BrightQ Installation and User Guide

26th June 2003

Contents

Documentation Overview

The Installation and User Guide is designed to assist in the installation, setup, configuration, and subsequent usage of BrightQ. The manual is structured so that it follows the process of loading, installing, registering, executing, configuring, and printing from BrightQ. Listed below are some of the subjects this manual covers.

- Installing BrightQ on a Linux computer running Red Hat
- Installing BrightQ via. command line interface
- How to register your copy of BrightQ
- How to configure BrightQ for Socket (9100) based printing
- How to configure BrightQ for LPR
- Setting the default print options for a print queue
- How to print an Adobe PDF (Portable Document Format) file without opening the file
- How to print an Image file without opening it
- How to define the location of a local printcap file

Legal Stuff

1 Product Overview

The purpose of this document is to provide a step-by-step road map for the successful installation, configuration, and subsequent use of Codehost, Inc's BrightQ Linux and Unix printing software. This document will cover both the shell-based installation and the X-Windows-based installation. After reading this document, the user should be able to install, configure, and use BrightQ.

Note; All following instructions, illustrations, Figures, etc, are done under the assumption that the user is "root", or the superuser, unless otherwise noted.

1.1 BrightQ Product Overview

Codehost's BrightQ is a highly scalable, turnkey software package, which provides a friendly, graphical user interface that links into all commonly utilized UNIX and Linux print systems and spoolers (i.e. CUPS, LP, LPR, LPRng, etc.). BrightQ provides access to device specific output functionality while printing, in the UNIX and Linux environments. This access to the printers additional functionality is done without the need for end user developed complex LP filters or scripting. This increased output device functionality is provided via. the Original Equipment Manufacturer (OEM) device specific Printer Driver, and the default print system/spooler.

Codehost's BrightQ User Software consists of 4 core modules:

- **BrightINSTALL or the Installation Wizard:** BrightINSTALL allows for an easy GUI or shell driven installation of BrightQ. BrightQ provides an auto running CD capability for the Window Managers, Operating Systems, and Distributions that support auto run CD's, or an easily downloaded brightq.run file.
- **Configuration Tool:** The Configuration tool provides an easy GUI or shell driven printer configuration environment that will define the default printing variables/options for a specific printing device, which include, but are not limited to, selection of the service level printing protocols, access to local printing, default output finishing options, a GUI based queuing manager, remote and local connectivity, and many other features. This data is saved as a configuration file and queried via. the BrightQ filters and the Print Job Manager (PJM).
- **Printer Driver/filters:** The third module is the Printer Driver or BrightQ filter. BrightQ incorporates the OEM's latest printer drivers into the Configuration tool as well as the BrightQ Print Job Manager and integrates industry standard and, or device specific PDL filters into the printing workflow.
- **Print Job Manager:** The fourth module is the Print Job Manager (PJM), which allows for access to all output devices finishing options/features, via. any application that utilizes the default printing system/spooler that BrightQ is compatible with and configured to support. The PJM presents all of the output device options in an easy to work with Graphical User Interface (GUI), which is consistent across supported OS's and distributions. Additionally BrightQ utilizes the default theme you are currently running to provide consistency with your visual work environment. Your printers device specific options can also be accessed via. shell or CLI.

2 System Requirements

Listed below are the minimum core requirements to run Codehost, Inc's BrightQ on the Linux Operating system and various supported distributions. Additionally Table 1 outlines the supported Linux distributions and their respective versions. BrightQ version 1.6.4 supports the following hardware platforms/architectures and as well as UNIX Operating Systems and Linux Distributions. It is assumed if the hardware (HW) platform/architecture is not listed in this document it is subsequently not supported in version 1.6.4 of BrightQ. Listed are the minimum supported versions of aforementioned Operating Systems. It is important to understand that these are earliest versions that have been tested with BrightQ and earlier versions might work, but have not been tested or approved, and therefore are not supported.

- **Major Linux Distributions:** BrightQ support most major Linux distributions currently available. Listed in Table 1 are the major Distribution revisions supported by BrightQ as well as the supported Kernel revisions.
- **Kernel:** The kernel acts as a mediator between your programs and your hardware. It handles (or arranges for) the memory management for all of the running programs (processes), and makes sure that they all get a fair share of the processor's cycles. In addition, it provides a nice, fairly portable interface for programs to talk to your hardware. There is certainly more to the kernel's operation than this, but these basic functions are the most important to know. The minimum version of supported Linux Kernel for BrightQ? is later or equal to 2.2.14 or 2.4.12 or greater
- **X11 Server (X Window System):** X11 protocol support, The X Protocol defines a client-server relationship between an application and its display. To meet this, the application (called an X client) is divorced from the display (known as the X server). X further provides a common windowing system by specifying both a device dependent and an independent layer, and basing the protocol on an asynchronous network protocol for communication between an X client and X server. The minimum version of supported Linux X Server for BrightQ v1.6.4 is Xfree86 version 4.0 or greater. The minimum version of supported X Server for BrightQ v1.6.4 is later or equal to version 11 release 5 X Windows must be installed in order to run the BrightQ GUI configuration tool on your local host. Please to the CLI section of this document for instructions via. the CLI or shell.
- For Linux distributions of BrightQ it must be installed on the Intel x86 series (or compatible), or AMD series of 32 bit and 64 bit CISC processors. Currently there is no support offered for Linux distributions running on SPARC, UltraSPARC, PPC, Alpha, or additional platforms not mentioned in this document.
- For the BrightQ running on Linux we recommend a minimum processor configuration of a Pentium I 133 MHz (or compatible) with 64 MB of Ram, and 250 MB of free HD space.
- For the Sun Solaris version of BrightQ it must run on the UltraSPARC II or III family of RISC processors.
- For the Silicon Graphics (SGI) IRIX version of BrightQ it must run on the MIPS family of RISC processors.
- For the HP-UX version of BrightQ, it must run on the PA-RISC family of RISC processors.
- For the AIX version of BrightQ, it must run on the Power PC family of RISC processors.
- Please refer to Table 2 below for the supported versions of non-Linux UNIX Operating Systems.

(note: CUPS is not supported with SCO in either native or MSLA mode; only Berkely (BSD) based printing is supported)

2.1 Supported Linux Printing Systems

BrightQ supports most major Linux print spoolers/systems (i.e. LP, LPR, LPRng, CUPS). When installing BrightQ using the "Expert" option you will be prompted to select the appropriate installed print spooler for BrightQ to monitor (note this is only relevant if you have multiple spoolers installed). When installing BrightQ using the "Recommended" installation option the installer will select the default print spooler as the system to monitor. If no print spooler is loaded or detected then BrightQ will abort the installation, and prompt the user to install a default spooler (prior to reinstalling BrightQ) and reinstall BrightQ.

The four supported Linux print spoolers/systems are listed below, with their supported versions

Table 1: Supported Linux Distributions and Versions

Linux Distribution	Minimum Supported Distribution Version	Minimum Kernel Version
Red Hat	6.2	2.2.14
SuSE	7.3	2.2.14
TurboLinux	7.0	2.2.14
Mandrake	8.0	2.2.14
Debian	2.2r6	2.2.14
Slackware	7	2.2.14
Caldera	OpenLinux64-bit 3.1, or OpenWS 3.1.1	2.2.14

Table 2: Supported Unix Versions and Architectures

Unix Operating System	Minimum Operating System Version	Processor/Architecture
Solaris (SunOS)	8 (5.8) UltraSPARC	UltraSPARC II or III
Solaris (SunOS)	8 (5.8) i86pc	x86-Intel and Intel-Compatible
HP-UX	11i	PA-RISC
Free BSD	4.6	x86-Intel and Intel-Compatible
AIX	5.1	Power PC
IRIX	6.5	MIPS
SCO	OpenUNIX 8 (release 5 v8.0.0)	x86-Intel and Intel-Compatible
SCO	OpenServer 5.0.6 (release 3.2 v5.0.6)	x86-Intel and Intel-Compatible

- **CUPS (Common UNIX Printing System):** We support CUPS releases later than or equal to 1.1.15. CUPS focus is on the Internet Printing Protocol (IPP), but also supports other protocols such as LP and LPR. CUPS is not included on the BrightQ CD or brightq.run file, so therefore needs to be installed prior to installing BrightQ if this is the print spooler/system that BrightQ is to work in conjunction with.
- **LPRng (Line Printer Remote New Generation):** We support the LPRng release later or equal to 3.79. The LPRng software is an enhanced, extended, and portable implementation of the Berkeley LPR print spooler functionality. LPRng is not included on the BrightQ CD or brightq.run file, so therefore needs to be installed prior to installing BrightQ if this is the print spooler/system that BrightQ is to work in conjunction with.
- **LPR, LPD:** We support the LPR release later or equal to 1.6.3.1. LPR, LPD is the Berkeley Line Printer Daemon. This is commonly referred to as the Berkeley Software Distribution (BSD) printing system.
- **LP:** We support the LP printing spooler/system. LP is the Line Printer system most commonly associated with the AT&T flavors of UNIX, and is commonly referred to as the System V printing system.

2.2 Supported Unix Printing Systems

BrightQ supports most major Unix print spoolers/systems (i.e. LP, LPR, LPRng, CUPS). When installing BrightQ using the "Expert" installation option you will be prompted to select the appropriate installed print spooler for BrightQ to monitor. When installing BrightQ using the "Recommended" installation option the installer will select the default print spooler as the system to monitor. If no print spooler is loaded or detected then BrightQ will abort the installation, and prompt the user to install a default spooler (prior to reinstalling BrightQ) and reinstall BrightQ. The two supported Unix print spoolers/systems are listed below with their supported versions.

- **CUPS (Common Unix Printing System):** We support the CUPS release later or equal to 1.1.15. CUPS focuses on the Internet Printing Protocol (IPP), but also supports other protocols such as LP and LPR. CUPS is not included on the BrightQ CD or brightq.run file, so therefore, needs to be installed prior to installing BrightQ if this is the print spooler/system that BrightQ is to work in conjunction with.

- **LP:** We support the LP printing spooler/system. LP is the Line Printer system most commonly associated with the AT&T flavors of UNIX, and is referred to as the System V printing system. Note; LP will work on systems that are BSD based as well as AT&T System V based.
- **LPR, LPD:** We support the LPR release later or equal to 1.6.3.1. LPR, LPD is the Berkeley Line Printer Daemon. This is usually referred to as the Berkeley Software Distribution (BSD) printing system.

2.3 Minimum Hardware Requirements

In order to install, configure, and run BrightQ to it's fullest potential, the following minimum requirements should be met

- 75M free hard drive space to install BrightQ
- 100M free hard drive space to run BrightQ
- 32M RAM
- Unless otherwise noted, the minimumn processor speed required by the OS will be acceptable for running BrightQ.

3 Installing BrightQ on a Linux or Unix Computer

The installation of BrightQ on either a Linux or Unix computer involves the following core steps:

1. Ensure that you have all of the system requirements in place prior to installing BrightQ, including root or superuser access to the system you will be installing BrightQ on.
2. Mounting the CD media or downloading and using .run file and installing the program into a accessible directory
3. Defining the path to the BrightQ program directory
4. Ensuring that the correct default print spooler is selected while installing (expert class) or accepting the recommended installation class
5. Registering BrightQ and ensuring the proper Codehost License File (CLF) or Codehost License Package (CLP) is loaded

It is always recommended that you check the Codehost, Inc. or your printer OEMs web site for recent BrightQ updates, patches, FAQ/Technotes, and the most recent release notes. Updates can be found at the following URL: http://www.codehost.com/brightq or on the OEM specific codehost URL (e.x. http://oemname.codehost.com).

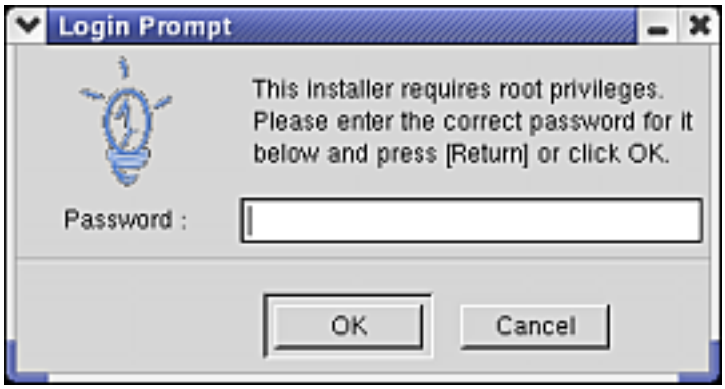
3.1 To install BrightQ in Linux or Unix

Note: The procedure described and the illustrations utilized are Linux centric. UNIX installations follow the same procedure but the look, feel, install paths, and core OS centric commands for installation may differ slightly. If it is required (for UNIX installations) we will attempt to point out the core differences. The installation procedure below will work when installing the program via. X windows or without an X server available. Menus that are non-X will be indicated.

BrightInstall will detect the following system attributes and adjust the installation accordingly

- Automatic detection of the **System Architecture:** The installer will auto detect the hardware platform/architecture the system is utilizing (i.e. x86, Sparc, MIPS, etc.)
- Automatic detection of the **Operating System (UNIX) and kernel:** The installer will auto detect the Unix OS and utilize the appropriate binaries (i.e. Solaris, HP-UX, IRIX, etc.)
- Automatic detection of the **Distribution (Linux) and kernel:** The installer will auto detect the Linux Distribution and kernel version in order to load and utilize the appropriate binaries (i.e. Red Hat, SUSE, Slackware, etc.)
- Automatic detection of the available **Libraries** (i.e. GLIBC, GTK, etc.)
- Automatic detection of the existing and default **printing spooler/system:** The installer will auto detect the default printing system and (depending on the class of installation) will prompt to utilize the pre-existing spooler/printing system.
- *A printing spooler/system must be pre-installed on the UNIX and Linux client in order to successfully install and run BrightQ. If one is not loaded the install will abort and you will be prompted to load one.*
- **Automatic detection of pre-installed printers:** The pre-installed printers will be made available via. BrightQ but will be only slightly modifyable from either the Print Job Manager or the Configuration tool (i.e. enabled, disabled, removed). The pre-installed printers are pulled from the appropriate print spooler/system default config files.

Figure 1: Installer "root" password screen



3.2 The first installation step will involve locating the locally accessible BrightQ installer

This will either be at the "root" level of the CD or in the locally accessible directory you have downloade the brightq.run file into. If your OS or window manager supports "autorun" and you are installing from a CD the installation will begin automatically (when you insert the CD), if not utilize the following procedure to begin the installation.

When you first run BrightInstall, you will be presented with the Codehost "End User License Agreement (EULA)". Please review the agreement and click the button labeled "I Agree" if you wish to continue with the install.

To start the setup process (if it wasn't autorun when you inserted the CD), change to the directory where the CD is mounted, and type *"sh setup.sh or ./setup.sh or sh brightq.xxx.run"*

Once you have accepted the EULA BrightQ setup screen, if you are not "root" the "root" login will appear as follows

You will be prompted by the BrightQ setup menus to select the "class" of installation that you want to utilize. The two classes are as follows: "Expert" or "Recommended". These two classes are explained in the following sections.

- The two classes determine whether or not you want BrightQ to make certain installation decisions for you, or these decisions will be made by the individual conducting the installation. For both installation and subsequent configuration steps you will need to have "root" access to the system that you are installing BrightQ on. If not logged in as "root" you will be prompted for the "root" password.
- The installation procedure anticipates that certain versions of the OS or Distribution Kernel will be pre-installed, if the client system is not up to date then the installer will prompt the user to install the required up to date software components, if they are not available the installation will be aborted. Prior to installing BrightQ, BrightQ users require a pre-existing printing system/spooler to be loaded and functioning.

3.3 Expert Class Installation

The Expert installation class will allow the user to make certain decisions pertaining to the installation of BrightQ. Under the Expert installation class BrightINSTALL still auto detects all relevant items. You will be able to choose the following items when utilizing the Expert Class installation.

3.3.1 Global Options

- **Install Path**: This is the default path that BrightQ will be installed on your local host. The default path is /usr/local/brightq, but this path is user definable.
- **Link Path:** This is where the symbolic links to the installed binaries reside. The default is /usr/bin, but this is user definable.

Figure 2: The first screen offered by the installer, shown is the "Expert" install option selected

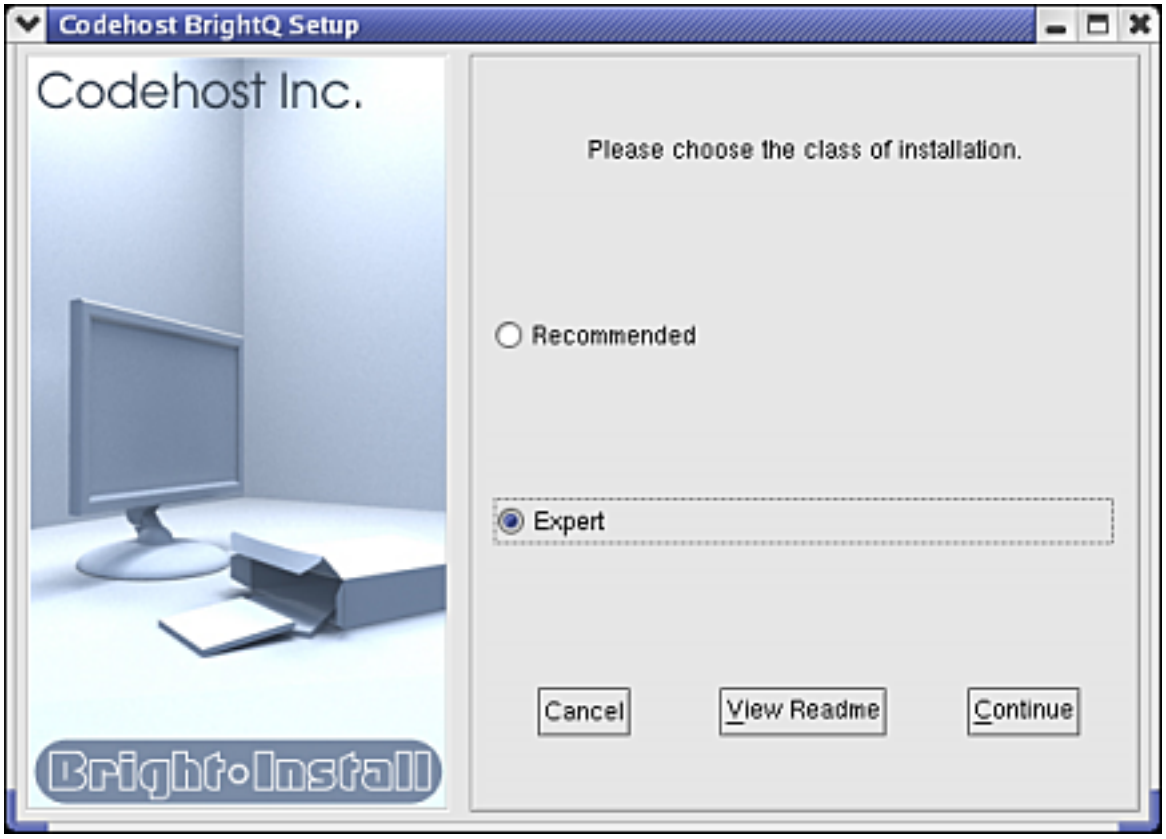
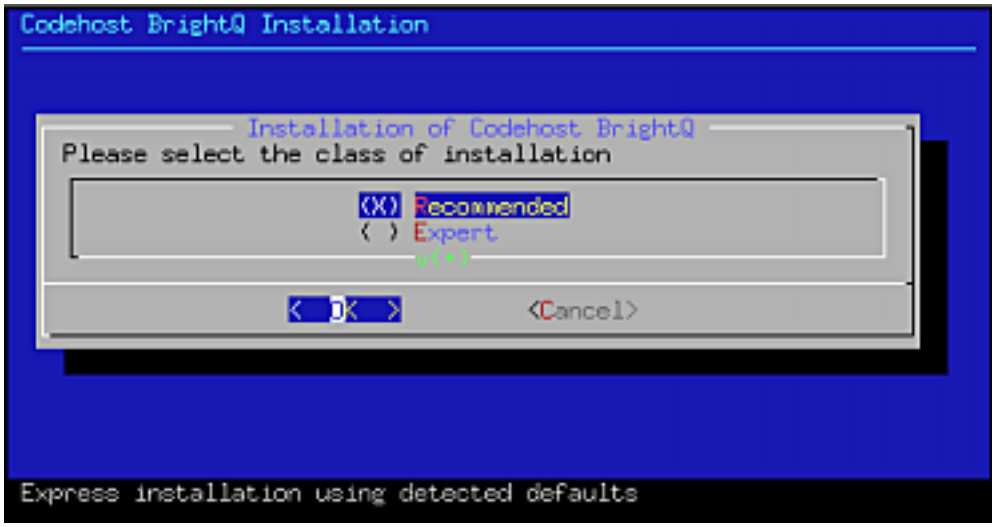


Figure 3: The first screen offered by the installer, if you don’t have X installed, showing the "Recommended" option selected.



3.3.2 Install Options/Printing System

- **CUPS Printing System:** Selecting this option assumes that you have the Common UNIX Printing System (CUPS) installed and selected as the default print spooler/system on your host. BrightQ will detect what the default print spooler/system is on your system and select this option by default. Please ensure that you have a supported version of CUPS installed on your system prior to installtion of BrightQ.
- **LPRng/LPR Printing System:** Selecting this option assumes that you have a LPR variant (LPRng, BSD, LPR, GNU LPR...) Berkeley (BSD) based printing system installed and selected as the default print spooler on your host. BrightQ will detect what the default print spooler/system is on your system and select this option by default. Please ensure that you have a supported version of LPRng/LPR installed on your system prior to installtion of BrightQ.
- **UNIX Printing System:** Selecting this option assumes that you have the System V release four (SVr4) or LP printing system installed and selected as the default spooler on your host. BrightQ will detect what the default print spooler/system is on your system and select this option by default.
- **Startup Menu Entries (KDE/GNOME/CDE):** For users who are utilizing the KDE, GNOME, or Common Desktop Environment (CDE) a menu entry will placed in the "startup menu"

Note: If you are utilizing Easy Software's ESP Print Pro and have it installed on the system you are installing BrightQ select the "CUPS" option for currently installed printing system.

3.4 Recommended Install

When utilizing the "Recommended" installation class the installer will make the core decisions pertaining to the installation of BrightQ for you. These decisions are the same as the Expert Class install (i.e. Install Path, Link Path, default print spooler/system, etc.). Under the Recommended installation the BrightINSTALL still auto detects and addresses all relevant items.

- The "Recommended Install" is designed for individuals who do not have a strong knowledge of either the UNIX or Linux operating systems or are comfortable with the default installation options.
- Once you have agreed to the EULA, selected the "Recommended Install", and clicked the "Continue" button, the BrightQ? installation will run until completed.

Note: if you cancel the installation of BrightQ prior to its completion, all files installed up to that point will be removed when you click "exit", and your system will be returned to the original state it was prior to installation.

3.5 Registration and License Manager

Once you have completed the installation, you will be prompted to register your copy of BrightQ. This is a optional step.

- By registering your copy, you will have the opportunity to be entered into the Codehost, Inc. BrightQ database. You have the option to be notified of product updates, FAQ's, etc.
- BrightQ will only work if you have a valid Codehost License File (CLF) or Codehost License Package (CLP) installed.

4 Configuring BrightQ

Now that you have installed and registered BrightQ it is time to begin the process of adding and configuring your printers. The configuration of BrightQ on either a Linux or UNIX computer involves the following core steps:

- Launching the BrightQ configuration tool either via. X-Windows or the CLI
- Selecting the appropriate model of printer, MFD/P, etc. (collectively described as "output device")
- Selecting the appropriate local or remote connection to your output device (parallel, serial, USB, File, Remote LPD, SMB, IPP, socket 9100)
- Defining the default output device properties
- Naming the print queue, and setting the systems default print queue
- Printing a BrightQ Test Page to ensure that the output device is configured properly

It is always recommended that you check the Codehost, Inc. or your printer OEM web site for recent BrightQ updates, patches, FAQ/Technotes, and the most recent release notes. BrightQ Updates can be found at the following URL http://www.codehost.com/brightq

4.1 Configuring BrightQ for Linux or Unix

Note: The procedure described and the illustrations utilized are Linux centric. UNIX installations follow the same procedure but the look, feels, and may differ slightly. If it is required (for UNIX installations) we will attempt to point out the core differences.

The configuration procedure below will only work when running the program via. X windows. After configuration, X windows is not required for printing or using BrightQ.

The first step in configuring BrightQ is to launch the Configuration tool. At a shell prompt or xterm window type the following command (note; the assumption is being made that you have the location of the Codehost binaries in your path. BrightInstall should do this for you): "codehost-config". (type without the quotes)

This will launch the Codehost Printer Configuration Tool. Once the program has launched you will see the setup screen.

4.2 Adding a new output device

Once you have the BrightQ Printer Configuration Tool launched you will need to add and subsequently configure your desired output devices. Utilize the following steps to add, configure, and test your output device:

- The first step to adding a device is to utilize the either the "Add Printer" Icon"  , use the "Add Printer" item in the Printer Menu, or simply type "Ctl+A" as shown in Figure 4 below.
- Once you have selected "Add a printer" you will be prompted to select the appropriate output device as shown in Figure 5 below. By selecting (in this example) "Generic PostScript printer" you will enable the device specific tab menus.
- Once you have selected your output device in this case "Generic PostScript printer" the additional Printer Configuration Tool tab menus will be made available to you as shown in Figure 6 below. The additional tab menus aside from the "Model" menu that will be enabled are the "Connection, Properties, and Queue".

Figure 4: Initial configuration screen

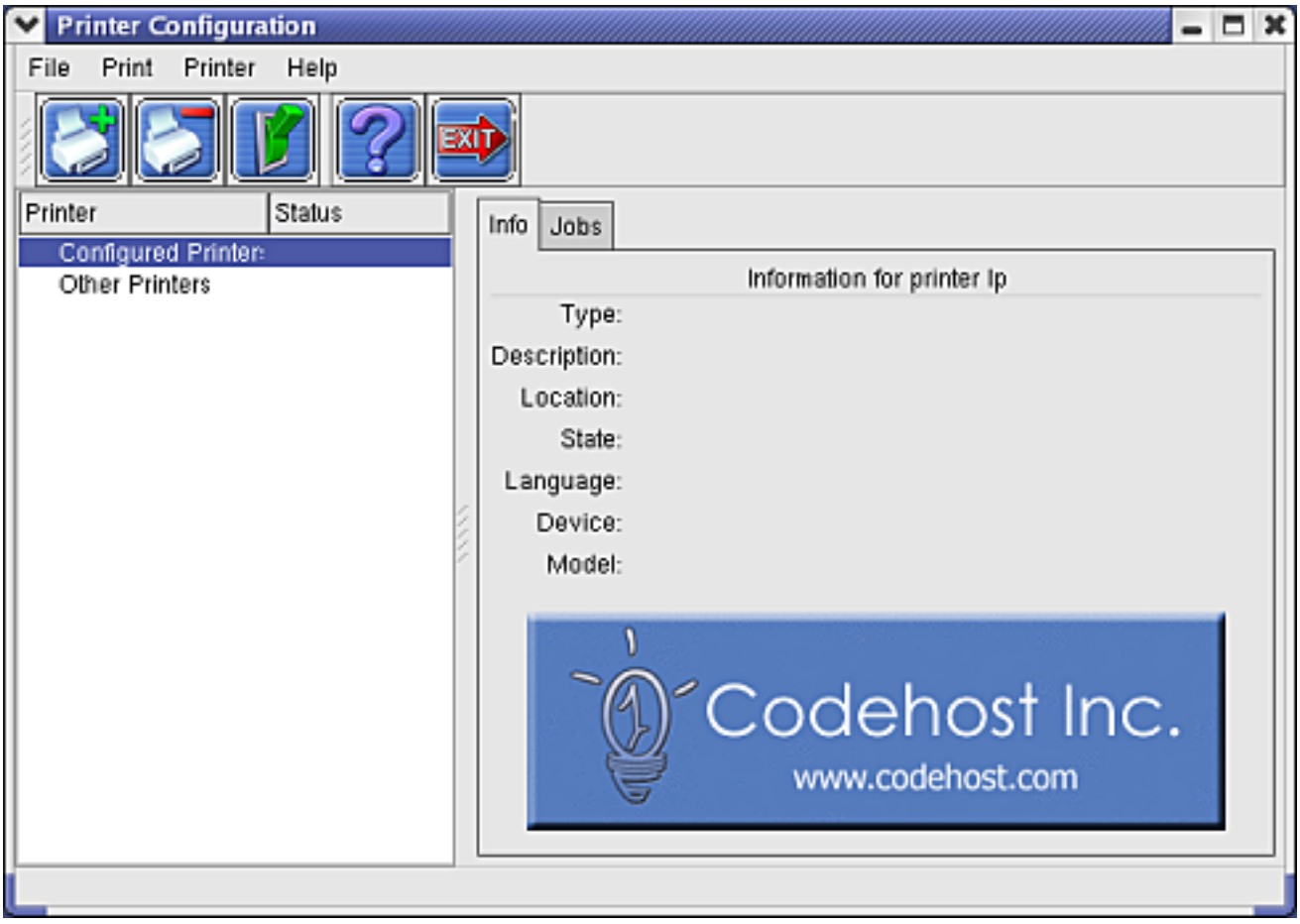


Figure 5: Select a printer model

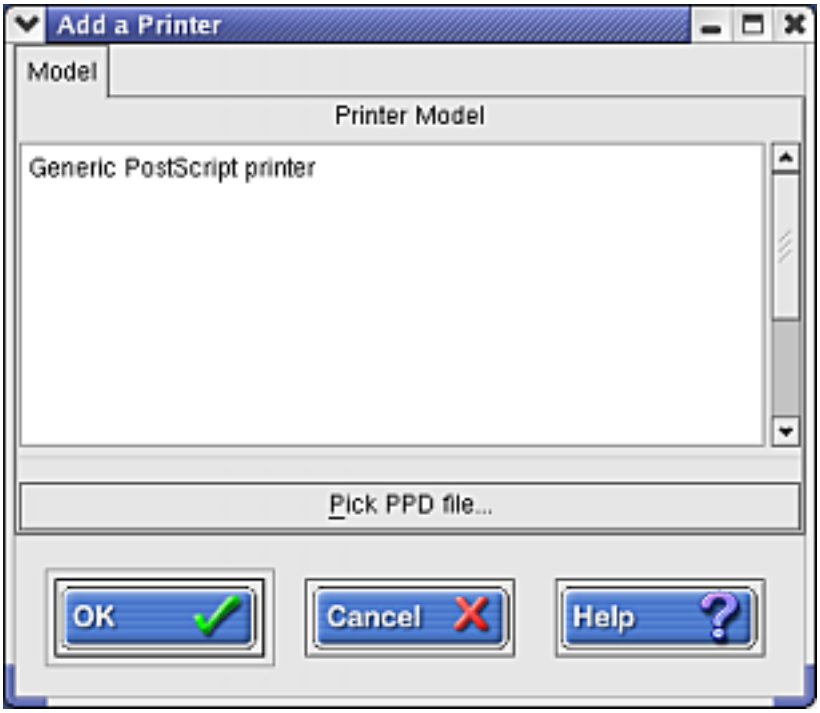
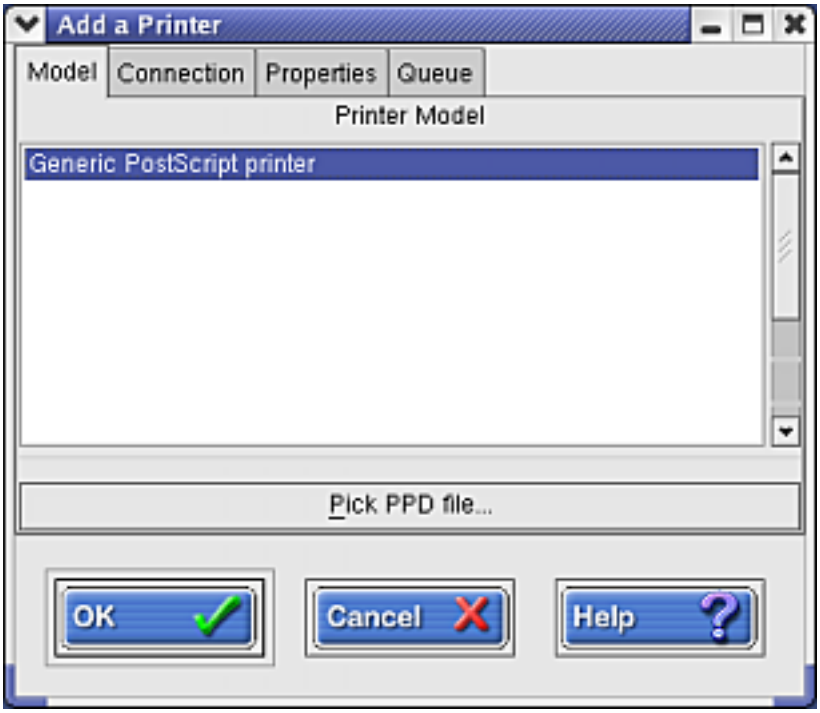


Figure 6: Additional Tabs become available



4.3 The Connection tab menu

This is the menu system you will use to determine how your computer will communicate with the printer model that you have selected to configure. You will be presented with a number of different connectivity/communication options to connect your printer. The options relate to printing both local and remote. The available connection options are as follows:

- Parallel
- USB (Linux and Solaris only)
- Serial
- Remote
- LPD
- IPP
- Socket (Direct to Port Printing)
- SMB (thru Samba's SMB Client)
- File
- Disable filter processing (raw mode): You would enable this option if you need the data to be passed through BrightQ without being modified by any of the BrightQ PDL filters. This allows the file to be passed on to the destination output device without any data modifications or filtering done by BrightQ.

4.3.1 Parallel Printing (Figure 7)

Parallel printing is a printer connected directly to the local computer via. Parallel (i.e. centronics) cable. You will have the option to specify the path to the printer. The default path is "/dev/lp0", but this is a user definable path.

- **Device:** The usual default path for a parallel device is "/dev/lp0" but this path might exist as "/dev/lp1", "/dev/lp2", or it might exist as "/dev/par0", "/dev/parallel/0", etc. depending on your operating system.

4.3.2 Universal Serial Bus (USB) Printing (Figure 8)

When printing via. the USB port of the computer you will need to have a USB printer directly connected via. USB cable to the computer utilizing BrightQ. You will need to define the default path to the device. Note; USB port printing does not support any port options.

USB Printing is only a feature of Linux and Solaris versions of BrightQ

- **Device:** The usual default path for a USB printer device is "/dev/usb/lp0" but this path might exist as lp1, lp2, or it might exist as "/dev/ulpt1", "/dev/unlpt1", "/dev/usblp1", "/dev/usb/lp1", "/dev/usb/usblp1", etc. depending on how you have configured your computer to use the USB port.

Note; all numbers listed in the above paths are only examples and may be different on your individual setup

4.3.3 Serial Printing (Figure 9)

BrightQ supports the standard RS-232C serial ports on the system (the ports on a normal PC are examples of RS-232 connections). When printing via. the serial port of the computer you will need to have a Serial printer directly connected via. serial cable to the computer utilizing BrightQ. You will need to define the default path to the device, speed of data transfer, Data Bits, Parity, and Flow Control.

Figure 7: Configuring a parallel printer

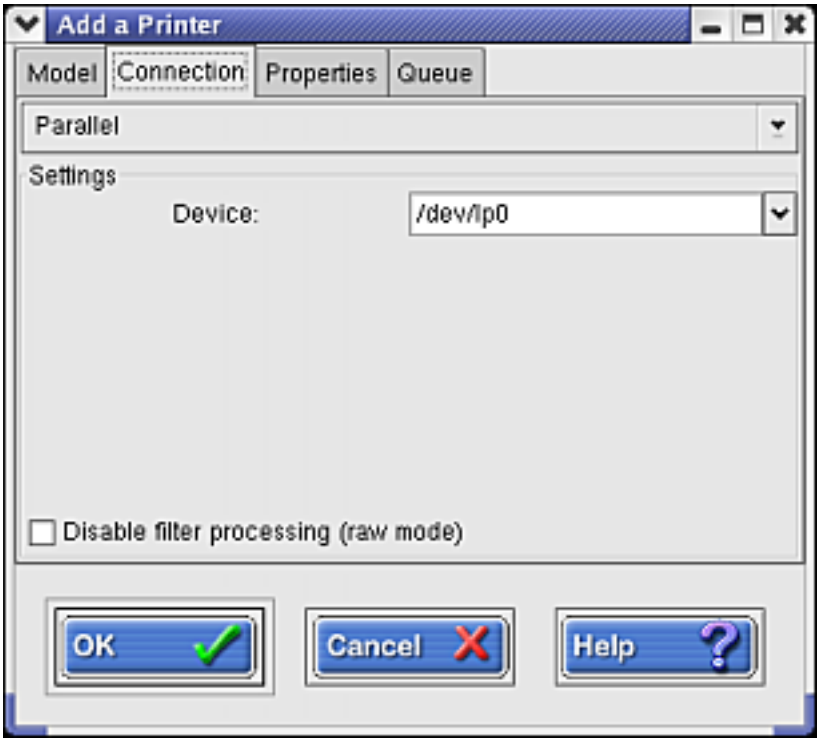
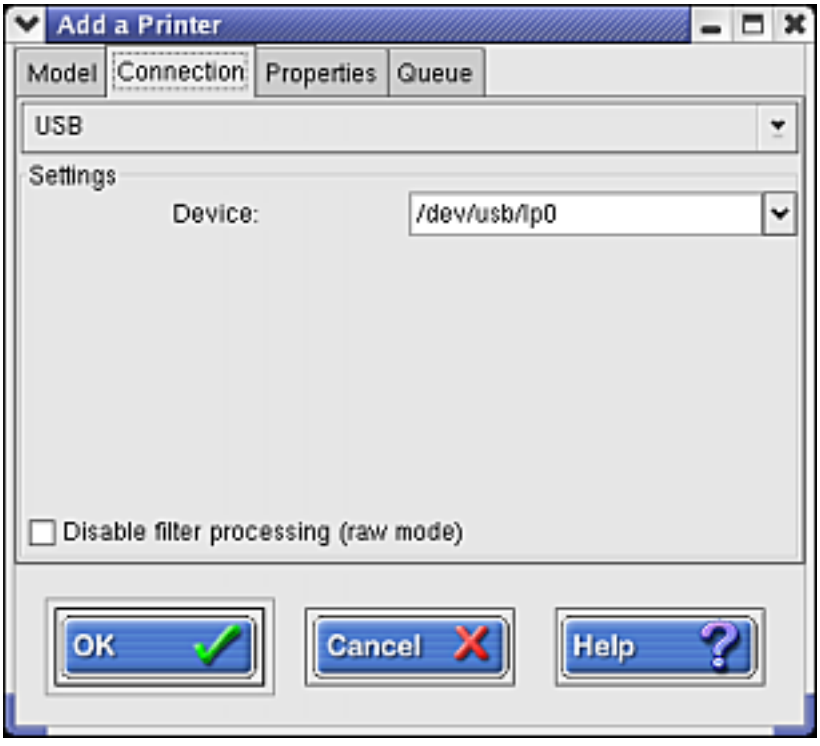


Figure 8: Configuring a USB printer



- **Device:** The usual default path for a Serial device is "/dev/ttyS0" but this path (/dev/) might exist as "ttyS1", "ttyS2", "cua0", or it might exist as "/dev/serial/0" etc. depending on how you have configured your computer to use the serial port or what generation your OS release or distribution is.
- **Speed (Baud Rate):** Sets the speed of the serial port in bits per second (baud). You have to select a data transfer speed for the serial connection. You have a choice between 1200, 2400, 4800, 9600 (default), 19200, 38400, 57600, 115200, baud rates
- **Data Bits:** This determines the number of asynchronous data characters transmissions at a time. You have an option of 7 or 8 Data Bits to be asynchronously transferred at a time (8 is default).
- **Parity:** A calculated value that is used to reconstruct data after a transfer failure. You have the option of selecting None, Odd, or Even.
  - **None:** Does not send a parity bit check (default)
  - **Odd:** Send a parity check bit with every character; the result of the sum of all bits in each character must be odd
  - **Even:** Send a parity check bit with every character; the result of the sum of all bits in each character must be even
- **Flow Control:** This is the management of data flow between computers or, in this case, a computer and a peripheral printing device. Flow control is designed so that computers and devices can handle data at an efficient pace.
  - **None:** This effectively determines that no flow control is necessary and no parity check bit will be sent by default (by default a parity check bit is sent).
  - **Soft:** This uses the XON and XOFF characters to do flow control; note this is usually not reliable with printers for the following reasons. Software flow control is slower and usually less desirable than hardware flow control. Software flow control is used only for transmitting text. It cannot be used for binary file transfer because binary data may contain the special flow control characters.
  - **Hard:** This sets the flow control to use the request-to-send (RTS) and clear-to-send (CTS) signal lines. This should be used with all high-speed serial connections that compress data.
  - **DTR/DSR:** This sets the flow control to use the data-terminal-ready (DTR) and data-set-ready (DSR) signal lines

Note; all numbers listed in the above paths are only examples and may be different on your individual setup

4.3.4 File (printing to a file) (Figure 10)

This option will allow you to configure a printer to print to a file vs. printing to an actual printer. All the data will be redirected to the specified file path, instead of being sent to the printer. This can be utilized for testing, or to blindly send files to a pipe or device (dev/*). You will need to define an absolute path for the file to be placed.

- **Path to file:** You must supply the exact path to the file to be printed to, eg "/usr/local/tmp/psoutput/temp.ps", with this example BrightQ will produce a file called "temp.ps" and place it in the "/usr/local/name/psoutput" directory. This can also be used to specify an arbitrary device that would not be explicitly supported by the configuration tool, such as hot folders.

Be aware that most printing systems will not truncate the file, and thus each jobs data may be appended to the specified file which will make multiple outputs merge together and behave in a inconsistent manner. You must also ensure proper permissions on the file or directory so that the daemon has write access to it.

Figure 9: Configuring a serial printer

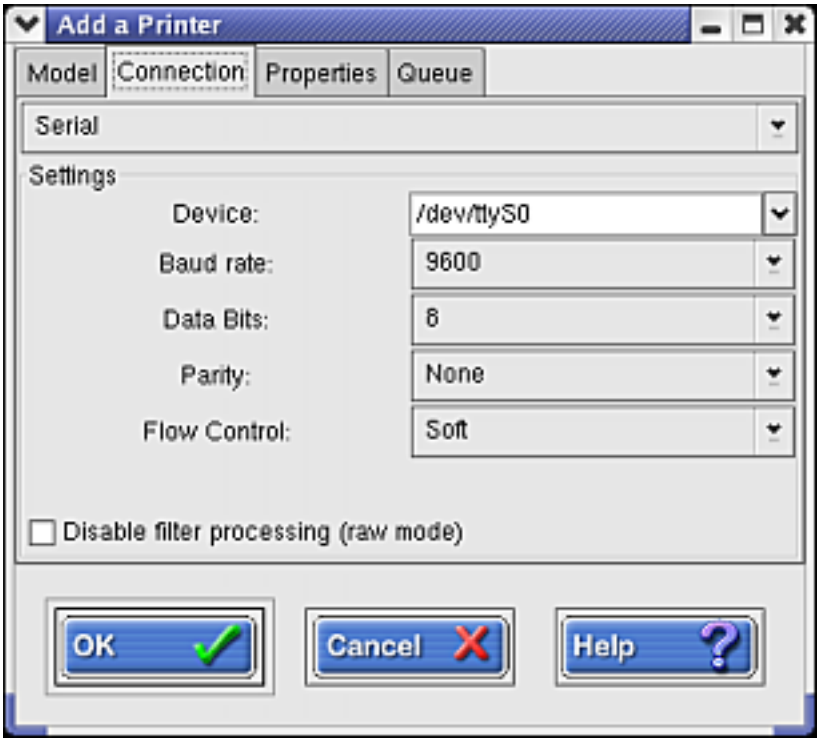


Figure 10: Configuring printing to a file

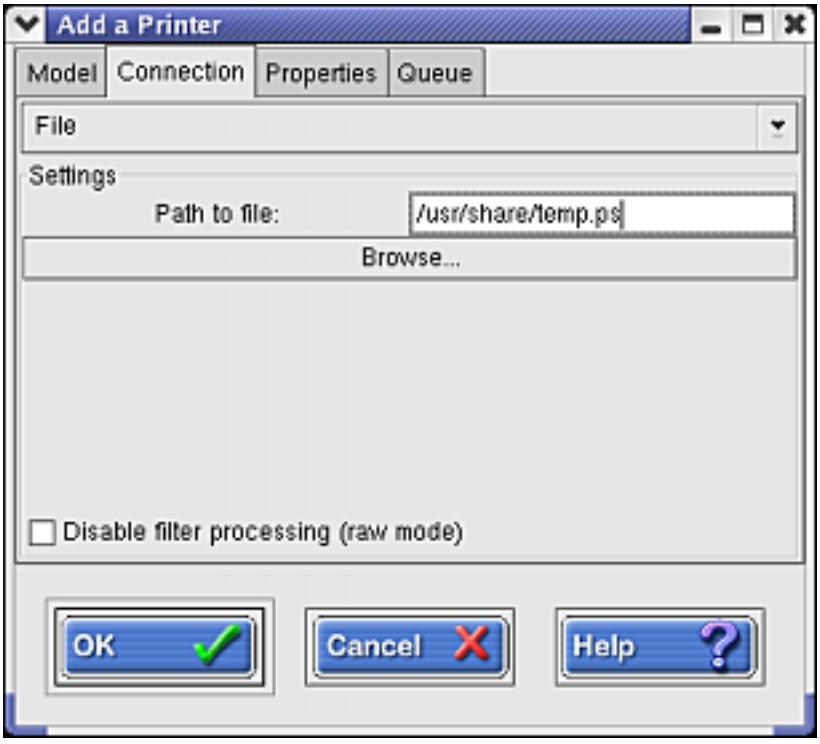
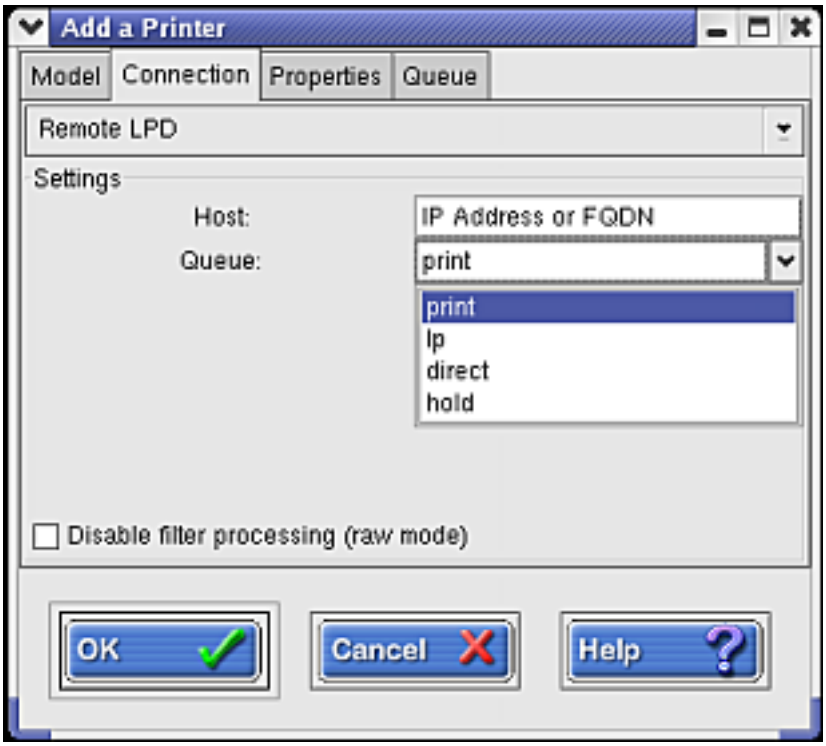


Figure 11: Configuring printing to Remote LPD/LPR



4.3.5 Remote LPD/LPR (Figure 11)

This is the implementation of the protocol used by the BSD printing system or Line Printer Daemon (LPD). Printers on the network using the LPD protocol (or LPD print servers). Both host and queue need to be specified.

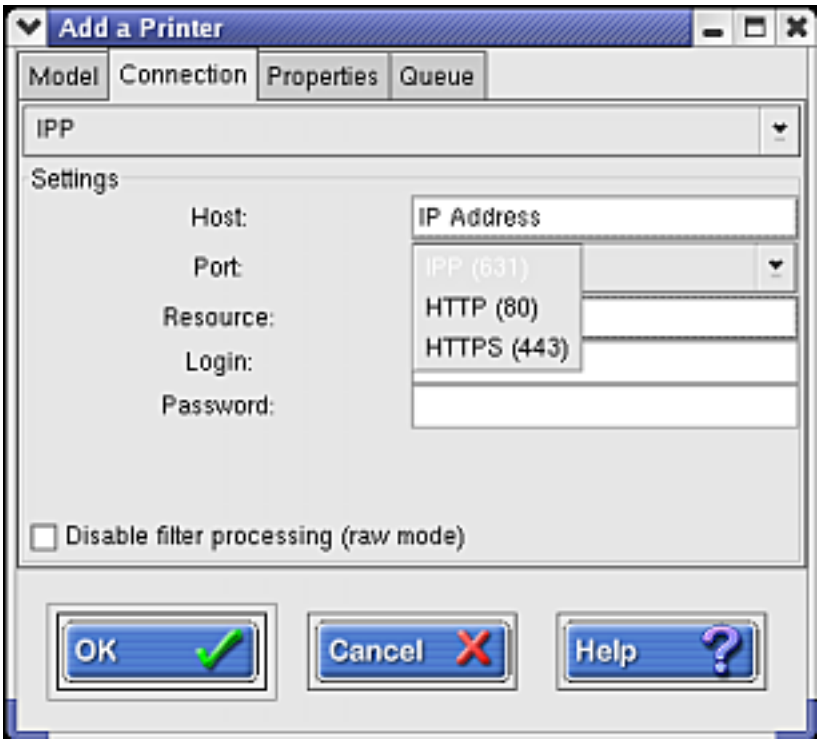
- **Host:** The host address is either an IP address of the printer or LPD server supplying the LPD service, or the Fully Qualified Domain Name (FQDN) of the remote LPD server (e.g. printer.codehost.com). This is the IP or FQDN of the output device.
- **Queue:** The Queue is the name of the printing Queue on the LPD server. Note; some devices can have multiple Queue names that redirect to specific locations (virtual or physical) on the printer. Examples of multiple Queue names might be, "print", "hold", and "direct". Additionally many output devices have fixed remote queue names. We have built into the product four default remote LPD queue names of "print", "lp", "direct", and "hold". If your remote queue name is not one of the aforementioned names you can simply highlight the Queue name and type in the appropriate name.

4.3.6 Internet Printing Protocol (IPP) (Figure 12)

The Internet Printing Protocol is a new, open protocol for printing on IP networks. It is used by many modern print servers, including the CUPS and ESP Print Spoolers. Host, Port, and Resource need to be specified.

- **Host:** The host address is either an IP address of the printer or IPP server supplying the IPP service, or the Fully Qualified Domain Name (FQDN) of the remote IPP server (i.e. printer.codehost.com).
- **Port:** This is the port IPP will talk to, in order to send an outgoing job. Normally for CUPS this port is set at IPP (631), but may be HTTP (80), or HTTPS (443) for secure printing. This is determined by the printer OEM.

Figure 12: Configuring printing via IPP



- **IPP Resource:** The resource is the name of the IPP resource on the IPP server, or printer. The "IPP" URL scheme allows an IPP client to choose an appropriate IPP print service (for example, from a directory). The IPP client can establish an HTTP connection to the specified IPP print service. The IPP client (computer running BrightQ) can send IPP protocol requests (for example, a 'Print-Job' request) and receive IPP protocol responses over that HTTP connection.
- **Login/Password:** If needed, you can specify the IPP Login name and Password combination. The need for such a Login and Password is defined by the printer OEM, or the IPP server administrator.

4.3.7 Socket/Raw TCP/IP (port 9100 is the default) (Figure 13)

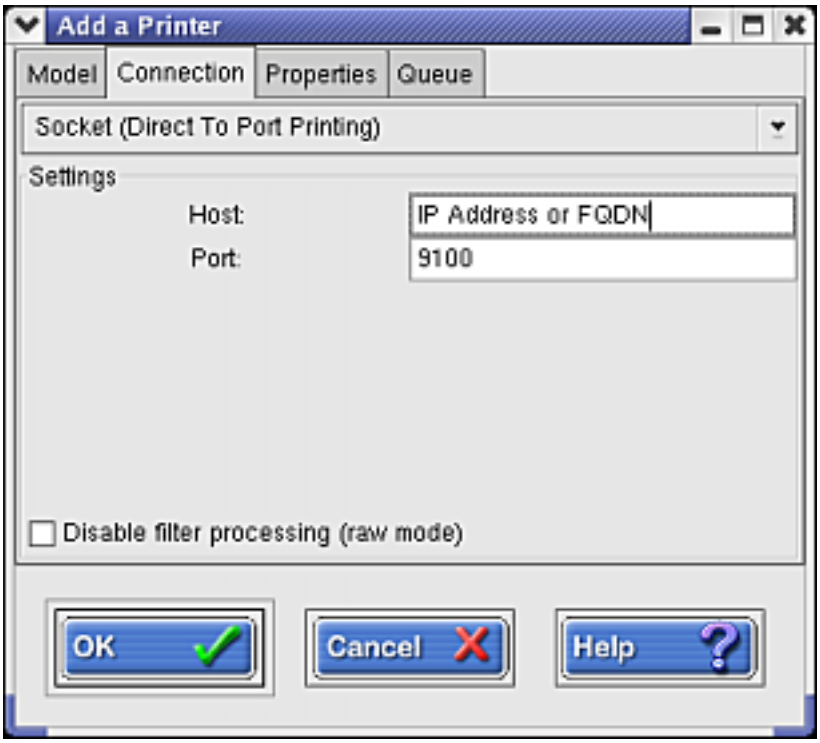
Socket or direct to port printing allows you to print directly via. a raw TCP socket connection, or what is often called "AppSocket printing" or the "JetDirect" protocol. Both host and port need to be specified.

- **Host:** The host address is either an IP address of the printer or Server supplying the Socket/Raw service, or the Fully Qualified Domain Name (FQDN) of the remote server (i.e. printer.codehost.com).
- **Port:** The Port is 9100 and is usually associated with an HP Jet Direct box, but can apply to non-jet direct printers.

4.3.8 Samba/SMB (Server Message Block) (Figure 14)

This is a file-sharing protocol designed to allow networked computers to transparently access files that reside on remote systems over a variety of networks. The SMB protocol defines a series of commands that pass information between computers. SMB uses four message types: session control, file, printer, and message. Use this to connect to a

Figure 13: Configuring printing to a Socket printer



Windows or UNIX based SMB print server's using the SMB protocol or utilizing Samba. SMB is not supported 100% on printers that have embedded SMB support.

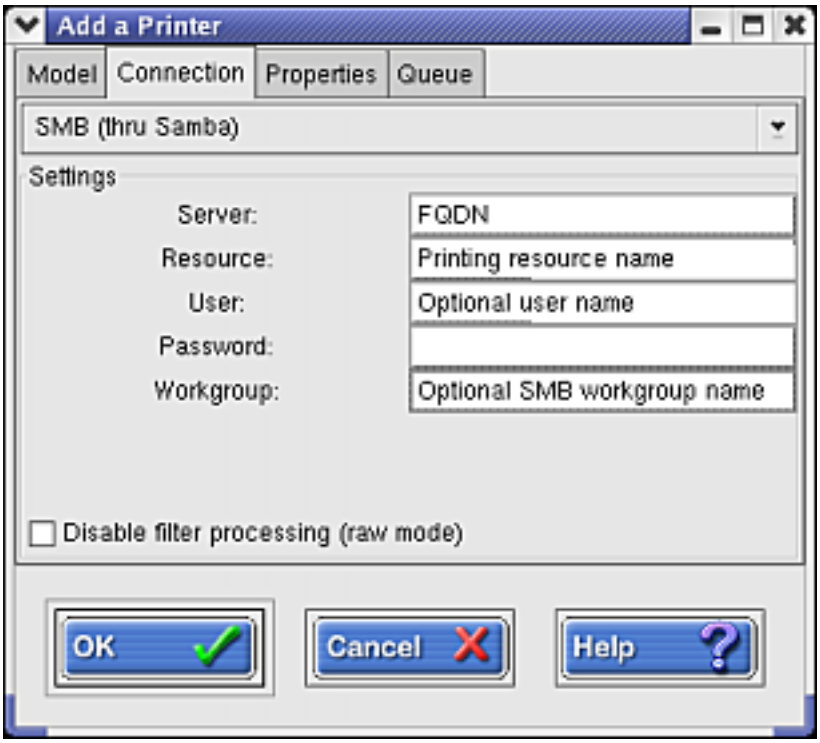
Note: In order to support SMB printing you will need to have Samba's smbclient installed on your local host prior to installing BrightQ. If you do not have support for SMB installed on your local host prior to the installation of BrightQ you will not have the "SMB (thru Samba)" option available in the "Add a Printer" dialog box. You also need to make sure both SMB and NMB daemons are running prior to installing BrightQ.

- **The Server:** This is the SMB name for the print server (this is not an IP address).
- **The Resource:** This is the name of the SMB resource on the server. For instance, if you want to access the printer commonly referred to as \\MACHINE\PRINTER\, then MACHINE would be the Server, and PRINTER would be the Resource.
- **Password/Workgroup:** If needed, you can specify the SMB workgroup name and log in with a user/password combination.
- **Disable filter processing (raw mode):** You would enable this option if you need the data to be passed through BrightQ without being modified by any of the BrightQ filters. This allows the file to be passed on to the destination output device without any data modifications done by BrightQ.

4.4 Configuring BrightQ - Printer Properties

Once you have completed selecting your output device and configuring the connection options, it will be time to select the default output device options. These options will be the default options for the currently logged in user. The selections may include **installable options** such as whether or not the output device you are printing to has certain add-on equipment. The aforementioned add on equipment may include the following items or other add on

Figure 14: Configuring printing to a SMB printer



products; paper folders, staple units, sorters, booklet makers, duplex units, additional paper trays, additional paper decks, insertion units, hole punchers, trimmers, scanners, fax servers, saddle finishers, etc.

The output devices Properties that are selected will be associated with the user that is configuring the output device. For example if you are user 1 and you have configured printer 1 properties to include a stapler, and additional paper deck, each time you log on to the system your configured printer 1 will have the stapler and paper deck options enabled. If you are user 2 and you have logged on to the system and have not configured the output devices properties then you will be presented with the output devices default options. If you are configuring the output device as the "root" user your configuration will be the default for all users.

The process to define the output devices default options is very much like the process of configuring the output devices **"Connection"** options. On the **"Add a Printer"** tab menu you have four options, **"Model, Connection, Properties, and Queue"**. We have already selected the output device Model, and the methodology for connecting to it (Connection), now we will determine the default **"Properties"**. Shown below in Figure 15 you will see the default option menu for a generic PostScript printer.

4.5 Configuring BrightQ - Printer Queue

Once you have completed configuring your output device's model, connection options, and properties it is time to name your output devices Queue.

- **Queue:** This is a user-definable print queue name. This is the naming convention for your output device that you will interface with in all of the BrightQ modules. Only standard alphanumeric characters are supported for the queue name. Depending on your default printing system/spooler this name may or may not be changed (creating an alias) without reinstalling the printer. Currently CUPS does not support queue name aliases or renaming of the queue. The Berkeley print system/spooler and some System V (Solaris) printing systems/spoolers support the alias and the queue renaming.

Figure 15: Configuring output device properties

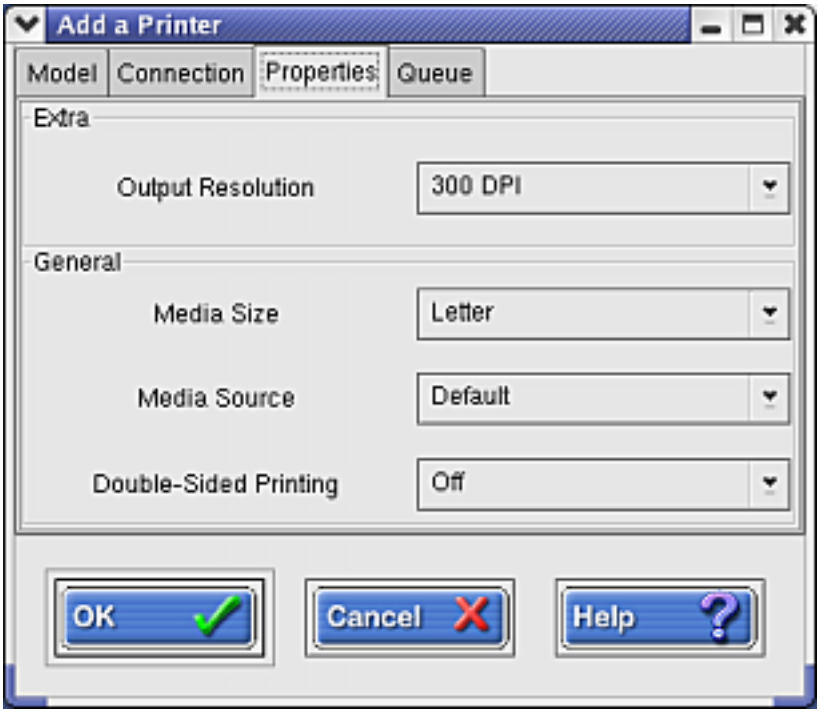


Table 3: Maximum allowed characters in queue name

Print System	Maximum allowed characters in queue name
Unix LP back-ends (including Solaris)	14 characters maximum
CUPS and LPRng	25 characters maximum
BSD LPR on Linux/FreeBSD	14 characters maximum

Figure 16: Configuring the output device queue

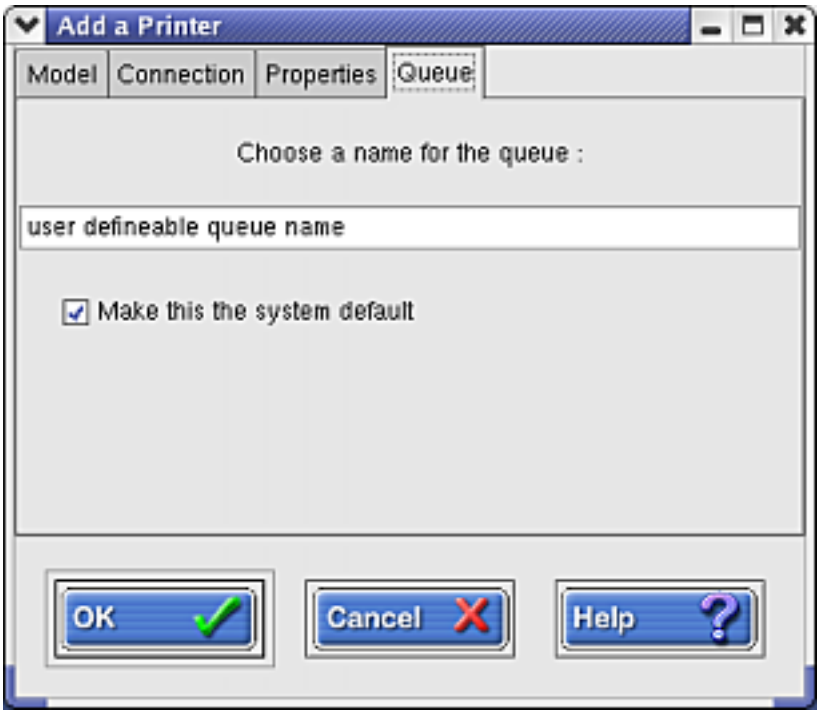
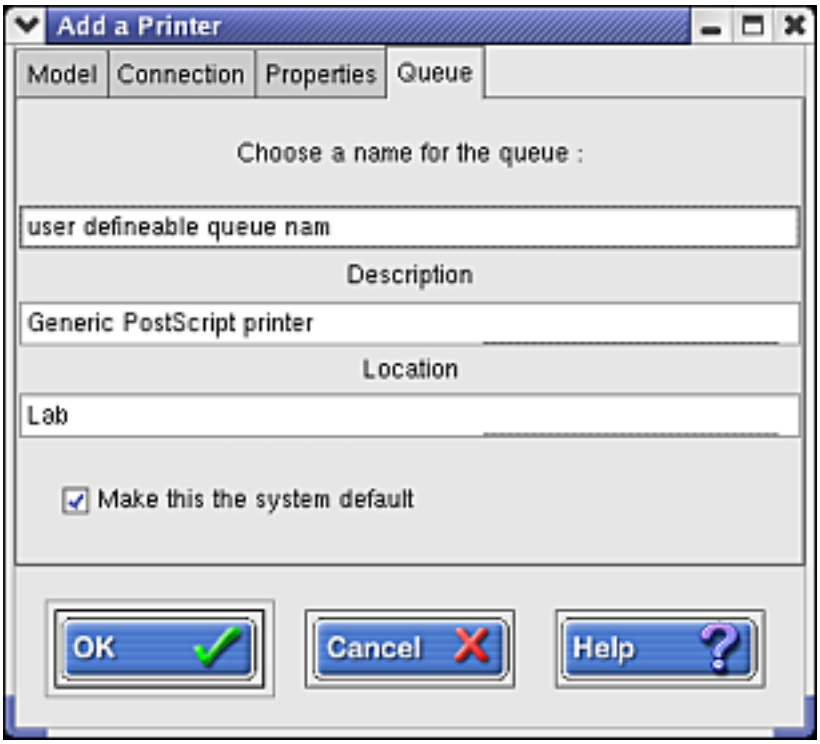


Figure 17: Configuring the output device queue - CUPS



5 Configuration Tool User Interface

The Configuration Tool (Config. Tool) is the primary User Interface for configuration, and management of BrightQ. The Config. Tool is also the interface in which you will conduct native file format printing (i.e. PDF, Text, Image, and PostScript). The configuration tool is designed to offer a UI for the following features:

- Registering and Licensing BrightQ
- Adding Printers
- Selecting printer model
- Configuring Printers local and network Queue connection
- Defining the default printer properties
- Naming the print queue
- Setting the default printer
- Testing (test print)
- Printing Documents Directly (Postscript, Image, PDF, and Text)
- Enabling, Disabling, and Removing print queues
- Queuing System UI
- Uninstalling
- Check and Rescue
- Defining the config tool options (CUPS, LPD, LP)

Since we have already covered the process to install and configure a BrightQ output device we will begin reviewing the Configuration Tool UI by "Setting the default printer".

5.1 Launching the Configuration tool

The BrightQ configuration tools primary function is to be utilized as a GUI for the addition and removal of printers in the BrightQ application. The configuration tool will allow for you to add either printers which have already been compiled into BrightQ, existed prior to the installation of BrightQ, or if the revision of BrightQ supports loading PPD's post install, you will be able to add a printer via. Included PPD. The process for adding and removing a printer along with any ancillary functionality is outlined in the following sections.

- **Launching the Configuration tool:** The first step is to launch the BrightQ configuration tool in order to add, configure, set as default, etc an output device to the print spooling/queuing system. To launch the configuration tool either go to the menu item/application Icon, etc that was added to GNOME, KDE, or CDE during installation and launch the program from there, or do the following at a shell prompt or xterm window; type **"codehost-config"**
  - Note; switching to the directory that the BrightQ program is in to run the Configuration tool is only necessary if the directory is not in the path of the host the system is running on or you do not give the path to the file. Switch to the BrightQ bin directory **"cd /usr/local/brightq/bin/"** (or the appropriate directory that BrightQ has been installed into) and type the following: **"./codehost-config"**. Or launch from the current directory with the command **"/usr/local/brightq/bin/codehost-config".**
  - Once the configuration tool is launched you will see the screen listed in Figure 18. Please note the descriptions of the Config. Tool menus.

Figure 18: Configuration tool UI - File

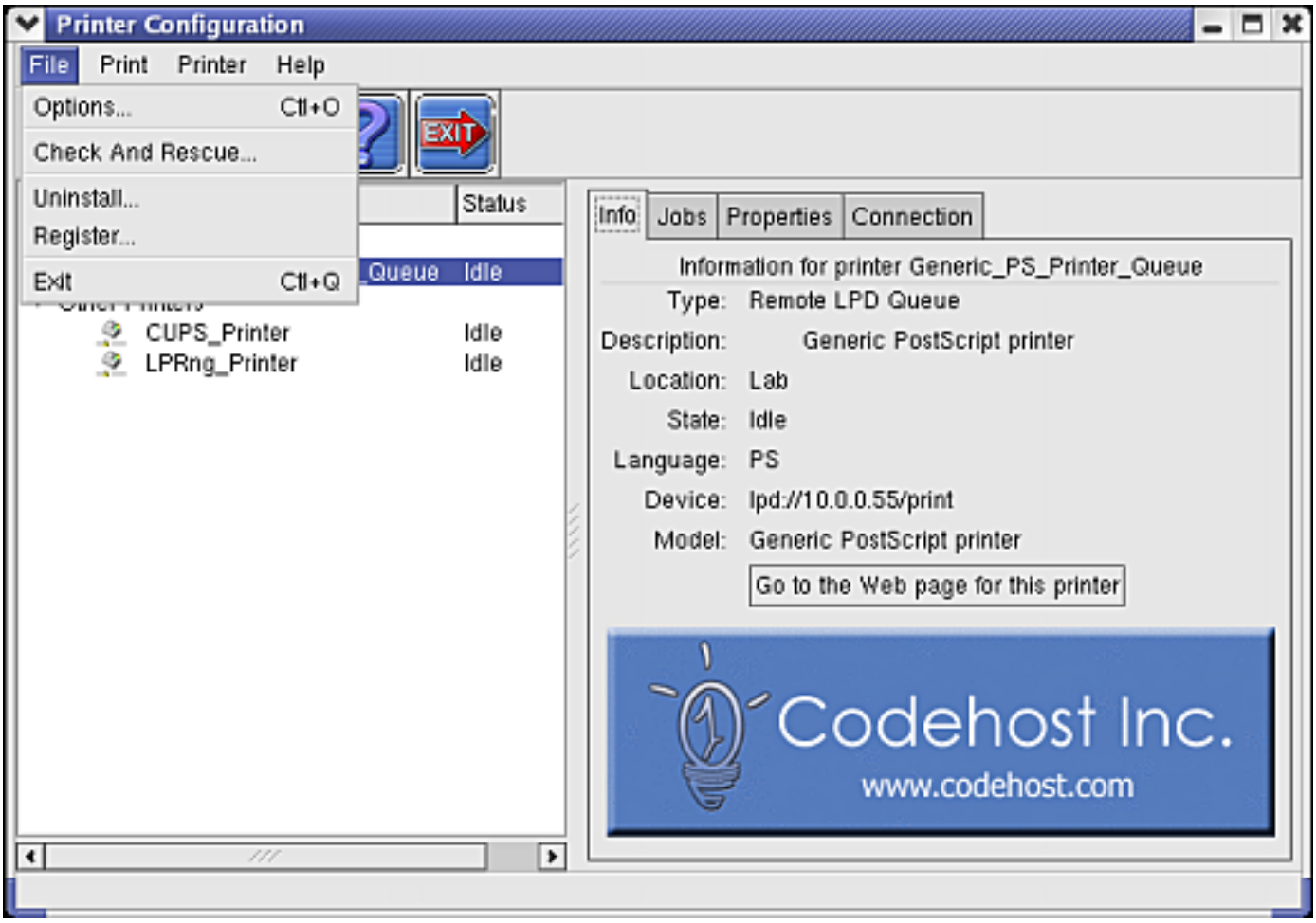


Figure 19: Configuration tool UI - Print

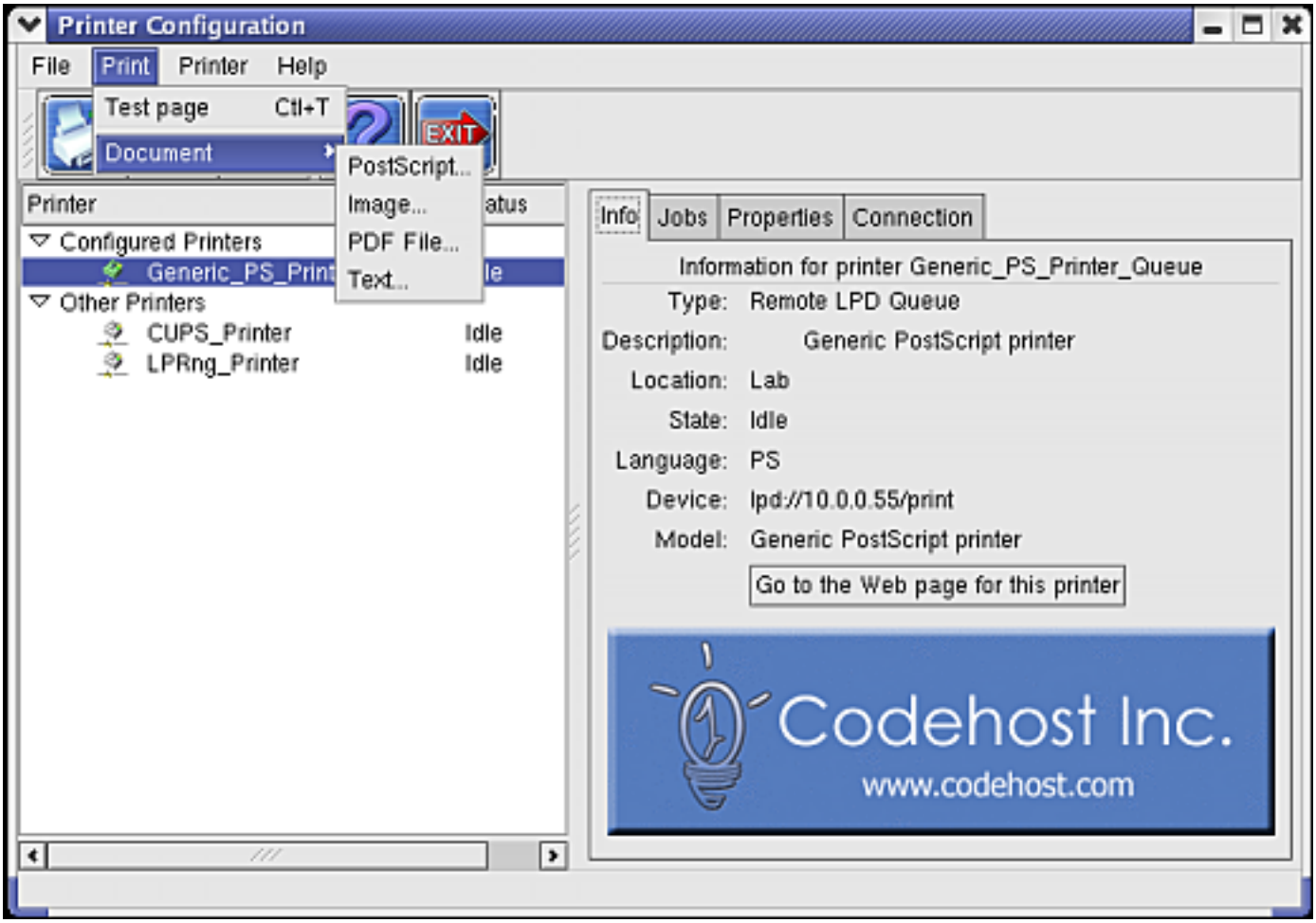
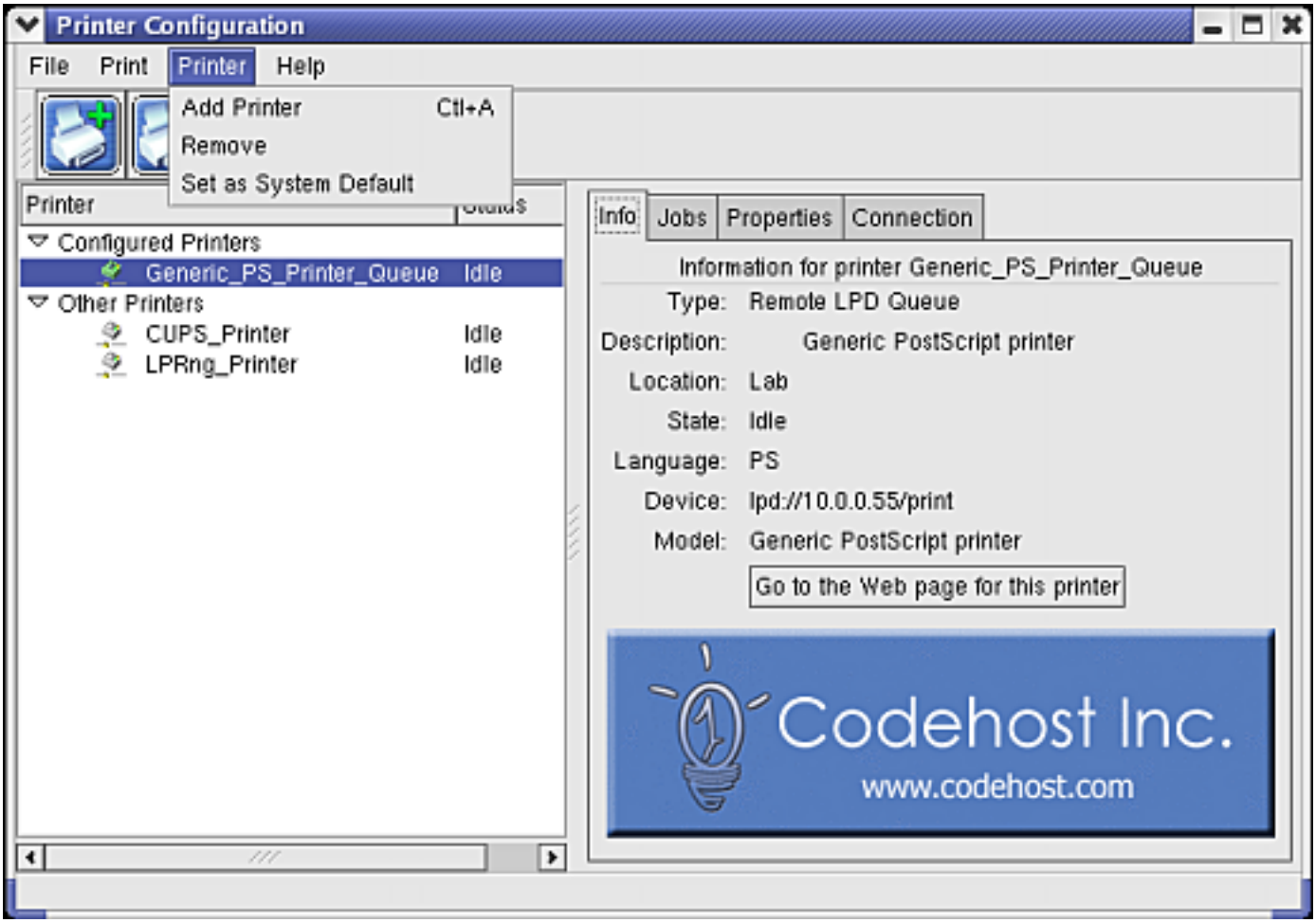


Figure 20: Configuration tool UI - Printer



5.2 Config tool - File Menu - Options (CUPS, LPD server, and Printcap)

In BrightQ you have the ability to define certain options pertaining to the default spooler that BrightQ is working in conjunction with. By selecting the "file/Options" menu option you will invoke the Options dialog box. These options pertain to the location of certain configuration files, server addresses, encryption, etc additionally based upon what your default print system/spooler is the options you will presented with will vary and are listed and explained below.

- If you have CUPS installed as the default spooler on your system you will have the following CUPS centric options for BrightQ (Figure 21)
  - **User:** In order to configure a printer/device you need to be logged in as a user with administrative privileges on the CUPS server.
  - **Password:** This is the password for the aforementioned logged in user
  - **Server Address:** This is the location of the CUPS server. By default this is the "localhost" or the local computer that you are loading BrightQ on. This could also be a remote host that has a CUPS server on board.
  - **Server Port:** This is port that the system will query the CUPS server on.
  - **Force Encryption:** This option forces all communication between the client and CUPS server to be encrypted (SSL). This is a user defined variable.
  - **Restart CUPS daemon automatically:** In some instances the CUPS server might stop responding and this is an error recovery mechanism to restart the CUPS daemon automatically. Note; the CUPS Daemon does not require a restart to add printers, modify printers, etc. This option is a failsafe. This can also be done
- If you are using a default spooler that is not CUPS but instead a BSD based print spooling system (i.e. LPRng, LPR or LP) then you will have the following options for BrightQ (Figure 22)
  - **Printcap:** This is the default printcap location that you want BrightQ? to use to add and configure new printers. This is the default location of the printcap file. This is the printer capability database file. This is the file that contains the core info. for your printer. The values in the user printcap file override values in the /etc/printcap, which override the default values in the /etc/lpd.conf file. This dialog box is designed to allow a user to define the location of a local printcap file.
  - **LPD Server:** This is the default location of the LPD server. This is the Line Printer Daemon, or the print server program of LPR or LPRng. By default the location of the LPD Server is the "localhost" that is running BrightQ

5.3 Config tool - Check and Rescue

BrightQ comes with a tool designed to ensure that all relevant files are installed in the proper location, are the correct size, and are functional. By selecting the file/Check and Rescue menu option, you will run the Check and Rescue tool. (Figure 24)

- Once Check and Rescue has been run it will display which files have been modified, corrupted, moved, etc.
- If a file has been flagged to need to be Rescued you can use the Rescue or Dismiss option
  - If you choose to rescue a file then you will be prompted to locate the original BrightQ package or CD, or to pick another location the files can be found.
  - Once you have selected the location of the original BrightQ package the system will extract the appropriate files and install them on the host running the Check and Rescue tool.
  - To ensure that the files have been rescued exit out of Check and Rescue and then run it again. It should now report that no problems were found. To exit the program simply click the "Dismiss" button.

Figure 21: CUPS Options

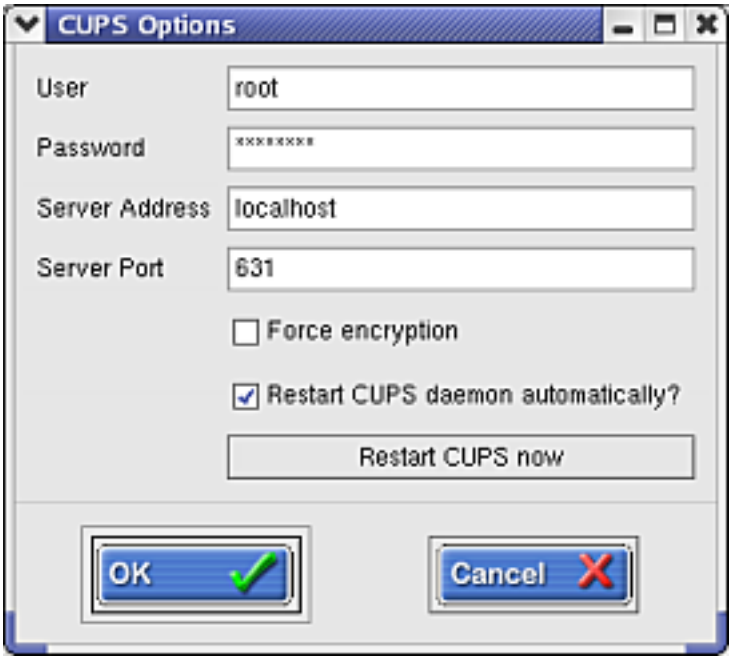


Figure 22: LPRng Options

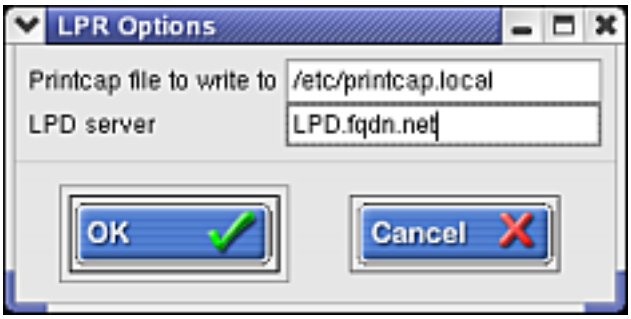


Figure 23: LP Options for, top left to bottom right, Solaris, AIX, HP-UX and IRIX

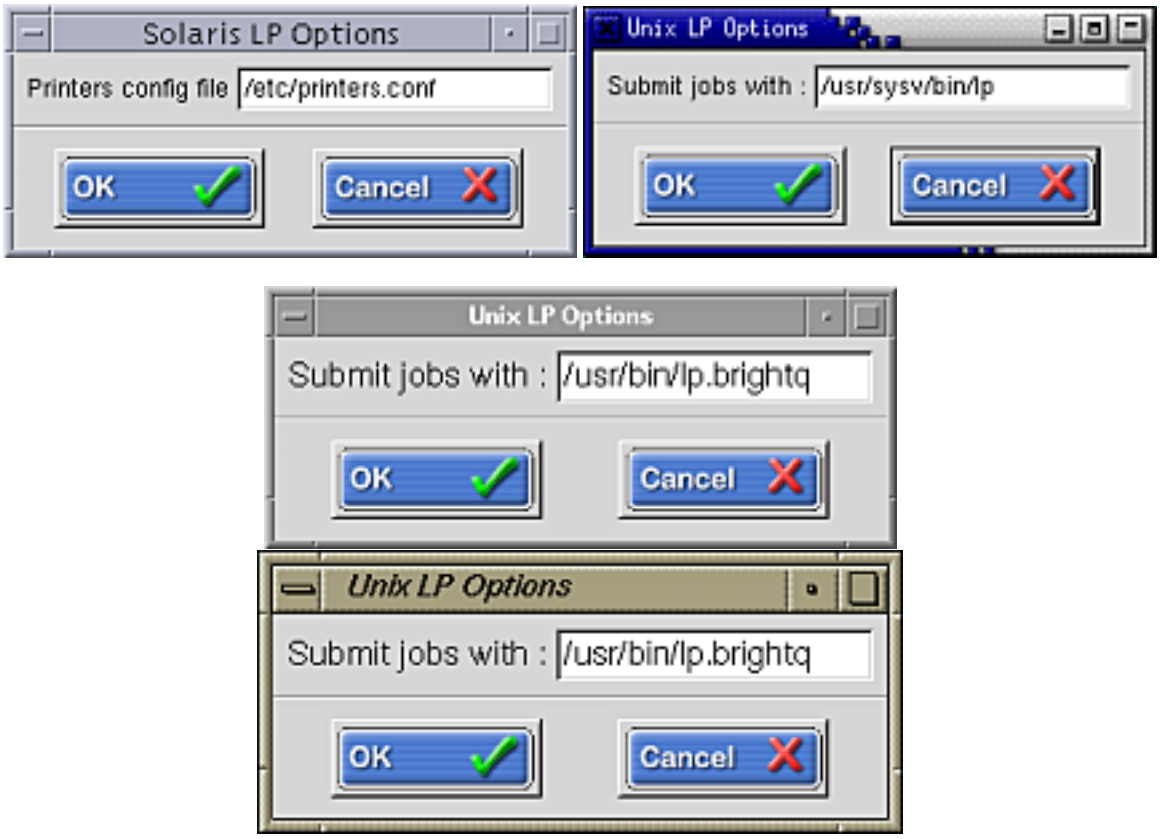
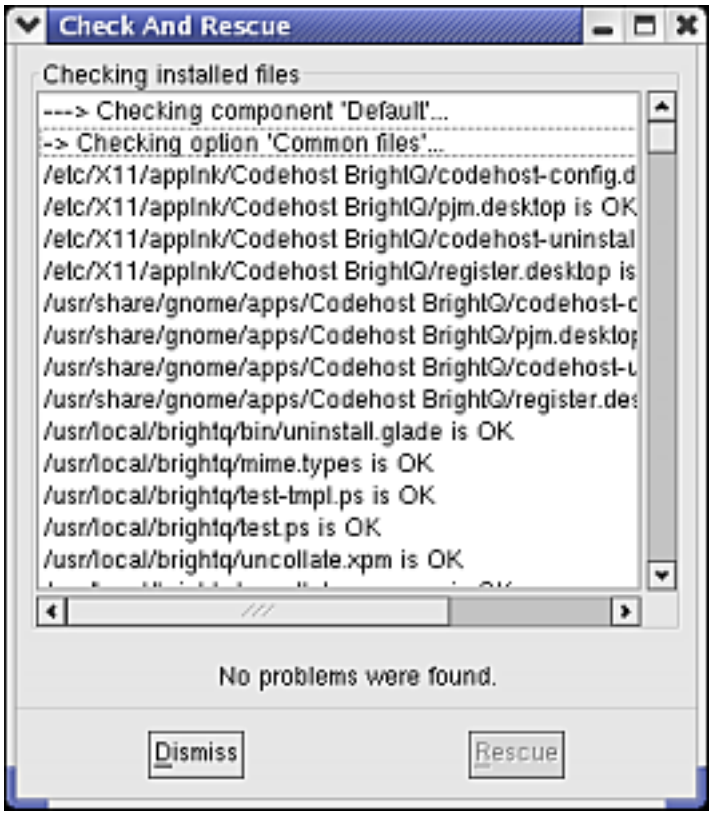


Figure 24: Check and Rescue



5.4 Config tool - Uninstalling BrightQ

BrightQ comes with both an installer and an uninstaller. By selecting the "File/Uninstall" menu option or by running the uninstaller in a shell you will completely Uninstall BrightQ and all relevant supporting files.

- If you are using CUPS as your default spooler then you will need to supply the administrative or "root" password to remove the printers installed via. BrightQ.
- When running the Uninstall tool you will need to select "Complete Uninstall" and then click the "Uninstall" button.
- The Uninstall tool can be invoked via. shell by typing "codehost-uninstall" as long as the directory that the BrightQ binaries are in is in the system's default path.

5.5 Config tool - Registering BrightQ and the License Manager

You might be required to register your copy of BrightQ in order to utilize the program. You might also be required to install an additional Codehost License File (CLF) or Codehost License Package (CLP) in order to enable additional features, output devices, etc.

- All registration centric activity is conducted via. the "File/License Manager/Register Online/Register" menu of the BrightQ Config. Tool.
- Please refer to Section 3.5 of this guide for a detailed description and diagram on utilizing the Registration program.

5.6 Config tool - Print Menu - Test print and Document Printing

In BrightQ via the Config Tools "Print" Menu, you have the ability to print both a test page and print documents in their native file format (without first opening them in their associated applications).

5.6.1 Printing a Codehost Test page

In order to print a Test Page, you will select the "Print/Test Page" or Ctl+T; this will print a Test Page to your selected printer in the appropriate PDL for that printer.

- Printing the Test file will "not" engage the Print Job Manager (PJM).
- This page will print out utilizing the default PDL of the device it is being printed to.
- On the page it will display the following:
  - A one degree radial line test RGB/CMYK color wheel (if the output device support color printing if not the wheel will be grayscale),
  - The name of the Printer Model
  - Default PDL
  - The name of the host that printed the file out.

5.6.2 Printing a PostScript File

BrightQ will allow you to print a RAW PostScript file directly from the Config tool program interface. To access this option go to the "Print/Document/PostScript". You will be prompted to locate a RAW PS file for printing (*.ps).

- Once the PostScript file is loaded, the Print Job Manager (PJM) will be engaged so that you can select any relevant printing options.
- This filters PostScript files and adds printer commands and options

- *Note; If you select in the PJM Properties/General and then check the "Raw Mode" button the file will pass through BrightQ without being filtered and thus the output device options will not be enabled additionally you will not have the ability to view and or select options within the Print Job Manager (PJM) which are centric to your printer, and all other options will be ingnored.*

5.6.3 Printing an Image file

BrightQ will allow you to print an Image file directly from the Config tool program interface. To access this option go to the "Print/Document/Image". You will be prompted to locate an Image file for printing. This filter converts Image files into the appropriate PDL and adds printer commands and options to the data stream.

- The readable Image file formats are listed below;
  - BMP, GIF, JPEG, PhotoCD, Portable anymap (PBM, PGM, PNM, and PPM), PNG, SGI RGB, Sun Raster, and Tiff image files.
- Once the Image file is loaded the Print Job Manager will be engaged so that you can select any relevant printing options. In the PJM you have numerous menu options centric to printing an Image File. Listed below are the Image Printing options and a brief description;
  - **Brightness** - Specifies overall brightness of the document in percent. 100% is normal, 50% is half as bright and 200% is twice as bright. This affects all of the CMYK channels. *Note; Brightness will work with all PostScript Files as well as Image files.*
  - **Hue** - This specifies a color Hue rotation. Please refer to table-A3 on page 19 for the effect of hue adjustments on primary colors. Note; the HUE adjustment only applies to Image files.
  - **Saturation** - This specifies the saturation, or the distance the color's hue moves from neutral gray. If you increase the saturation then the hue will move farther from neutral gray. A value of 100 is unchanged, 50 is half as colorful or saturated as 100 where 200 is twice as saturated or colorful as 100. Note; the Saturation adjustment only applies to Image files.
  - **Gamma** - This specifies the overall gamma or luminance correction for the output. A value of 1.6.3 specifies no correction, whereas a correction of 0.5 or 2.0 will generate darker or lighter output, respectively. Gamma is applied to the RGB or Luminance for Grayscale output, equally. *Note; Gamma will work with all PostScript Files as well as Image files.*
  - **Image Size - Resolution (PPI)** - This specifies the resolution of the image in Pixels per Inch. This default value is that of the resolution of the actual file being printed or 128 PPI if no resolution information is available or selected. The Resolution (PPI) overrides the % of page options. *Note; the Resolution (PPI) adjustment only applies to Image files.*
  - **Image Size - % of page** - This specifies the scaling of the image with respect to the selected media. The default value is 100 which means that if you were to select Letter paper the image would cover the entire 8.5x11 printable area. The % of Page, option overrides the Resolution (PPI) options. *Note; the % of page adjustment only applies to Images file and will retain the image files aspect ratio.*
  - **Image position** - This specifies the location of the image file on the printed page. *Note; the Image Position adjustment only applies to Image files.*

5.6.4 Printing an Adobe Acrobat file (PDF)

BrightQ will allow you to print an Adobe Acrobat Portable Document Format (PDF) file directly from the Config tool program interface. To access this option go to the "Print/Document/PDF file". You will be prompted to locate a PDF file (*.PDF) for printing.

- Once the PDF file is loaded the PJM will be engaged so that you can select any relevant printing options
- This filter converts PDF files into PostScript and adds printer commands and options

5.6.5 Printing a Text file

This filter converts Text files into PostScript and adds printer commands and options. BrightQ will allow you to print any Text file directly from the Config tool program interface. To access this option go to the "Print/Document/Text". You will be prompted to locate a Text file for printing.

- Once the Text file is loaded the PJM will be engaged so that you can select any relevant Text or general printing options. In the PJM you have numerous menu options centric to printing a Text File. Listed below are the Image Printing options and a brief description
  - **Text Format - Chars per inch:** The default value for this is 10 characters per inch. This determines the number of text characters per inch that will be printed.
  - **Text Format - Lines per inch:** The default value for this is 6 lines of text per inch.
  - **Text Format - Columns:** The default value for this is 1 column. These are columns of text. 1 Column will fill the imageable area of the page, while if you select 2 columns then the imageable area of the page would be separated into 2 columns each representing 50% of the page, etc.
  - **Syntax Coloring - On/Off:** The default value for Syntax Coloring is off. This option will take any C, C++, shell script, and PERL code that is in the text file and color code it accordingly

5.7 Config tool - Printer - Add/Remove and Set as System Default

These menu options allow you to add additional output devices (Ctl+A), remove existing output devices, and determine which output device will serve as the default device for all additional BrightQ modules. To access these options go to the "Printer" menu.

5.7.1 Adding a Printer

BrightQ allows you to add a new printer or add another printer that already exists but configure it in a unique manner. Regardless of whether you are adding a new printer or adding one that already exists, the process is identical. To access these options go to the "Printer/Add Printer" menu or select the "Add Printer" Icon show above.

- Once you have gained access to the "Add Printer" menus please refer to Section 4 for a detailed description of configuring your new output device. Once you have completed Adding a new Printer the printer will be listed under "Configured Printers".

5.7.2 Removing a Printer

BrightQ allows you to remove a previously installed BrightQ printer or a printer listed under the "Configured Printers" or "Other Printers" header. Note; Printers listed under "Other Printers" were already installed prior to BrightQ's installation. Regardless of whether you are adding a new printer or adding one that already exists, the process is identical. To access these options go to the "Printer/Add Printer" "Printer/Remove" menu's or select the "Add Printer" Icon show above.

- You will be required to supply the administrative or "root" password in order to successfully add or remove your selected printer.

5.7.3 Selecting the output device to be used as the System Default

BrightQ allows you to set a default output device that all relevant BrightQ modules will utilize as the default output device. You will have three locations in which you can set your default printer. Only a user with administrative or "root" privileges can set the default printer.

- The first place to set the default printer is at the point of installation of the new printer. In the Queue tab you have the option of selecting "Make this the default printer" by checking this dialog box (please refer to Figures M and N).
- The second place this can be done is via. the "Printer/Set as System Default" options (note; you will have to have the output device you want set as default selected in the printer interface).
- The final location you can set the default printer is by right mouse clicking the desired printer in the Configured printers UI. Right click and select "Set as system default"

5.7.4 Enabling, Disabling, and Removing Print Queues

By disabling a printer you are not allowing any print jobs to be submitted to that queue and conversely by enabling it you are allowing jobs to be submitted to that queue. If you attempt to print to a disabled queue the PJM will "error out" on the job.

- In order to Enable or Disable a printer simply select the configured printer, right mouse click and select Enable or Disable.
- You can also do this with the enable/disable printer icon. The icon is in the form of a switch that will be green if the currently selected printer is enabled and red if it is disabled (see above).

5.8 Queuing System User interface

When utilizing BrightQ's configuration tool you can view an output devices Info, queued Jobs, device Properties, and the device Connection. Listed below is a brief description of each tab menu. Note; The asterisk (*) indicates something is variable based upon the default print system/spooler. The left column has the configured printing devices it also has the Other Printers which are printers that existed in the host's printcap file prior to installing BrightQ. The column on the left also displays the status of the BrightQ Configured Printers. The left column will also show the printers "Status" of being idle, enabled, stopped, or disabled. The default print spooler/system will determine the term's being used (idle vs. enabled, stopped vs. disabled).

5.8.1 Info Tab Menu

The "Info Tab" supplies the user with certain information about the configured output device that is currently selected. The output devices specific info. is listed below (Figure 25)

- **Type:** This defines the type of queue configured for the selected output device, the options are as follows;
  - **Local** - This applies to all local connections (i.e. Parallel, USB, Serial, and File)
  - **Remote LPD Printer** - The printer is configured to use LPD
  - **Remote IPP Printer** - The printer is configured to use IPP
  - **Remote Socket Printer** - The printer is configured to use Socket
  - **Remote SMB Printer** - The printer is configured to use Samba's SMB client

- **Description*:** This field will only appear if you are using CUPS as your default print system/spooler and only if you filled in the fields in the "Add a Printer" dialog box (see Figures 16 and 17). This is a user-definable field.
- **Location*:** This field will only appear if you are using CUPS as your default print system/spooler and only if you filled in the fields in the "Add a Printer" dialog box (see Figures 16 and 17). This is a user-definable field and applies to the physical location of the printer.
- **State*:** This is the current state of the selected printer. This is either going to be idle, stopped, disabled, or list the job currently being processed or the job that processed last
- **Language:** This is the default Page Description Language (PDL) this output device supports by default.
- **Device*:** In the case of CUPS this defines the devices URL (universal resource locater) in the format of protocol://address:resource. i.e. Parallel:/dev/lp0, usb:/dev/usb/lp0, lpd://10.0.0.55/print, ipp://10.0.0.55/ipp/print With a standard Berkeley or AT&T spooler it is listed simply as **remote** or **local**.
- **Model:** This is the model of output device that you have installed. This is hard coded to the output device driver.

* Note that "Description", "State", "Location", and "Device" are only available when using CUPS

5.8.2 Jobs Tab Menu

The jobs that you have queued to print will be visible by selecting the Jobs tab. The Jobs tab represents the queuing interface for BrightQ (Figure XXXXXXX). If you select the "Jobs" tab menu in the window on the right it shows the currently queued print jobs and displays the following information about the jobs;

- **Name:** This is the name of the file being printed or processed
- **ID:** This is a numeric value that is representative of the sequence of the job being printed
- **State:** This is the state that currently queued document is in. Each job object is always in one of the six states listed below:
  - **Pending:** This is a job that is waiting to be printed
  - **Suspend:** This is a job that has been suspended and is currently waiting to be resumed or deleted
  - **Processing:** This is a job that is being processed (filtered) or printing
  - **Cancelled:** This is a job that has been deleted
  - **Aborted:** This is a job that has been aborted by the system due to an error condition
  - **Completed:** This is a job that is completed
- **Printer:** This field will display the user defined name of the output device you are printing to
- **Owner:** This field will display the user name that is logged in to the system that is printing (i.e. "root", guest, etc.)
- **Size:** This is the size of the currently printing file represented in bytes

5.8.3 Properties tab menu

The output device's default options you selected during the installation and configuration phase will be visible by selecting the Properties tab. The output device options selected under the Properties tab represents the default options for that device. If you are printing via, BrightQ the options selected in the Properties tab will be appended to your data file unless you select other options that override the selections in the Properties menu. This is also the menu you will use to define your output device's "Installable Options".

5.8.4 Connection tab menu

This is the menu system you will use to determine how your computer will communicate with the printer model that you have selected to configure. You will be presented with a number of different connectivity/communication options to connect your printer. The options relate to printing both locally and remotely.

Figure 25: Config Tool Info tab menu

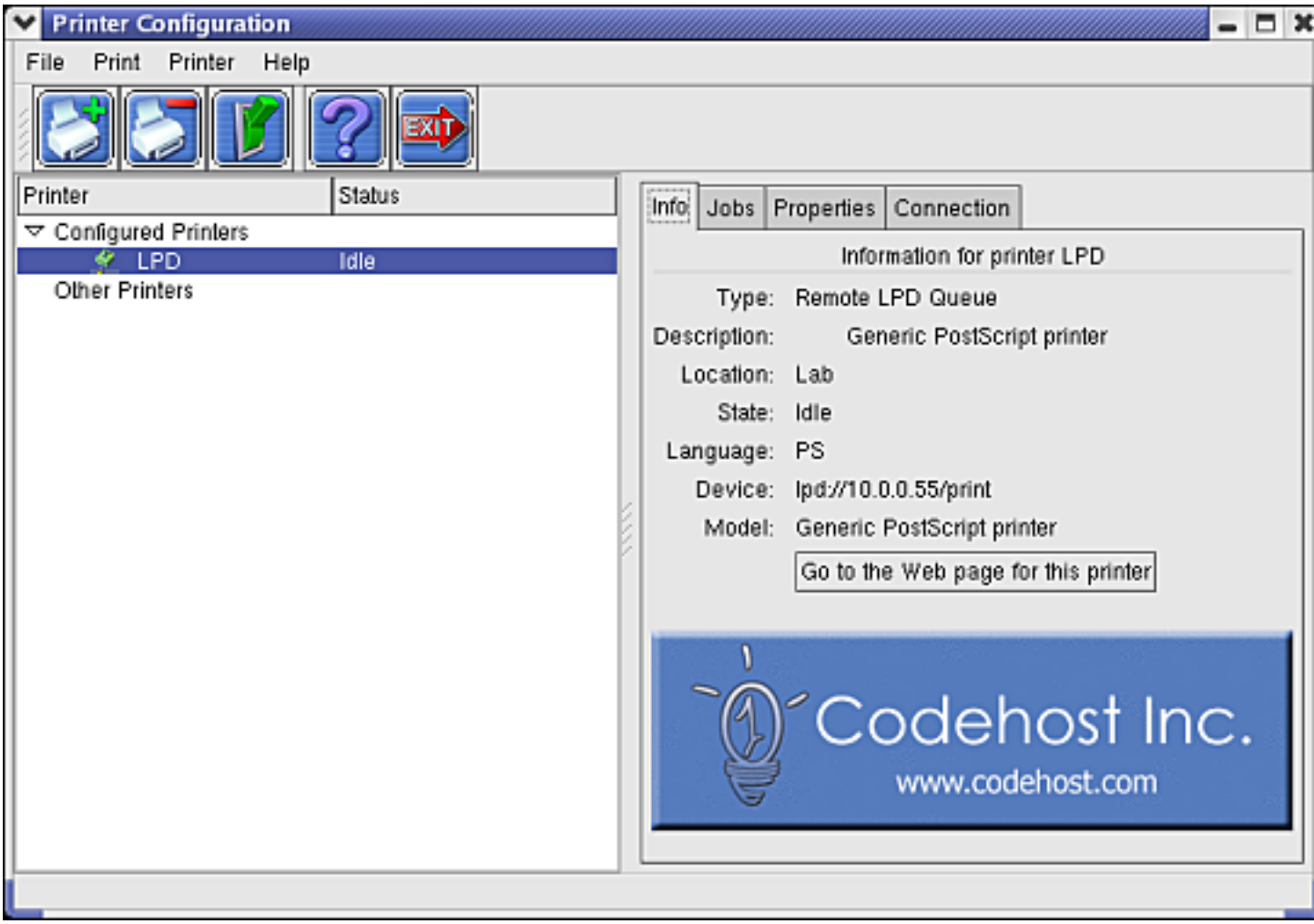
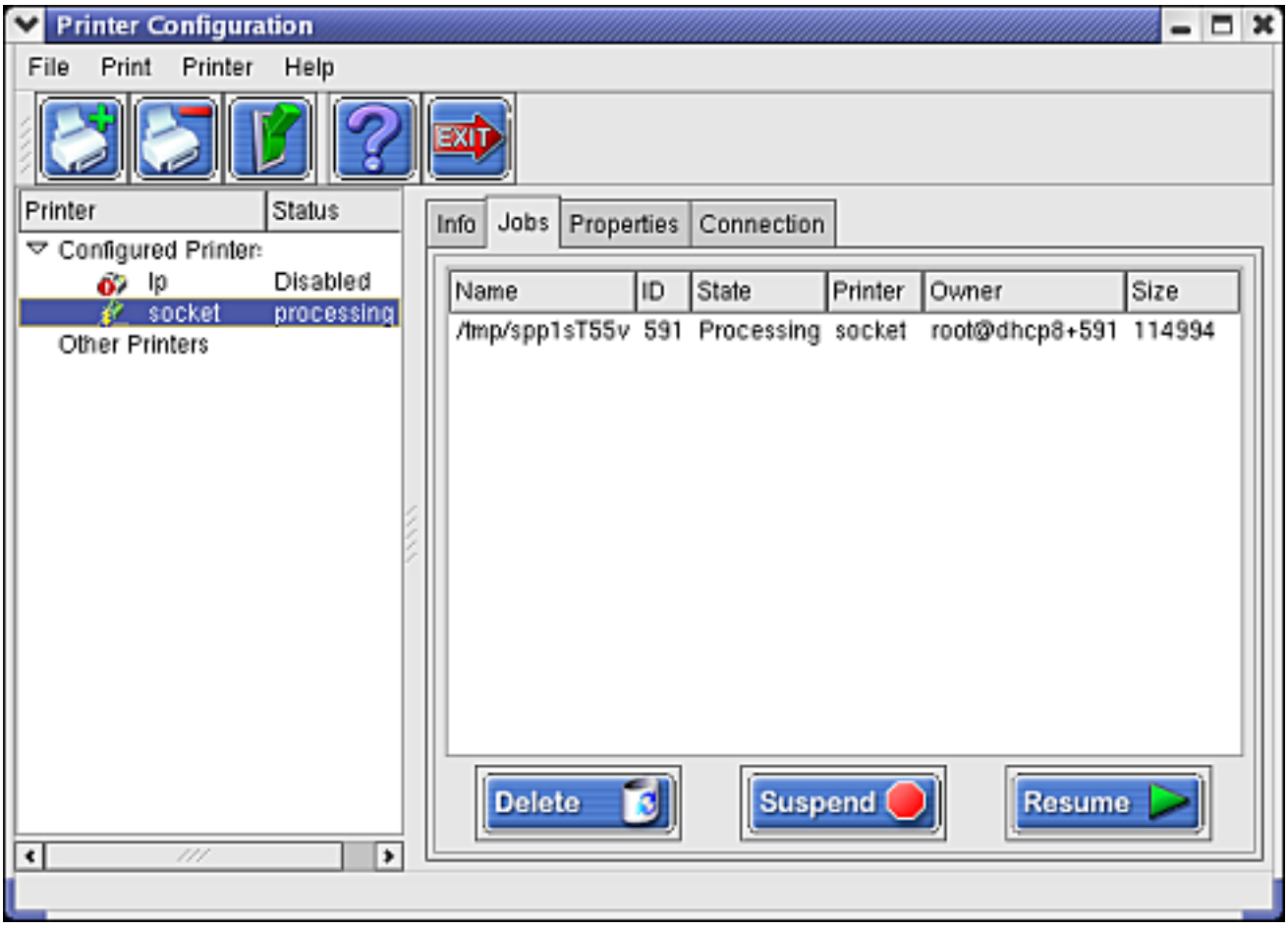


Figure 26: Config tool with Jobs tab menu



6 Print Job Manager

The final core module of the BrightQ suite is the Print Job Manager or PJM. The PJM is the primary tool that users will interface with while printing documents thru applications and BrightQ. The PJM is similar in form and function to the printing interfaces utilized in the other Operating Systems with integrated print spoolers and print systems. PJM is a program designed as a replacement for the popular lpr command-line tool traditionally used as the interface by applications to submit jobs to the printing system. Upon installation, PJM is set up so that it will override the lpr command, so that every program that calls lpr will in fact be calling the PJM, thus providing a user friendly printing interface. If a graphical environment (X windows) is not available then PJM will simply pass on the jobs to the printing system/spooler (i.e. CUPS, LPRng, etc.) without any user intervention required. When printing utilizing the default system print spooler and an application that is communicating with the aforementioned spooler the PJM will appear after clicking print in your application or after selecting the file to be printed via. the BrightQ configuration tool document printing option. All of the printers default options will be made available to the user at the point of printing, and if none are selected the PJM will default to the options set as default in the Config. Tools properties tab menu. The PJM is the main printing interface for BrightQ designed to allow access to the core areas of the OEM print driver. Some of these core subcategories of printing are generic in nature while others are OEM print driver specific.

Note: The PJM can be launched via. shell by typing at the prompt "pjm".

6.1 PJM initial Menu and properties button (Figure 27)

Listed below is the description of the initial menu's and sub-menu's you will be working with when you utilize the PJM

6.1.1 Printer

This is the drop down menu that you select your configured printer. The name of the printer is the queue name utilized while installing the printer via. the Configuration tool.

- **Name:** This is the name of the configured printer
- **State:** This is the state that currently selected print queue is in. Each queue's state is dictated by the spooling system
- **Type:** This is also defined by the spooling system, but in general will display the name of the device, the connection type and PDL
- **Comment:** This is displayed as the configured printer driver name
- **Location:** This is a user definable field that is determined via. the Config tool at the printer installation
- **Properties:** By selecting the Properties button you will enable the "Job Properties" tab menu
- **Set as default:** This will set the currently selected printer as the local default printing device

6.1.2 Page Selection

This menu allows you to select which pages will be printed in your document. The options are as follows;

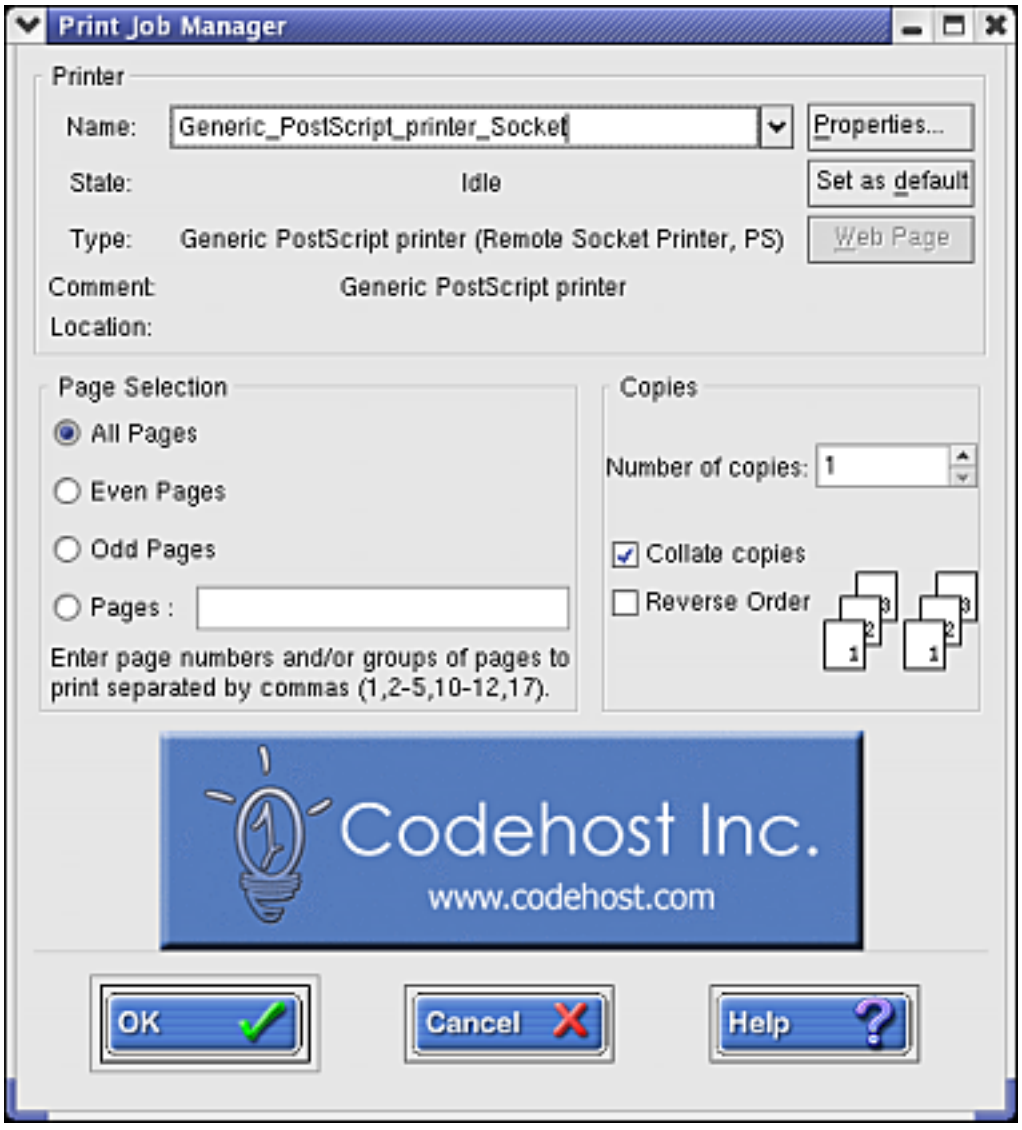
- All Pages, Even Pages, Odd Pages, or a page range separated by commas (1, 5, 7, 11) and hyphens (1-5, 6, 7-11).

6.1.3 Copies

This is the section that will determine the number of copies of your document that will be printed, collation, and the order your print job will come out in.

- **Number of copies:** This will determine the number of copies of the document you are printing. The maximum value for this field is 100.

Figure 27: PJM's initial menu



- **Collate Copies:** This option ensures that each copy of the job will be processed individually or electronically collated. This option is designed to take multiple sets of documents and ensure that they are printed for example; pages 1, 2, 3 - 1, 2, 3 vs. un-collated which would produce 1, 1, - 2, 2 - 3, 3. If Collate is not selected then unless you have a "collator" on your output device you will be required to collate the output by hand.
- **Reverse Order:** This will determine whether or not your documents come out 1, 2, 3, etc. or reversed 3, 2, 1, etc. This option ensures that the last page is printed first and that the first page is printed last.

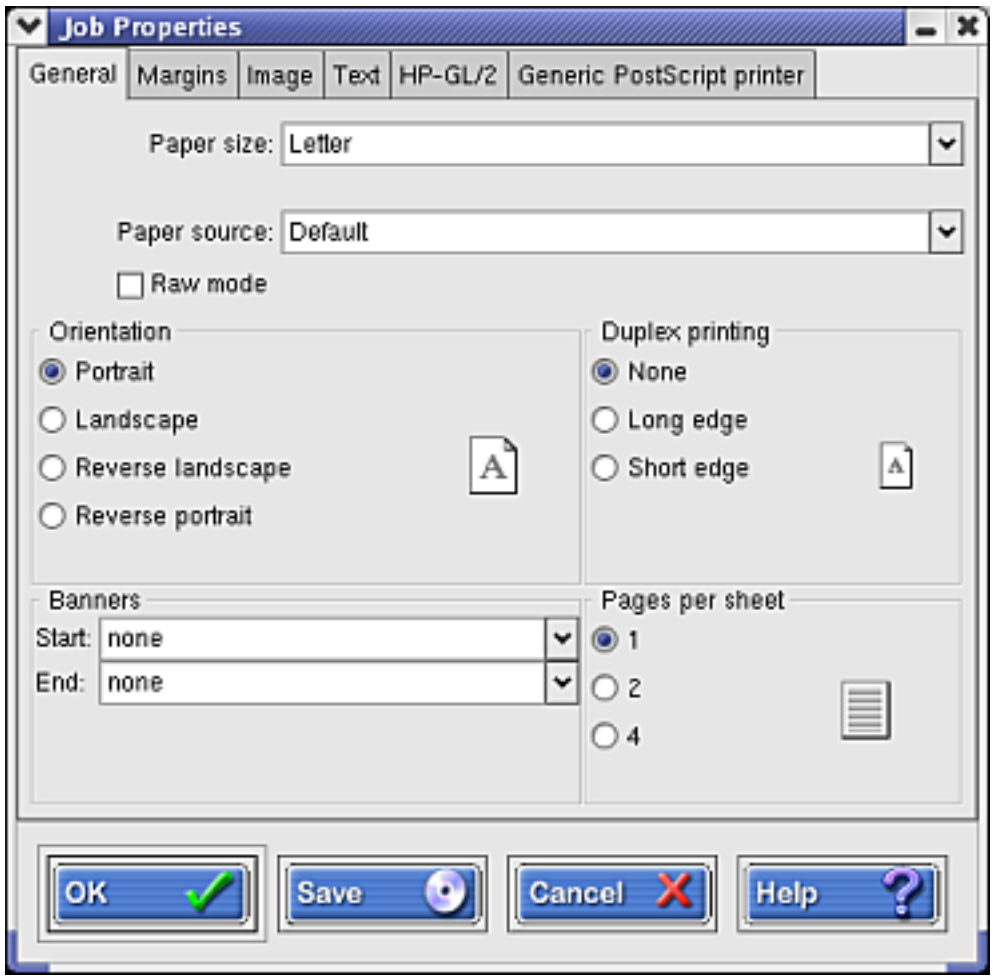
6.2 Tab Menus

Upon selecting the "Properties" button in the initial Print Job Manager screen you will be Print Job Manager's tab menus. These menu's will be displayed each time you print a document (with the exception of the BrightQ Test Page or if you have repressed the PJM UI via. argument while evoking the PJM or lpr).

6.2.1 General (Figure 28)

- **Paper Size:** This will determine the size of paper your output will print out on. The options are determined by the printer's device driver.
- **Paper Type:** This is the type of media that the printer can utilize. These options are determined by the printer's device driver.
- **Paper Source:** This option will only be displayed if the printer has more than one available input source for paper. These options are determined by the printer's device driver.
- **Raw Mode:** This option will allow you print out your documents in the RAW PDL that they have been created in. By checking this box your files will not pass through any BrightQ? PDL filters but instead be handed off "as is" to the appropriate IO filter.
- **Orientation:**
  - **Portrait:** This is the default paper orientation. This orientation is with the short paper edge on top
  - **Landscape:** This orientation is with the long edge of the paper on top
  - **Reverse landscape:** This is Landscape printing upside down
  - **Reverse portrait:** This is Portrait printing upside down
- **Duplex Printing:** This options availability is determined by the printers device driver
  - **None:** This determines the job should be printed single sided (simplex)
  - **Long edge:** This is duplex or two sided printing with the long edge (i.e. the 11in. edge on an 8.5x11 piece of paper) of the paper. This will print the top of the page on side one on the same edge of the paper as the top of the page on side two. In the case of Long Edge, the top of the page would be the short edge.
  - **Short edge:** This is duplex or two sided printing with the short edge (i.e. the 8.5in. edge on an 8.5x11 piece of paper) of the paper. This will print the top of the page on side one, and on the same edge of the paper as the top of the page on side two. In the case of short Edge, the top of the page would be the long edge.
- **Pages per sheet:** This option will automatically scale and place multiple pages per sheet depending on the number selected. The options are one (default), two, and four
- **Banners:**
  - **Start:** This will print a banner sheet prior to the print job
  - **End:** This will print a banner sheet after the job prints

Figure 28: PJM's General Menu



6.2.2 Margins (Figure 29)

The Margins tab menu is designed to only work with either text or image files. Note margin adjustments are relative to paper orientation.

- **Use custom margins:** When enabled this option will force the margins of Image or Text files to adhere to values input into the available fields.
  - **Top:** This will determine how far down from the top of the document the imageable area of the page begins.
  - **Bottom:** This will determine how far up from the bottom of the document the imageable area of the page begins.
  - **Left:** This will determine how far in from the left of the document the imageable area of the page begins
  - **Right:** This will determine how far in from the right of the document the imageable area of the page begins
- **Units:** You can select which units of measurement you will utilize for your margin adjustments. The options are cm (centimeters), in (inches), or points. Note the default unit of measurement is points and when enabled it will default to 13 points for all margins.

6.2.3 Image (Figure 30)

Please refer to Section 5.6.3 and Figure 30 for complete "Image Printing" details

6.2.4 Text (Figure 31)

Please refer to Section 5.6.5 and Figure 31 for complete "Text Printing" details

6.2.5 HP-GL/2 (Figure 32)

The HP-GL/2 tab menu is for printing HP-GL/2 files to your PostScript output device (HPGL to PS). The options selected here will only apply to HP-GL/2 files and will not effect any other data format. Please refer to Figure 32.

- **Use only black pen:** This will force the HP-GL/2 plot to be output in grayscale vs. color
- **Fit plot to page:** This will force the output to fit the page size selected via. the devices PPD Regardless of the size of the HP-GL/2 plot.
- **Pen Width:** This option will determine the emulation of the pen width of the plot as it is converted to PostScript. Pen width is measured in micrometers and by default is set to 1000.

6.2.6 Configured Printer (this will display as the PPD or output device name) (Figure 33)

This is the tab menu for your configured printer/s. This menu will display all relevant options for that devices printer driver. Any selection made here will override the selections for the device made in the Configuration tool (you must be "root" to override the options). The options available in this menu are defined by the print driver so they will vary depending on the output device.

Note; If the print queue you are printing to is setup as "Raw" the output device options will not be enabled additionally you will not have the ability to view and or select options within the Print Job Manager (PJM) which are centric to your printer, and all other options selected will be ingnored.

Figure 29: PJM's Margins Menu

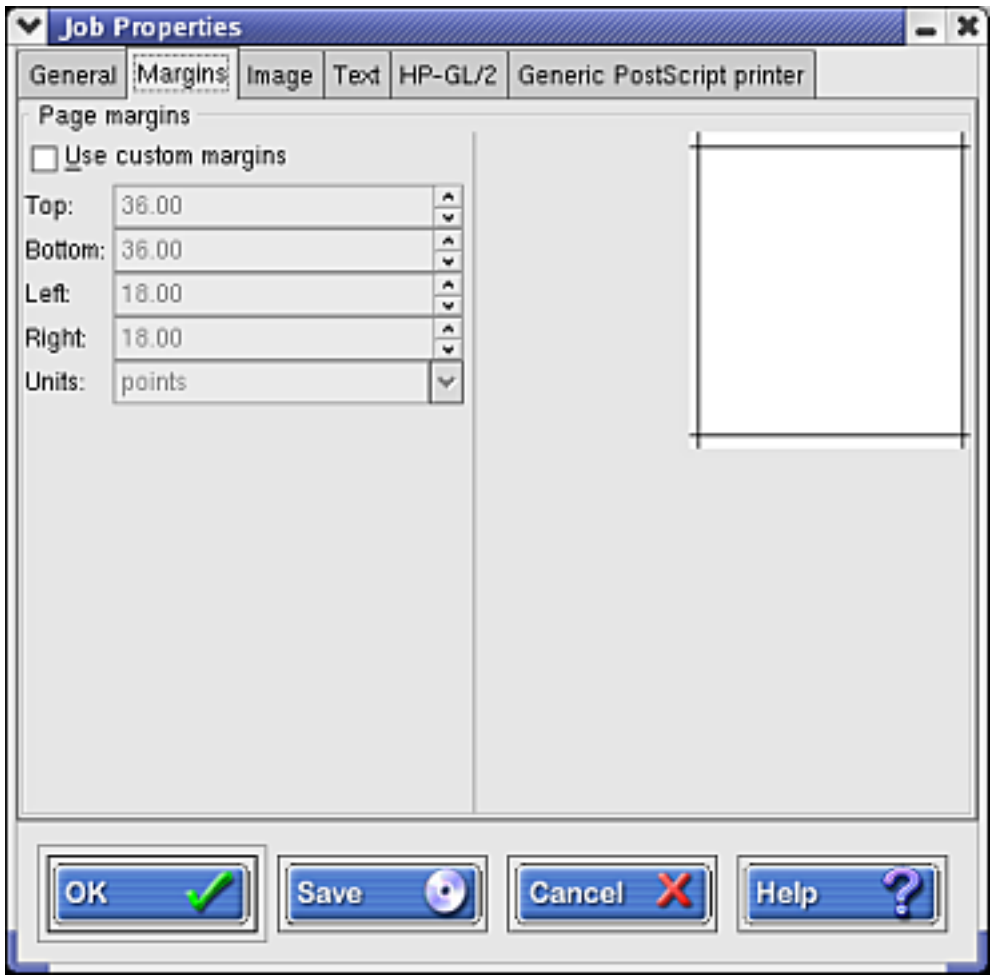


Figure 30: PJM's Image Menu

Figure 31: PJM's Text Menu

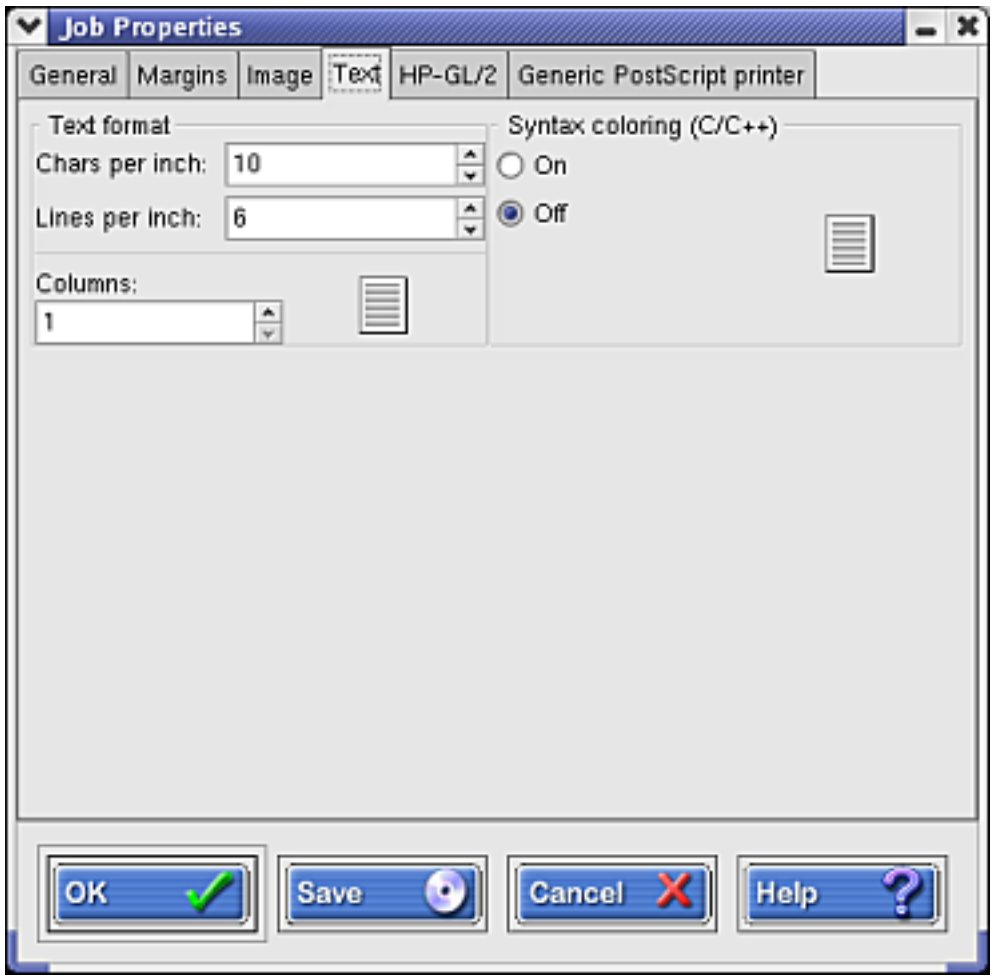


Figure 32: PJM's HP-GL/2 Menu

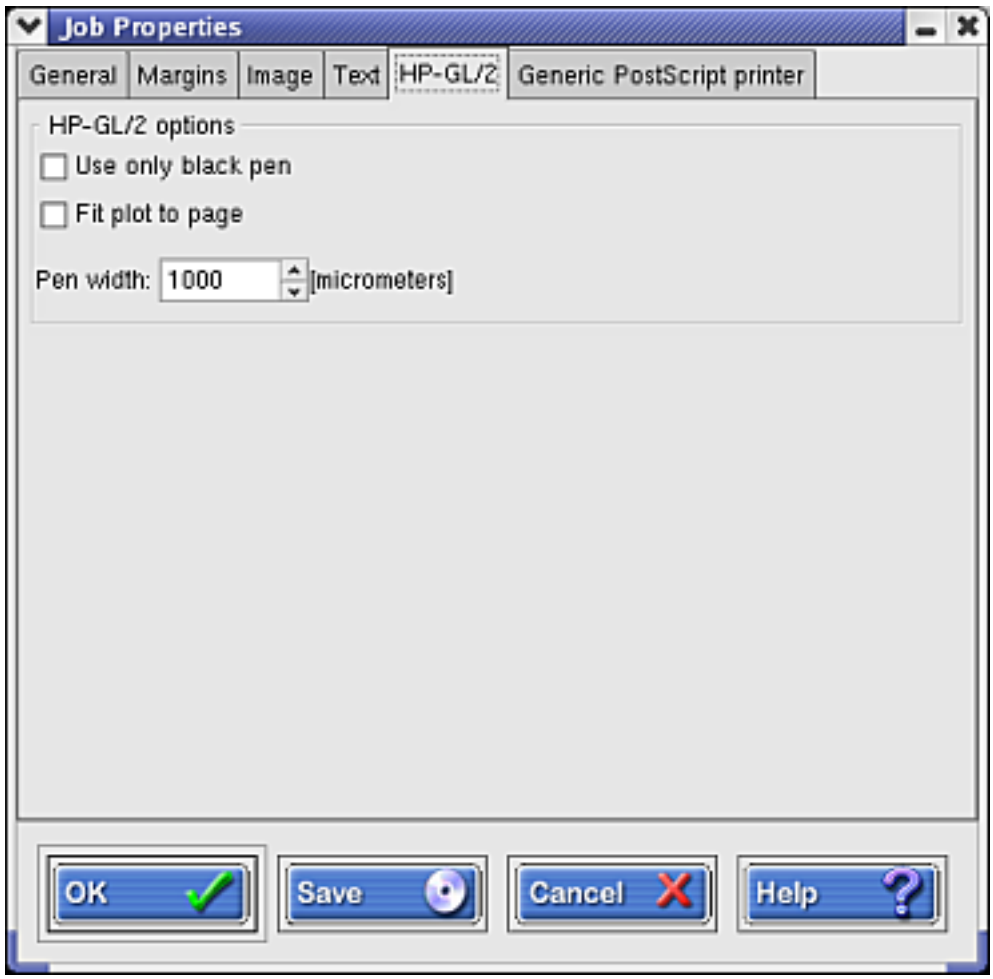
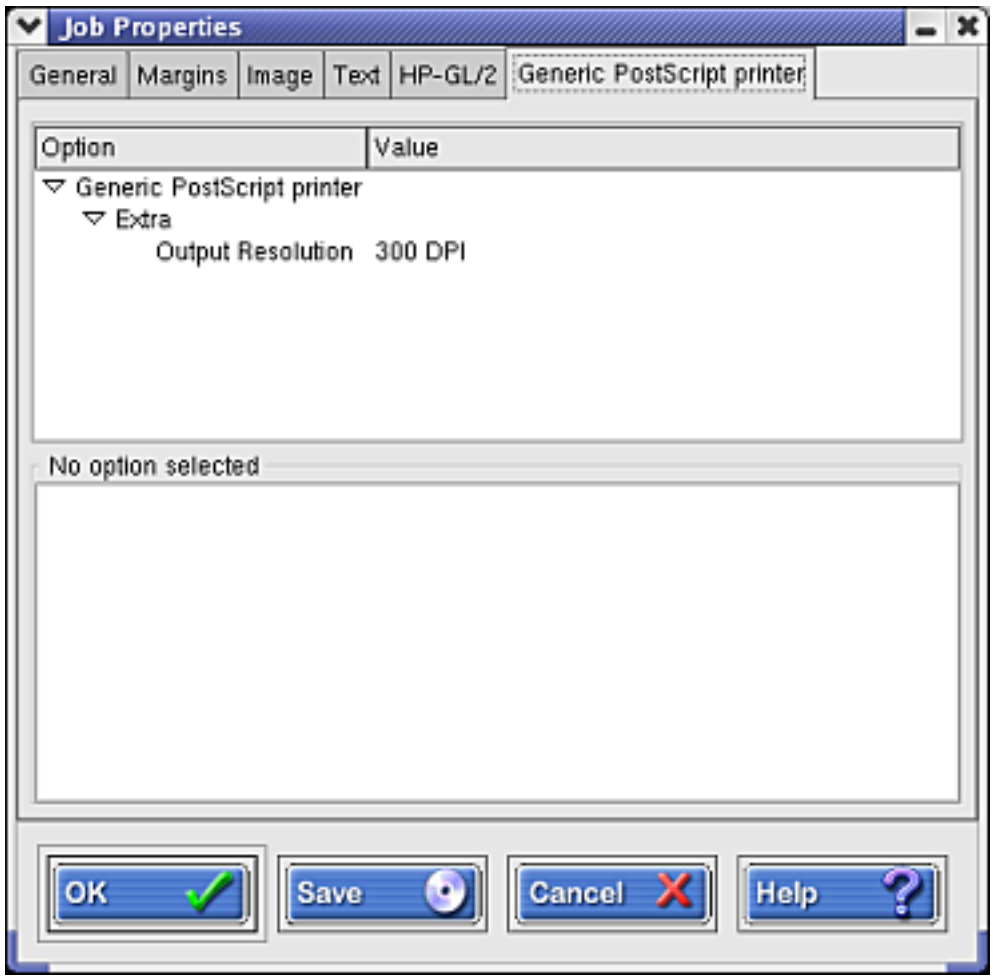


Figure 33: PJM's Printer-Specific Menu (example for Generic Postscript)



7 BrightQ Command Line Interface (CLI)

BrightQ can be utilized with X windows or can be utilized via. a CLI. The BrightQ CLI will allow you to conduct the following operations listed below.

- Install a printer
- Define the connection type (i.e. Parallel, USB, Serial, Remote LPD, IPP, Socket, SMB, and File)
- Determine the printers default properties
- Define the printers default properties
- Query a printers filter for the available commands and arguments

The following section will describe the steps required to install, query, and configure a printer with the CLI.

7.1 Installing a BrightQ printer with the CLI

This section makes the assumption that you have already successfully installed BrightQ on your system. This section is broken down by the connection type that you choose to connect to your printer.

7.1.1 The "codehost-config" command, arguments, and descriptions are listed below

Arguments	Description
–help | -h	Print this help message
–add | -c <queue> <ppd>	Configure a new printer
–remove | -r <queue>	Remove a queue from the system
–update | -u <queue>	Update the parameters for a queue
–config | -C <queue>	Show available options for the queue

The arguments below are optional

Arguments	Description
–list | -a	List all available queues
–login | -l <login>	Specifiy a user for login
–pass | -p <password>	Specifiy a password for the user
–description | -D <desc>	Add/update a description for the printer
–location | -L <location>	Add/update the location for the printer
–uri | -U <URI>	Set the connection URI for the printer
–options | -o <options>	Change the default PPD settings

7.1.2 Remote LPD CLI

As listed in the above tables the core command to setup a device is "codehost-config". In order to setup a print queue for a device utilizing a remote line printer daemon (LPD) utilize the following arguments.

Note; The local queue name, IP address of the remote machine that is hosting the LPD queue, device specific ppd (and path), and remote printer queue name are all variables.

At a terminal or command prompt type the following;

- codehost-config -c <localqueuename> /usr/local/brightq/ppd/C/<device specific ppd for this printer> -U lpd://<IP address of the remote machine hosting the LPD queue>/<remote print queue> See the sample below;
- codehost-config -c localprintqueue /usr/local/brightq/ppd/C/printer.ppd -U lpd://10.0.0.20/print

7.1.3 IPP CLI

As listed in the above tables the core command to setup a device is “codehost-config”. In order to setup a print queue for a device utilizing the Internet Printing Protocol (IPP) utilize the following arguments.

Note; The local queue name, device specific ppd (and path), user name, password, IP address of the remote machine that is hosting the IPP resource, the port number, and IPP resource are all variables.

At a terminal or command prompt type the following;

- codehost-config -c <localqueuename> /usr/local/brightq/ppd/C/<device specific ppd for this printer> -U ipp://<username:password address of the remote machine hosting the IPP queue:the port IPP is listening on/ipp resource/ipp resource>
- codehost-config -c localprintqueue /usr/local/brightq/ppd/C/printer.ppd -U ipp://user:password@10.0.0.20:631/ipp/printer

7.1.4 Socket CLI

As listed in the above tables the core command to setup a device is “codehost-config”. In order to setup a print queue for a device utilizing the Socket or port 9100 utilize the following arguments.

Note; The local queue name, device specific ppd (and path), user name, password, IP address of the remote machine that is hosting the IPP resource, the port number, and IPP resource are all variables.

At a terminal or command prompt type the following;

- codehost-config -c <localqueuename> /usr/local/brightq/ppd/C/<device specific ppd for this printer> -U socket://<IP address of the remote machine hosting the socket queue:the port socket is listening on>
- codehost-config -c localprintqueue /usr/local/brightq/ppd/C/printer.ppd -U socket://10.0.0.20:9100

7.1.5 SMB (Samba) CLI

As listed in the above tables the core command to setup a device is “codehost-config”. In order to setup a print queue for a device utilizing the SMB protocol (via. Samba) utilize the following arguments.

Note; The local queue name, device specific ppd (and path), user name, password, server, workgroup, and SMB resource are all variables.

At a terminal or command prompt type the following;

- codehost-config -c <localqueuename> /usr/local/brightq/ppd/C/<device specific ppd for this printer> -U smb://<user name on the printer hosting the SMB resource:password@SMB server/SMB workgroup/SMB resource>
- codehost-config -c localprintqueue /usr/local/brightq/ppd/C/printer.ppd -U smb://user:password@server/workgroup/resource

7.1.6 USB CLI

As listed in the above tables the core command to setup a device is “codehost-config”. In order to setup a print queue for a device utilizing an USB connection utilize the following arguments.

Note; The local queue name, device specific ppd (and path), and the path to the USB device, are all variables.

At a terminal or command prompt type the following;

- codehost-config -c <localqueuename> /usr/local/brightq/ppd/C/<device specific ppd for this printer> -U usb:/<path to usb device>
- codehost-config -c localprintqueue /usr/local/brightq/ppd/C/printer.ppd -U usb:/dev/usb/lp0

7.1.7 Print to File CLI

As listed in the above tables the core command to setup a device is "codehost-config". In order to setup a print queue to print to a file utilize the following arguments.

Note; The local queue name, device specific ppd (and path), and the path to the file, are all variables.

At a terminal or command prompt type the following;

- codehost-config -c <localqueuename> /usr/local/brightq/ppd/C/<device specific ppd for this printer> -U file:</path to file>
- codehost-config -c localprintqueue /usr/local/brightq/ppd/C/printer.ppd -U file:/tmp/file1.ps

7.1.8 Serial CLI

As listed in the above tables the core command to setup a device is "codehost-config". In order to setup a print queue to print to a printer utilizing a serial connection utilize the following arguments.

Note; The local queue name, device specific ppd (and path), path to the serial printer, baud rate, data bits, parity, and flow control are all variables.

At a terminal or command prompt type the following;

- codehost-config -c <localqueuename> /usr/local/brightq/ppd/C/<device specific ppd for this printer> -U serial:/<path to serial device>baud=9600+bits=8 +parity=noneflow=soft
- codehost-config -c localprintqueue /usr/local/brightq/ppd/C/printer.ppd -U serial:/dev/ttyS0?baud=9600+bits=8 +parity=noneflow=soft

7.1.9 Parallel CLI

As listed in the above tables the core command to setup a device is "codehost-config". In order to setup a print queue to print to a printer utilizing a parallel connection utilize the following arguments.

Note; The local queue name, device specific ppd (and path), and path to the parallel printer are all variables.

At a terminal or command prompt type the following;

- codehost-config -c <localqueuename> /usr/local/brightq/ppd/C/<device specific ppd for this printer> -U parallel:/<path to parallel device>
- codehost-config -c localprintqueue /usr/local/brightq/ppd/C/printer.ppd -U parallel:/dev/lp0

7.2 Removing a print queue

In order to remove a queue setup and configured by BrightQ you will use the core command "codehost-config". In order to remove a print queue named localprintqueue utilize the "-r" argument.

- codehost-config -r <localqueuename>
- codehost-config -r localprintqueue

7.3 Updating a print queue, queue description, and location

In order to update a queue setup and configured by BrightQ you will use the core command “codehost-config”. In order to update a print queue named localprintqueue utilize the “-u” argument. In the first example you are updating the localprintqueue from a remote lpd queue to a socket queue. In the second example you are updating the IP Address of localprintqueue’s remote lpd server.

- codehost-config -u localprintqueue -U socket://10.0.0.20:9100
- codehost-config -u localprintqueue -U lpd://10.0.0.21/print

In order to update a queue’s description utilize the -D argument. In the example below we are updating the localprintqueue’s description to colorprinter.

- codehost-config -u localprintqueue -D colorprinter

In order to update a queue’s location utilize the -L argument. In the example below we are updating the localprintqueue’s location to 2ndfloor.

- codehost-config -u localprintqueue -L 2ndfloor

7.4 Listing all available queues and their configuration info.

In order to list all of the queues setup and configured by BrightQ you will use the core command “codehost-config”. In order to list the queues and their respective setup info. utilize the “-a” argument. Codehost-config will print to the screen detailed information on the connection type, URI, Model, PPD being used, and the default PPD options for that queue. See the example below.

- codehost-config -a or –list

7.5 Setting login and password when creating a new queue with CUPS as the underlying print spooler/system

In order to avoid having to enter a login and password for CUPS each time you install a printer you can include those in the CLI. You will use the core command “codehost-config”. In order to include the login and password utilize the “-l for login and -p for password” argument’s. The -l and -p arguments can be used for all aspects of BrightQ and CUPS that require root login and password. Note; You need to be root to run codehost-config. See the example below.

- codehost-config -c localprintqueue /usr/local/brightq/ppd/C/printer.ppd -U lpd://10.0.0.55/print -l root -p password

7.6 Setting the the print queue’s URI

In order to configure the print queue’s URI you will use the core command “codehost-config”. In order to set the URI utilize the “-U” argument. The example below is updating the localprintqueue’s default URI to lpd://10.0.0.22/hold.

- codehost-config -u localprintqueue -U lpd://10.0.0.22/hold

7.7 Configuring a BrightQ printer with the CLI

Once you have installed your printer utilizing the CLI commands and arguments listed above, it will now be necessary to configure the installed printer. The primary elements that you will need to configure are the default ppd or filter options, and the installable options. Once you have configured these options they will become the default for that queue. Subsequently any job that goes through the configured queues will be filtered with the options that you have applied to that queue. These options will be statically linked to the queue and can only be overridden by specific CLI options applied when printing or by utilizing the update (-u) option.

7.7.1 Determining the default ppd or filter options for a specific printer queue

As listed in the above tables the core command to configure a device is “codehost-config”. In order to determine the default ppd or filter options utilize the following arguments.

- codehost-config -C localprintqueue

Once you have run the “codehost-config -C localprintqueue” command you will be presented with a list of default ppd or filter options. The list will display both the subsection of the ppd or filter and the options as well as default arguments. Next to each “default option” will be an asterix (*). An example of the displayed “Installable” ppd or filter options are listed below.

InstallableOptions :

Option ’Option2’ (Multi-Cassette Unit) :
True (Installed)
<*> False (Not Installed)
Option ’Option3’ (Exta Paper Deck) :
True (Installed)
<*> False (Not Installed)
Option ’Option4’ (Output Option) :
<*> None (Not Installed)
FinisherJ6 (Finisher-J6)
FinisherJ67 (Finisher-J6/J7)

7.7.2 Configuring the default ppd or filter options for a specific printer queue

Once you have run the codehost-config -C localprintqueue command and have be presented with a list of default ppd or filter options the next step will be to configure or define the defaults for that queue. As listed in the above tables the core command to configure or define a device’s defaults is “codehost-config”. In order to configure or define the default ppd or filter options you will utilize both the “-u” (update) and “-o” (option) arguments. An example of configuring a print queue named localprintqueue with an Output Option of a Finisher-J6 installed by default is listed below. Note; All options and arguments are variables and you will need to query the print queue via. codehost-config -C localqueuename in order to determine the available options.

- codehost-config -u localprintqueue -o Option4=FinisherJ6

In order to configure multiple options in the same CLI string simply place the “-o” (option) argument between each option. An example of configuring a print queue named localprintqueue with a default paper size A3 and an Output Option of a Finisher-J6 installed by default is listed below. Note; All options and arguments are variables and you will need to query the print queue via. codehost-config -C localqueuename in order to determine the available options.

- codehost-config -u localprintqueue -o Pagesize=A3 -o Option4=FinisherJ6

7.8 BrightQ Printing with the CLI

Once you have installed, and configured your printer utilizing the CLI commands and arguments listed above, it will now be necessary to understand how to print and dynamically access the ppd or filter options for that queue. In order to determine the default ppd or filter options utilize the “codehost-config -C localqueuename” command. Once you have run the “codehost-config -C localprintqueue” command you will be presented with a list of default ppd or filter options. The list will display both the subsection of the ppd or filter and the options as well as default arguments. Next to each “default option” will be an asterix (*). An example of the displayed “PageSize” ppd or filter options are listed below.

General :

Option 'PageSize' (Media Size) :
Letter (Letter)
Legal (Legal)
<*> A3 (A3)
A4 (A4)
A5 (A5)
B4 (B4)
B5 (B5)
Tabloid (11x17)

Once you have determined the option you want to utilize (in this case printing on Tabloid paper) use the syntax below to ensure that the data will be filtered appropriately. In order to utilize multiple options in the same CLI string simply place the "-o" (option) argument between each option. Note; lp, lpr, pjm, -P, -d, etc. are all variables and all with the exception of pjm (print job manager) will be determined by the underlying print spooler/system. The –no-gui command can be utilized to repress the pjm gui.

- lpr -P localprintqueue -o PageSize=Tabloid /path/to/file
- lp -dlocalprintqueue -o PageSize=Tabloid -o MediaType=Heavy /path/to/file
- pjm –no-gui -P localprintqueue -o PageSize=Tabloid /path/to/file

The following helpful commands can be utilized with BrightQ's CLI

- –no-gui: This will repress the Print Job Manager GUI from appearing when printing
- raw: This will ensure that the data being printed will not be filtered by the BrightQ filters

Listed below is a sample of printing a file with both the "–no-gui" and "raw" options

- lpr –no-gui -P localprintqueue -o raw /path/to/file
- lpr –no-gui -P localprintqueue -o PageSize=Tabloid /path/to/file
- lp –no-gui -dlocalprintqueue -o raw /path/to/file
- pjm –no-gui -P localprintqueue -o raw /path/to/file

7.9 Uninstalling BrightQ from the CLI

If you need to uninstall BrightQ from the CLI utilize the "codehost-uninstall brightq" command. If you need help with the command type "codehost-uninstall –help". In order to list all installed products and options utililize the "-l" argument as displayed below;

- codehost-uninstall -l

In order to conduct a complete uninstall of BrightQ and no select individual products or options utilize the following command

- codehost-uninstall brightq

If you would like to uninstall only a specific product or option utilize the "-l" argument to list the products and options, then select the appropriate products or options and utilize the following command
Note; you will be prompted for each product or option as to whether or not you want to uninstall

- codehost-uninstall brightq "product or option in quotes"

Table 4: BrightINSTALL and Configuration Tool

Function	Normal User	"root" User
Installing BrightQ	No *	Yes
Uninstalling BrightQ	No	Yes
Adding a printer	No	Yes
Configuring installable printer options	No	Yes
Configuring connection options	No	Yes
Naming or re-naming of the print queues	No	Yes
Check and rescue	No	Yes
Registration	No	Yes
Printing a test page or document via. the configuration tool	Yes	Yes
Setting a printer as default	No	Yes
Accessing the on-line help files	Yes	Yes
Deleting, Suspending, re-ordering, and Resuming print jobs	Yes	Yes
Changing non-installable printer options	Yes	Yes
Setting Factory Defaults on non-installable printer options	Yes	Yes

* You may execute this as a normal user and BrightINSTALL will ask for the "root" password

8 User vs "root" While Using BrightQ

BrightQ can be utilized by UNIX and Linux normal (mortal) users as well as "root" users. There are core differences between the user experience with BrightQ when logged in as a user vs. "root". The "root" user has access to all options within BrightInstall, the Configuration tool, and Print Job Manager. The "root" user can install/configure, add/remove printers, enable/disable queues, restart the printing system, select the installable options, etc. The user on the other hand cannot install/configure printers, restart the printing system, as well as access numerous other configuration options (they will be grayed out and unavailable).

Listed in Tables 4 and 5 below are the features that either the user or "root" user can access, modify, etc. These are listed by the Configuration Tool which encompasses the installer as well, and the Print Job Manager.

Table 5: Print Job Manager

Function	Normal User	"root" User
Selecting printer outside the default	Yes	Yes
Determining Page Selection	Yes	Yes
Determining number of copies, collation, and reverse order	Yes	Yes
Accessing printer properties	Yes	Yes
Selecting Paper size, type, source, orientation, duplexing	Yes	Yes
Printing in Raw mode	Yes	Yes
Selecting pages per sheet (n-up)	Yes	Yes
Defining Page Margins	Yes	Yes
Defining Image Brightness, Hue, Saturation, Gamma, size, and % of page	Yes	Yes
Defining text alignment, lines/characters per inch, columns, Syntax coloring	Yes	Yes
HPGL2 to PS conversion	Yes	Yes
Selecting non-installable printer options	Yes	Yes
Changing non-installable printer options	Yes	Yes
Setting Factory Defaults on non-installable printer options	Yes	Yes

9 Tables

9.1 Supported Distributions, Kernels, and OS versions

Linux Distribution	Minimum Supported Distribution Version	Minimum Kernel Version
Red Hat	6.2	2.2.14
SuSE	7.3	2.2.14
TurboLinux	7.0	2.2.14
Mandrake	8.0	2.2.14
Debian	2.2r6	2.2.14
Slackware	7	2.2.14
Caldera	OpenLinux64-bit 3.1, or OpenWS 3.1.1	2.2.14

Unix Operating System	Minimum Operating System Version	Processor/Architecture
Solaris (SunOS)	8 (5.8) UltraSPARC	UltraSPARC II or III
Solaris (SunOS)	8 (5.8) i86pc	x86-Intel and Intel-Compatible
HP-UX	11i	PA-RISC
Free BSD	4.6	x86-Intel and Intel-Compatible
AIX	5.1	Power PC
IRIX	6.5	MIPS
SCO	OpenUNIX 8 (release 5 v8.0.0)	x86-Intel and Intel-Compatible
SCO	OpenServer 5.0.6 (release 3.2 v5.0.6)	x86-Intel and Intel-Compatible

9.2 Acronyms

BrightQ Acronyms	
BrightINSTALL	This is the BrightQ installation wizard
Config. Tool	BrightQ Configuration Tool
PJM	Print Job Manager

Page Description Language Acronyms	
GDI	Graphical Device Interface
PCL	Printer Control Language
PDL	Page Description Language
PJL	Printer Job Language
PPD	Postscript Printer Description
PS	PostScript

System Acronyms	
CUPS	Common Unix Printing System
CLI	Command Line Interface
FQDN	Fully Qualified Domain Name
GUI	Graphical User Interface
IP	Internet Protocol
IPP	Internet Printing Protocol
LP	Line Printer (SVR4)
LPD	Line Printer Daemon
LPR	Line Printer Remote (BSD)
LPRng	Line Printer Remote New Generation
QA	Quality Assurance
SMB	Server Message Block
URL	Uniform Resource Locator
SVR4	System Five release four - AT&T UNIX
UI	User Interface

10 End User License Agreement

NOTICE TO USER: PLEASE READ THIS CONTRACT CAREFULLY. BY USING ALL OR ANY PORTION OF THE SOFTWARE YOU ACCEPT ALL THE TERMS AND CONDITIONS OF THIS AGREEMENT, INCLUDING, IN PARTICULAR THE LIMITATIONS ON: USE CONTAINED IN SECTION 2; TRANSFERABILITY IN SECTION 4; WARRANTY IN SECTION 6 AND 7; AND LIABILITY IN SECTION 8. YOU AGREE THAT THIS AGREEMENT IS ENFORCEABLE LIKE ANY WRITTEN NEGOTIATED AGREEMENT SIGNED BY YOU. IF YOU DO NOT AGREE, DO NOT USE THIS SOFTWARE. IF YOU ACQUIRED THE SOFTWARE ON TANGIBLE MEDIA (e.g. CD) WITHOUT AN OPPORTUNITY TO REVIEW THIS LICENSE AND YOU DO NOT ACCEPT THIS AGREEMENT DO NOT USE THIS SOFTWARE.

1. Definitions. "Software" means (a) all of the contents of the files, disk(s), CD-ROM(s) or other media with which this Agreement is provided, including but not limited to (i) Codehost or third party computer information or software; (ii) related explanatory written materials or files ("User Manual"); and (iii) fonts; and (b) upgrades, modified versions, updates, additions, and copies of the Software, if any, licensed to you by Codehost (collectively, "Updates"). "Use" or "Using" means to access, install, download, copy or otherwise benefit from using the functionality of the Software in accordance with the Documentation. "Permitted Number" means one (1) unless otherwise indicated under a valid license (e.g. volume license) granted by Codehost. "Computer" means an electronic device that accepts information in digital or similar form and manipulates it for a specific result based on a sequence of instructions. "Codehost" means Codehost, Inc., 8671 Hayden Place, Culver City, California 90232.

2. Software License. As long as you comply with the terms of this End User License Agreement (this "Agreement"), Codehost grants to you a non-exclusive license to Use the Software for the purposes described in the User Manual. Some third party materials included in the Software may be subject to other terms and conditions, including the General Public License, which are typically found in a "Read Me" file located near such materials.

2.1. General Use. You may install and Use a copy of the Software on your compatible computer.

2.2 Backup Copy. You may make one backup copy of the Software, provided your backup copy is not installed or used on any computer. You may not transfer the rights to a backup copy unless you transfer all rights in the Software as provided under Section 4.

3. Intellectual Property Rights. The Software and any copies that you are authorized by Codehost are the intellectual property of and are owned by Codehost, Inc. with the exception of any code that falls under the GNU General Public License (please refer to section 14 of the End User License Agreement). Aside from open-source code, the structure, organization and code of the Software are the valuable trade secrets and confidential information of Codehost, Inc. The Software is protected by copyright, including without limitation by United States Copyright Law, international treaty provisions and applicable laws in the country in which it is being used. You may not copy the Software, except as set forth in Section 2 ("Software License"). Any copies that you are permitted to make pursuant to this Agreement must contain the same copyright and other proprietary notices that appear on or in the Software. Unless specifically and expressly permitted by Codehost or a valid open-source license, you agree not to modify, adapt or translate the Software. You also agree not to reverse engineer, decompile, disassemble or otherwise attempt to discover the source code of the non-open source Software except to the extent you may be (1) expressly permitted to decompile under applicable law (please refer to section 14), or (2) it is essential to do so in order to achieve operability of the Software with another software program, and (3) you have first requested Codehost to provide the information necessary to achieve such operability and Codehost has not made such information available. Codehost has the right to impose reasonable conditions and to request a reasonable fee before providing such information. Any information supplied by Codehost or obtained by you, as permitted hereunder, may only be used by you for the purpose described herein and may not be disclosed to any third party or used to create any software which is substantially similar to the expression of the Software. Requests for information should be directed to the Codehost Customer Support Department. Trademarks shall be used in accordance with accepted trademark practice, including identification of trademarks owners' names. Trademarks can only be used to identify printed output produced by the Software and such use of any trademark does not give you any rights of ownership in that trademark. Except as expressly stated herein, this Agreement does not grant you any intellectual property rights in the Software and all rights not expressly granted herein are reserved by Codehost.

4. Transfer. You may not, rent, lease, sublicense or authorize all or any portion of the Software to be copied onto another user's computer except as may be expressly permitted herein. You may, however, transfer all your rights to Use the Software to another person or legal entity provided that: (a) you also transfer each this Agreement, the Software and all other software or hardware bundled or pre-installed with the Software, including all copies, Updates

and prior versions, and all copies of font software converted into other formats, to such person or entity; (b) you retain no copies, including backups and copies stored on a computer; and (c) the receiving party accepts the terms and conditions of this Agreement and any other terms and conditions upon which you legally purchased a license to the Software. Notwithstanding the foregoing, you may not transfer education, pre-release, or not for resale copies of the Software.

5. NO WARRANTY. The Software is being delivered to you "AS IS" and Codehost makes no warranty as to its use or performance. CODEHOST AND ITS SUPPLIERS DO NOT AND CANNOT WARRANT THE PERFORMANCE OR RESULTS YOU MAY OBTAIN BY USING THE SOFTWARE. EXCEPT FOR ANY WARRANTY, CONDITION, REPRESENTATION OR TERM TO THE EXTENT TO WHICH THE SAME CANNOT OR MAY NOT BE EXCLUDED OR LIMITED BY LAW APPLICABLE TO YOU IN YOUR JURISDICTION, CODEHOST AND ITS SUPPLIERS MAKE NO WARRANTIES CONDITIONS, REPRESENTATIONS, OR TERMS (EXPRESS OR IMPLIED WHETHER BY STATUTE, COMMON LAW, CUSTOM, USAGE OR OTHERWISE) AS TO ANY MATTER INCLUDING WITHOUT LIMITATION NON-INFRINGEMENT OF THIRD PARTY RIGHTS, MERCHANTABILITY, INTEGRATION, SATISFACTORY QUALITY, OR FITNESS FOR ANY PARTICULAR PURPOSE.

6. Pre-release Product Additional Terms. If the product you have received with this license is pre-commercial release or beta Software ("Pre-release Software"), then the following Section applies. To the extent that any provision in this Section is in conflict with any other term or condition in this Agreement, this Section shall supersede such other term(s) and condition(s) with respect to the Pre-release Software, but only to the extent necessary to resolve the conflict. You acknowledge that the Software is a pre-release version, does not represent final product from Codehost, and may contain bugs, errors and other problems that could cause system or other failures and data loss. Consequently, the Pre-release Software is provided to you "AS-IS", and Codehost disclaims any warranty or liability obligations to you of any kind. WHERE LEGALLY LIABILITY CANNOT BE EXCLUDED FOR PRE-RELEASE SOFTWARE, BUT IT MAY BE LIMITED, CODEHOST'S LIABILITY AND THAT OF ITS SUPPLIERS SHALL BE LIMITED TO THE SUM OF FIFTY DOLLARS (U.S. $50) IN TOTAL. You acknowledge that Codehost has not promised or guaranteed to you that Pre-release Software will be announced or made available to anyone in the future, that Codehost has no express or implied obligation to you to announce or introduce the Pre-release Software and that Codehost may not introduce a product similar to or compatible with the Pre-release Software. Accordingly, you acknowledge that any research or development that you perform regarding the Pre-release Software or any product associated with the Pre-release Software is done entirely at your own risk, if not part of the open-source portion of the Software shall be owned by Codehost. During the term of this Agreement, if requested by Codehost, you will provide feedback to Codehost regarding testing and use of the Pre-release Software, including error or bug reports. If you have been provided the Pre-release Software pursuant to a separate written agreement, your use of the Software is also governed by such agreement. You agree that you may not and certify that you will not sublicense, lease, loan, rent, or transfer the Pre-release Software. Upon receipt of a later unreleased version of the Pre-release Software or release by Codehost of a publicly released commercial version of the Software, whether as a stand-alone product or as part of a larger product, you agree to return or destroy all earlier Pre-release Software received from Codehost and to abide by the terms of the End User License Agreement for any such later versions of the Pre-release Software. Notwithstanding anything in this Section to the contrary, if you are located outside the United States of America, you agree that you will return or destroy all unreleased versions of the Pre-release Software within thirty (30) days of the completion of your testing of the Software when such date is earlier than the date for Codehost's first commercial shipment of the publicly released (commercial) Software.

8. LIMITATION OF LIABILITY. IN NO EVENT WILL CODEHOST OR ITS SUPPLIERS BE LIABLE TO YOU FOR ANY DAMAGES, CLAIMS OR COSTS WHATSOEVER OR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL DAMAGES, OR ANY LOST PROFITS OR LOST SAVINGS, EVEN IF A CODEHOST REPRESENTATIVE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH LOSS, DAMAGES, CLAIMS OR COSTS OR FOR ANY CLAIM BY ANY THIRD PARTY. THE FOREGOING LIMITATIONS AND EXCLUSIONS APPLY TO THE EXTENT PERMITTED BY APPLICABLE LAW IN YOUR JURISDICTION. CODEHOST'S AGGREGATE LIABILITY AND THAT OF ITS SUPPLIERS UNDER OR IN CONNECTION WITH THIS AGREEMENT SHALL BE LIMITED TO THE AMOUNT PAID FOR THE SOFTWARE, IF ANY. Nothing contained in this Agreement limits Codehost's liability to you in the event of death or personal injury resulting from Codehost's negligence or for the tort of deceit (fraud). Codehost is acting on behalf of its suppliers for the purpose of disclaiming, excluding and/or limiting obligations, warranties and liability as provided in this Agreement, but in no other respects and for no other purpose. For further information, please see the jurisdiction specific information at the end of this Agreement, if any, or contact Codehost's Customer Support Department.

9. Export Rules. You agree that the Software will not be shipped, transferred or exported into any country or used in any manner prohibited by the United States Export Administration Act or any other export laws, restrictions or regulations (collectively the "Export Laws"). In addition, if the Software is identified as export controlled items under the Export Laws, you represent and warrant that you are not a citizen, or otherwise located within, an embargoed nation (including without limitation Iran, Iraq, Syria, Sudan, Libya, Cuba, North Korea, and Serbia) and that you are not otherwise prohibited under the Export Laws from receiving the Software. All rights to Use the Software are granted on condition that such rights are forfeited if you fail to comply with the terms of this Agreement.

10. Governing Law. This Agreement will be governed by and construed in accordance with the substantive laws in force in the State of California. This Agreement will not be governed by the conflict of law rules of any jurisdiction or the United Nations Convention on Contracts for the International Sale of Goods, the application of which is expressly excluded.

11. General Provisions. If any part of this Agreement is found void and unenforceable, it will not affect the validity of the balance of the Agreement, which shall remain valid and enforceable according to its terms. This Agreement shall not prejudice the statutory rights of any party dealing as a consumer. This Agreement may only be modified by a writing signed by an authorized officer of Codehost. Updates may be licensed to you by Codehost with additional or different terms. This is the entire agreement between Codehost and you relating to the Software and it supersedes any prior representations, discussions, undertakings, communications or advertising relating to the Software.

12. Notice to U.S. Government End Users. The Software and Documentation are "Commercial Items," as that term is defined at 48 C.F.R. §2.101, consisting of "Commercial Computer Software" and "Commercial Computer Software Documentation," as such terms are used in 48 C.F.R. §12.212 or 48 C.F.R. §227.7202, as applicable. Consistent with 48 C.F.R. §12.212 or 48 C.F.R. §§227.7202-1 through 227.7202-4, as applicable, the Commercial Computer Software and Commercial Computer Software Documentation are being licensed to U.S. Government end users (a) only as Commercial Items and (b) with only those rights as are granted to all other end users pursuant to the terms and conditions herein. Unpublished-rights reserved under the copyright laws of the United States. Codehost, Inc., 8671 Hayden Place, Culver City, California 90232, USA. For U.S. Government End Users, Codehost agrees to comply with all applicable equal opportunity laws including, if appropriate, the provisions of Executive Order 11246, as amended, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 (38 USC 4212), and Section 503 of the Rehabilitation Act of 1973, as amended, and the regulations at 41 CFR Parts 60-1 through 60-60, 60-250, and 60-741. The affirmative action clause and regulations contained in the preceding sentence shall be incorporated by reference in this Agreement.

13. Compliance with Licenses. If you are a business or organization, you agree that upon request from Codehost or Codehost’s authorized representative, you will within thirty (30) days fully document and certify that use of any and all Software at the time of the request is in conformity with your valid licenses from Codehost.

14. Exceptions. Any portion of the Software or any software distributed alongside, attached to or part of the Software that is governed by the GNU, General Public License or any license other than this Agreement, shall abide by the provisions of such relevant licenses and agreements. All such known licenses and agreements are typically provided in the Read Me file.

If you have any questions regarding this Agreement or if you wish to request any information from Codehost please use the address and contact information included with this product to contact the Codehost office serving your jurisdiction.

Codehost and BrightQ are either registered trademarks or filed trademarks of Codehost, Inc. in the United States and/or other countries..