

CUPS PRINTING BRIEF

Printers

Introduction

This document describes how to print to Honeywell Printers from a Linux/UNIX environment using the Common UNIX Printing System (CUPS). In this document you will find information on how to download and install drivers for Honeywell printers, what solution to use depending on use case, and what setups or environments you can expect to work.

Platform & Printer Support

The CUPS driver has been validated with the following Honeywell printers only.

- RP2f, RP4f
- PC23d, PC43d, PC43t
- PC41E-D, PC42E-D
- PC42E-T, PC300T, PC310T, OT810, OT820
- PC45d, PC45t
- PD41, PD42, PD43
- PD45S, PD45
- PM43, PM43c, PM23c
- PM45, PM45c, PM65
- PM4i, PF4i, PF2i, PX4i, PX6i
- PB21, PB22, PB31, PB32, PB50, PB51, PW50
- PX940V, PX940A, PX240S, PX240, PX4ie, PX6ie, PX45, PX65

Other fixed printers and mobile printers are not listed in the driver options. However, any Honeywell printer using Direct Protocol may use one of the available printers in the list.

CUPS Introduction

CUPS is a Linux/UNIX printing system that provides many advantages:

1. Act as a print server/spooler to send print jobs and manage print queues.
2. Enable third party drivers to convert print files to a language that the printer can understand.

There are two methods of using CUPS for printing to a Honeywell printer. The first is to print a standard document; the second is to send a file or a data stream containing Honeywell printer commands directly to the printer in pass-through mode.

Direct Protocol Raster Driver

When printing from a Linux/UNIX application, the standard output file format is either PostScript (PS) or PDF. This output file is sent to CUPS, which uses the Honeywell Windows Print Driver to convert the PDF or PS file into a Direct Protocol graphics file which is then sent to the printer.

Generic Pass-through Driver

The generic text driver tells the system that the print file should be sent as-is without performing any conversion. This is useful for systems that already generate Fingerprint or IPL commands for label printing.

Customers following this method use the CUPS print server to manage queues, reprint print jobs and to ensure no jobs are lost.

Language Support

The Honeywell CUPS driver supports the Direct Protocol printer command language. The driver will force the printer to Direct Protocol if the printer is in Fingerprint.

For IPL and DPL print jobs, use the generic driver approach described earlier.

Supported Connectivity

All connectivity options supported by respective printers should work when printing via CUPS to Honeywell printers. The following interfaces have been tested:

- LPR [Queue: lp]
- Telnet [Port:9100]
- Serial
- USB
- Parallel port (IEEE1284)

Operating Systems

The following operating systems have been validated to work with the CUPS driver:

- Ubuntu 20.4.1 [64 bit]
- Red Hat Enterprise Linux (RHEL) 8.3 [64 bit]
- CentOS 8.3.2011 [64 bit]
- openSUSE 15.3 [64 bit]

Other Linux/UNIX operating systems should work but have not been validated.

Validated Unix/Linux Applications

CUPS uses PS or PDF format as the required input allowing most applications to work with the InterDriver. The following applications have been tested with the Honeywell CUPS driver:

- GIMP (image editor)
- Glabel (label design tool)
- Mozilla (web browser)
- OpenOffice (Word™-like editor)
- LPR from command line (any document)
- Dictionary (dictionary application)
- Gedit (text editor)

System Requirements

There are a number of required software packages that must be available on the host system before installing and using the Honeywell CUPS driver. These packages contain tools to compile/build the driver and convert PS or PDF files into bitmap images. The bitmap image is used by the driver before converting the print data to Direct Protocol commands.

The packages listed below are required, but other standard tools may be needed by the system. All dependencies must be resolved or the driver will not compile and function properly.

Package	Utilities	Description
cups	cupsd cupsfilter cups	CUPS print server tools
automake	automake	Installation tool
autoconf	autoconf	Installation tool
glibc-devel	glibc headers	glibc headers
gcc	Gcc	GNU tools
ghostscript	ghostscript ps2pdf	PS to PDF conversion
poppler-utils	pdftoppm	PDF to PPM conversion
netpbm/netpbm-progs	pgmtopbm pnmtopnm pnmtoplainpnm	PNM Image conversion

Ubuntu Installation

This example shows how to install the required software packages in Ubuntu:

```
sudo apt-get install cups
sudo apt-get install automake
sudo apt-get install autoconf
sudo apt-get install gcc
sudo apt-get install ghostscript
sudo apt-get install poppler-utils
sudo apt-get install netpbm
```

RHEL and CentOS Installation

This example shows how to install the required software packages in RHEL:

```
sudo yum install cups
sudo yum install automake
sudo yum install autoconf
sudo yum install glibc-devel
sudo yum install gcc
sudo yum install ghostscript
sudo yum install poppler-utils
sudo yum install netpbm
sudo yum install netpbm-progs
```

openSUSE

All required software packages are included in the basic distribution of openSUSE.

Driver Download and Installation

Find the Intermec Direct Protocol driver package from the download section for your printer from <https://honeywell.com/PSSoftware-downloads>. Download the latest driver package to a Linux/UNIX machine and follow the steps below:

1. Un-pack the driver package in directory of choice:
`tar xvf cupsdriver-<x.y-zz>.tar.gz`
2. Enter the new extracted directory:
`cd cupsdriver-<x.y-zz>`
3. From there only one command is needed:
`./build.sh`

If any of the required software packages are missing, there will be warnings that dependencies have failed. If the command is executed successfully, the driver is automatically installed to the system and is ready to use.

Driver Un-Installation

To uninstall the driver (conversion filter and printer description files), follow the steps below:

1. Enter directory where driver package was extracted:
`cd cupsdriver-<x.y-zz>`
2. Execute the following command:
`sudo make uninstall`

Add Network Printer

Adding a network printer is a manual process and the host address/port of the printer must be known and available.

1. Open printer management tool and choose **add printer**.
2. Key in the printer IP address.
3. Select the printer icon and select manufacturer Honeywell.
4. Select the printer model/driver.
5. Print a test page to validate.

Add USB Printer

Some operating systems automatically detect and install USB printers without user interaction. When a printer is not detected or automatically installed the printer must be added manually.

1. Open printer management tool and choose **add printer**.
2. Select USB printer.
3. Print a test page to validate.

Add Serial Printer

Adding a serial port printer is a manual process and the serial port settings on the printer must be known.

1. Open the web browser and navigate to localhost:631.
2. Under Administration, choose Add Printer.
3. Select the appropriate port.
4. Enter serial port settings Baud rate.
5. Data bits Parity.
6. Flow Control.
7. Name the printer and Select manufacturer Honeywell.
8. Select printer model/driver.
9. Print a test page to validate.

Hardware handshake is recommended for serial port printing to ensure no data loss in the binary transfer of the print file.

Driver Configuration

Once the printer is added, it is ready to use for printing from any application. To enable remote configuration of the printer, there are a number of settings added to the CUPS driver as shown below:

Configuration	Details
Paper Type	Ribbon (TTR) No Ribbon (DT)
Media Type	Media with Gaps, Continuous Fix Len, Continuous Var Len, Black Mark
Print Speed	4-14 ips
Media Sensitivity	Very low-Very high (print quality setting)
Darkness	5-95 [setps of 5] (print quality setting)
Print Resolution	201, 300, 406, 600 dpi
Start Adjust	Retract label before print
Stop Adjust	Align label after print
Color Mode	Black/White Gray
Dithering	Threshold for color setting (0-1)

A common setting in all printers is the size of the actual media/paper used for printing. There are predefined media size formats to choose from. If the predefined formats do not match the media used, then a custom setting can be used.

Another standard setting supported in the driver is to print multiple copies for one print job. Configuring the printer settings in the driver will not apply the settings to the printer until a print job is sent.

Note that not all applications enable all the settings in the printing dialog box. Some are very basic and allow only media size changes. Most test page features ignore settings, so test pages may not look as expected.

Print Quality

Host applications vary in their configuration capabilities. Here are some guidelines for creating the highest-quality label:

1. For printing graphics and images, greyscale may produce the highest quality label.
2. For printing bar codes where readability is most important, choose black and white.

Limitations/Considerations

A few considerations to remember when using CUPS to print to Honeywell Printers.

- For PS or PDF output, Direct Protocol is the language to use.
- Not all printers have been tested but all should work as long as they use Direct Protocol.
- Only the operating systems in this document have been validated.
- The print quality is an important parameter that needs to be tweaked based on application and actual image printed on the label.
- Post-printing features like the cutter are not supported by the driver.
- RFID printing is not supported.
- All printers will display all configuration settings, even if the printer does not support the setting itself.
- Features like clean printhead and self-test page in the driver dialog windows may be shown as active but have no function.
- Printing a test page when using a generic driver will not work and will send garbage to printer and require a reboot.
- CentOS 6.3 and possibly other OS versions use a different path for the driver files; /usr/share/cups/model/.

Known Issues

The option to choose a printhead resolution in the driver is currently not scaling the print buffer to a different size.

References

To learn more about CUPS and how it works, see the official CUPS web site: www.cups.org.

Summary

CUPS is a standard tool for Linux/ UNIX printing and the Honeywell CUPS driver implementation is based on standard Direct Protocol commands. Any combination of Linux environment and Direct Protocol printer should work. Installation and configuration instructions may vary between different operating systems and may require experimentation to arrive at the optimal settings for a given application.

The CUPS driver implementation for Honeywell printers is based on open source code allowing the customer or partner to adjust the driver to optimize printing for their system.

Patents

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