will try to transform PDF files with the program *pdf2ps*. It will search for *pdf2ps* in a number of default directories, but you may force the location by SICPSBINDIR. (this option is not used anymore)
CUPS_SERVER:	The CUPS server on which the document is printed.
DEVICE_URI:	The URI of the Canon device or output device of the queue.
PPD:	The name of the PPD file used for the printing of the document.
PRINTER:	The name of the printer queue itself.
SERVER_ADMIN:	The CUPS administrator.
TITLE:	The title of the document to print.
CQUEDATADIR:	The directory for the data of CQue [/opt/cel].
USER	Name of the user of the print job.

8.3 The Program setup

The program *setup* is the *installation program* for ***CQue***. It supports the following options:

-fx : Allow installation from any directory. (x=0: no, 1:yes). Default: yes. It makes a slight difference for setup up to know whether it is launched from the default directory /opt/cel/bin or not. The rpm and deb package installations launch setup with the option -f0 to force installation from /opt/cel/bin.

-d : Run setup in de-installation mode. In this mode, if an installation of CQue is detected, setup will ask for permission to de-install CQue (including any CQue printer queues). If confirmed it will proceed with the de-installation.

-qx : Query the steps of setup:
x = 0 : No, installation proceeds without questions [default].
1 : Ask permission to proceed and to upgrade each CQue printer queue if found.

-Sx : Set SELinux mode (x=0:ignore SELinux, 1:process SELinux) [1].

-Dx : Set debug mode:
x = 0 : Normal processing without debug information
1 : Send debug information to *stderr*, but do not execute commands.
2 : Send debug information to *stderr*, and do execute commands normally.
>2: May even output more debug information, while executing normally.

This program must be run as ***root*** (or super-user).
A log file with a review of the installation or update is written in:
/var/log/CQue4.0_UpdateLog.

8.4 CQue and SELinux

The program *setup,* the installation program for ***CQue,*** will detect whether the Linux distribution is running SELinux in enforced mode. If this is the case, setup will install a CQue SELinux policy module, ***cque.pp***. This will prevent any SELinux warning messages during setup process.

If, for whatever reason, you might prefer to de-activate the CQue SELinux policy, you may do so by the following command:

```
semodule  -r  cque
```

8.5 The program sicnc

The program *sicnc* is a home made version of the popular *netcat* or *nc* program shipped with most Linux distributions. It is used for various TCP/IP work internal to CQue. This version has the property that, when listening to a TCP/IP port, it stops doing so when an end of file is encountered. Some versions of nc would continue listening indefinitely.



9 Configuration Files and Scripts of CQue 4.0

9.1 Introduction

This chapter describes some of the configuration file of CQue 4.0. For the occasional reader this chapter will be far too technical, but for a Linux system administrator if may contain valuable information.
All of the configuration files of CQue are in readable ASCII format.

In this chapter the term *advanced options* of CQue will refer to either file box printing, printing with department accounting or secured printing, or any combination thereof.

9.2 Directory Layout of CQue 4.0

The program CQue is installed in a directory, which is fixed during setup of CQue.
The so-called working directory is: ***/opt/cel***.

During setup there will be the following directories created as sub-directory of /opt/cel:

- ***bin***: directory with binary programs, and executable scripts, basically: ***sicgsfilter, setup, sicnc***.
- ***doc***: directory with documentation.
- ***etc***: directory for the CQue configuration files.
- ***ppd***: directory for the printer model files or PPD files for PostScript, PCL and PXL.

9.3 Adding a Printer Model to CQue

It may occur that from time to time new models become available and/or old models become obsolete. To add a printer model to the data base of CQue consists simply of adding one or two files.

The name of a CQue PPD file is as follows:

cel-<Model>-<PDL>-<COUNTRY>.ppd

where:

<Model> = the Canon model name, for example iR4580
<PDL> = the printer description language: ps = PostScript, pcl = PCL or pxl=PXL.
<COUNTRY> = the language code: en=English, fr=French, de=Geman, it=Italian, es=Spanish.

For example: ***cel-iR4580-ps-en.ppd*** is a PPD for an iR4580 PostScript Canon device in the English language.
And ***cel-mf7170i-pxl-fr.ppd*** is a PPD for a MF7170i PXL Canon device in the French language.
This naming convention is imperative for CQue. In other words otherwise valid PPD files not adhering to this naming convention will not be recognised by CQue!

For PostScript Canon devices you could use the PPD files from MS Windows. We do not, however, recommend using these files because the advanced features (mailbox, department account, secured printing) are not supported by these files.

Thus we recommend using CQue compatible PPD files. CQue will be upgraded regularly to include any new Canon devices when available.
You might also check the web site of M.V.I. www.mv-informatique.com, which will be updated regularly to make the PPD files for the latest Canon devices available in different languages.

To add support for a new Canon device, first get the PPD files for that device.
Then copy these files to the appropriate PPD directory. This sounds easier than it may be for certain Linux distributions. Despite the standard of LSB (Linux Standard Base) which is proposed, only very few current Linux distributions do adhere to this standard.
At installation time setup figures out where the proper system PPD directory is located. This is reported in the CQue log file ***/var/log/CQue4.O_UpdateLog***.
The table below shows some known locations where you may look for.
Please note: The directory ***/etc/cups/ppd*** is ***not*** the right place to put the PPD file! This is a system directory where PPD files are copied after the queue has been created.
The correct PPD directory should already contain a series of files with the above described naming convention.

The following table shows some potential directories where PPD files could be located:

PPD directory	Comment / Linux system
/usr/share/foomatic/db/source/PPD	Fedora, Mandriva
/usr/share/ppd	Recommended LSB
/usr/share/cups/model	CUPS standard directory
/opt/share/ppd	Debian
/usr/share/cups/model/custom	UBUNTU
/usr/share/cups/model/foomatic-db-ppds	Several Linux

If no directory could be found, you might use /usr/share/cups/model as a starting point and find any subdirectories or symbolic links from there. For most current Linux distributions the /usr/share/cups/model directory is the basis for PPD files. On more recent Linux distributions we would expect /usr/share/ppd to be the principal location to look for, as this is the LSB recommended directory.

You might consult the FAQ section of the website: http://www.mv-informatique.com which will contain updates on this topic.
There is also a MVIForum at: http://www.mv-informatique.com/forum. Here you may find much more information about CQue and related UNIX printing topics.

Appendix A: Command Line Options

CQue relies on the CUPS printer manager for the processing of printjobs. The CUPS lp command supports a number of command line options, frequently used in classical UNIX printing.

The syntax for command line options is:

lp -d*printer* -o *option1* -o *option2* ....

Here ***option1*** has for example the syntax: *duplex=DuplexNoTumble*, or: *PageSize=a4*, etc.

Some main applications, for example ***acroread***, allow for the specification of such kind of options in the printer interface menu or windows.

To get a full listing of all options supported by the printer you may use the CUPS specific command:

lpoptions -l -d*printer*

Appendix B: A Note on PCL Printing

CQue supports PCL printers through the foomatic package, which uses the ghostscript program to transform various PDLs to PCL. Due to the intrinsics of this mechanism sometimes the output page needs an offset registration in both horizontal (x) and vertical (y) directions in order to fit completely on the paper. The CQue driver program **sicgsfilter** does apply known offsets for each Canon device.
The offsets may be different for long-edge and short-edge duplex printing. If, for whatever reason, the offsets applied by CQue do not give satisfactory output, you may modify the behaviour of CQue by applying the -r option of the ***sicgsfilter*** program.

The -r option allows for fixed PCL offsets.
The syntax is:

-r xfl,yfl[,xbl,ybl][,xfs,yfs[,xbs,ybs]]

The unit of dimension is decipoint, which means 1/720th of an inch.
The meaning of the variables is:

xfl,yfl = (x,y) offset for front page (simplex or long edge duplex).
xbl,ybl = (x,y) offset for back page (long edge duplex).
xfs,yfs = (x,y) offset for front page (simplex or short edge duplex).
xbs,ybs = (x,y) offset for back page (short edge duplex).

A negative value implies a shift to the left, or top. A positive value implies a shift to the right or bottom. This is on the front page. For the back page definitions differ.

To apply these options please follow the following steps.

1. Locate the PPD file for the printer queue. If the queue has the name 'foo,' the PPD file corresponding to that queue will be located at **/etc/cups/ppd/foo.ppd**.

2. Edit the file **/etc/cups/ppd/foo.ppd** and search the line containing the **sicgsfilter** program. An example:
   *FoomaticRIPCommandLine: "gs -q -dBATCH -dPARANOIDSAFER -dPDFFitPage -sDEVICE=ljet4 -dNOPAUSE%B%A%C -sOutputFile=- - %D%E | sicgsfilter -MPCL -NP %G%H%I -u&user; -V"&title;" -n&copies; "

   If we were to apply our own shifts, for long edge duplex only, an example might be:

   *FoomaticRIPCommandLine: "gs -q -dBATCH -dPARANOIDSAFER -dPDFFitPage -sDEVICE=ljet4 -dNOPAUSE%B%A%C -sOutputFile=- - %D%E | sicgsfilter -MPCL -NP %G%H%I **-r155,10,-155,20** -u&user; -V"&title;" -n&copies; "

If you specify values for short-edge duplex, you must first specify values for long-edge duplex.

3. Save the file and restart the queue (or cups):

   Restarting the queue is done by:

   ```
   disable  foo
   cupsenable foo
   ```

   Restarting CUPS is done by:

   ```
   service  cups restart
   ```

   or

   ```
   /etc/init.d/cups  restart
   ```

   (possibly: /etc/init.d/cupsys restart, depending on the type of Linux used).



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Appendix D: 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 ***sicforum*** for more up-to-date information.

1. *First release version 1.0: January 2008*

   This is the first official release of CQue 3.0.

2. *CUPS 1.3.2 (distributed by UBUNTU 7.10)*

   The CUPS 1.3.2 release as distributed by UBUNTU 7.10 has some limitations for legacy SystemV printing. For example the /etc/cups/interface directory is non-existent and the /usr/share/cups/model directory, though existing, is empty.

3. *Foomatic-rip and duplex printing*

   Some foomatic-rip distributions do not correctly process duplex printing. We strongly recommend using the latest version of foomatic-rip, which may be found at: http://www.openprinting.org/foomatic-rip.

4. *Printing multiple copies from OpenOffice*

   When printing multiple copies of the same document from OpenOffice, please note the behaviour for the various types of PDL as described in the following table.

Number of Copies	PS	PCL	PXL
1	prints 1 copy	prints 1 copy	prints 1 copy
N > 1 with collate	prints N copies	prints N copies	prints N copies
N > 1 without collate	prints N copies	prints 1 copy	prints 1 copy

   Thus, if possible, we recommend using the collate option of OpenOffice.

5. *OpenSuse*

   For OpenSuse the RPM version should be used with “rpm --nodeps”.
   OpenSuse checks for “foomatic-filters,” whereas CQue requires “foomatic.”

6. *LBP Support*

   For the LBP5970/5975 advanced features (mailbox, secured printing, department accounting) are not supported. Stapling is supported in PostScript only.

7. *PCL Offsets*

CQue allows for very precise positioning of the print data on the page. As not all Canon devices use the same PCL interpreter, details may differ between different Canon devices. The program sicgsfilter supports an option (-r) to manually specify PCL offsets in the PPD file. See Appendix C for more details.

8. *SELinux*

Several Linux distributions, including Debian and Fedora, come with the SELinux layer by default. If SELinux enforced then some CQue log messages would generate a SELinux warning. Therefore the setup program will now install a SELinux module if it detects the presence of enforced SELinux protection. (See Section 8.4)

9. *CQue 2.0-8 PPD revision*

Starting with CQue 2.0-8 all PPD files have been revised to be more stable and compatible with the latest foomatic specifications, as well as the Adobe specifications.

10. *Linux 64 bit (x86_64) support*

As of version 1.0-9 CQue comes with a separate package for Linux 64 bits version. The kernel version should be 2.6-27 or newer.

11. *CQue 2.0-10*

CQue 2.0-10 adds new devices and corrects some bugs for IPP and USB printing.

12. *CQue 2.0-11*

CQue 2.0-11 adds new devices and corrects some bugs in PPD files.

13. *CQue 2.0-0*

With respect to the version ***CQue 2.0*** some important changes of ***CQue 2.0*** include:

- All PPD files have been revised to allow for support of secured printing and printing with department accounting through the GTK+ interface. Unfortunately *OpenOffice* and *acroread* for Linux do not yet use this type of interface. It is expected, however, that future releases of these programs will support the CUPS specifications of PPD file syntax, as used by GTK+.
- CQue now ships in *rpm*, *deb* and *tgz* packages.
- The installation of an *rpm* or *deb* package includes the execution of the *setup*

program and installs the PPD files in an appropriate system directory. Any existing CQue 2.0 printer queues will be automatically upgraded with the new PPD files.
- For special purposes the *tgz* package allows for in installation without upgrading existing CQue 2.0 printer queues.
- Upgrading from SQue 9.X for Linux to CQue 3.0 for Linux is not supported. If you want to upgrade SQue 9.X to CQue, you would fist have to install CQue 2.0 (which transforms SQue printers queues to CQue printer queues) and then CQue 3.0.

> Please note: Due to a bug #3631 in CUPS versions up to and including 1.4 it is not possible to set default values for the advanced options (mailbox, secured printing and printing with department accounting) making use of the user interface of CQue. This bug will be fixed in release 1.5 of CUPS.
> When printing from applications making use of GTK+ advanced options are supported as described in this manual, and they do work correctly.

13. *CQue 2.0-1*

administrator

CQue 2.0-1 adds some new devices especially for professional printing.

14. *CQue 2.0-2*

CQue 2.0-2 adds some new devices especially entry level devices.

15. *Printing multiple copies of a document with stapling*

When printing multiple copies (say N copies) of a document with stapling most CUPS implementations will concatenate the output N times and then staple the resulting concatenated file. To prevent this CQue 2.0-2 PPDs support a feature: ***Repeat Job*** within the ***Canon Specific Options*** section. This allows you to specify from 1 to 99 copies for applications with the GTK+ print interface and 1 to 25 otherwise, with proper stapling of each copy. This feature is supported for PostScript, PCL5 and PCL6 Canon devices allowing PJL headers, i.e. some pure PostScript EFI devices are excluded.
Note: N copies of a document may generate N separate entries in the log file of the Canon device.

16. *CQue 2.0-3*

CQue 2.0-3 adds some new iR-ADV B/W and LBP devices.

17. *CQue 2.0-4*

CQue 2.0-4 adds some new iR-ADV B/W and Colour devices.

18. *CQue 2.0-5*

CQue 2.0-5 adds some new iR-ADV B/W and Colour devices and fixes some minor bugs.

19. *CQue 2.0-6*

CQue 2.0-6 adds some new iR-ADV B/W and Colour and B/W LBP devices.
CQue 2.0-6 revises PPD files for compatibility with CUPS versions 1.6 and later.
If you use CUPS 1.6 or later, please use CQue 2.0-6 or later.
Manual paper selection bug fixed for PCL drivers.
Limit for password of printing with department accounting fixed and some minor bugs were fixed too.

20. *CQue 2.0-7*

CQue 2.0-7 adds some new iR-ADV B/W and Colour and B/W LBP devices.
CUPS 1.7 integrates the foomatic package into CUPS itself. CQue 2.0-7 is the first version to be compatible with this new approach of CUPS.

21. *CQue 2.0-8*

CQue 2.0-8 adds some new iR-ADV B/W and Colour devices.

22. *CQue 2.0-9*

CQue 2.0-9 adds some new iR-ADV B/W and Colour devices. Also some minor bugs have been solved.

23. *CQue 2.0-10*

CQue 2.0-10 adds some new LBP B/W and MF Colour devices. Also some minor bugs have been solved.

24. *CQue 3.0-0*

CQue 3.0-0 adds some new iRADVANCE colour and LBP B/W and MF devices. The version 3.0-0 is a ***major release***, including updated documentation. Also some minor bugs have been solved. Support of XPP is discontinued.

25. *CQue 3.0-1*

CQue 3.0-1 adds some new colour and B/W LBP and MF devices.

26. *CQue 3.0-2*

CQue 3.0-2 adds iR-ADV C5560-5550 and iR-ADV C5540-5535 colour devices.

27. *CQue 3.0-3*

CQue 3.0-3 corrects some minor bugs and adds iR-ADV C7580/7570, iR-ADV C7565, iPR Svr G100, iPR Svr F200, iR-ADV C5500s GX500, iR-ADV C7500s GX500, iR-ADV C5500s-P1 and MF249dw devices.

28. *CQue 3.0-4*

CQue 3.0-4 adds iR-ADV colour devices (iR-ADVC255, iR-ADVC355, iR-ADVC3500 series) and grey-scale devices (iR-ADV4500 series).

29. *CQue 3.0-5*

CQue 3.0-5 adds the LBP 312x device.
CQue 3.0-5 also solves a couple of security issues and is now compiled with more recent (and secure) libraries on Linux kernel 4.1. This implies that the motif library as well as the png library version 16 have to be available on the Linux workstation. Versions using the older method of compilation (i.e. static compilation on Linux kernel 2.6) will be maintained and are available on request.

30. *CQue 3.0-6*

CQue 3.0-6 adds the LBP 613C, LBP 653C, LBP 654C devices, MF633C, MF635C and MF73xC devices, as well as the iR C3025x devices.
Also some minor bugs are resolved.

31. *CQue 4.0-0*

CQue 4.0-0 is a major release of CQue. It comes with the same PPDs as previous versions but the graphical user interface is absent. This eliminates many security and compatibility issues.
The following devices have been added: MF522x, MF525x, MF421dw, MF426dw, MF428dw, MF249dw and LBP212dw, LBP214dw and LBP21x.