HID® FARGO® HDP®5000 and HDP5600
CUPS Driver
User Guide

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May 2023

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Contacts

For technical support, please visit: **https://support.hidglobal.com**.

What's new

Date	Description	Revision
May 2023	Added support for HDP5000.	A.1

A complete list of revisions is available in **Revision history**.

Section **01**
Introduction

1.1 Supported CUPS driver versions

Common Unix Printing System (CUPS) is a modular printing system for Unix-like computer operating systems. The CUPS driver allows a computer to act as a print server. A computer running the CUPS driver as a host can accept print jobs from client computers, process these jobs, and send them to the appropriate printer.

The minimum required CUPS version for this driver is 1.7.2. If a previous version of the CUPS interface is being used, contact HID Global Technical Support at **https://support.hidglobal.com**.

The operating systems able to use CUPS include 64-bit Linux versions:

- NeoKylin 7
- NeoKylin 10
- Ubuntu 14.04
- Ubuntu 16.04
- Ubuntu 18.04
- Ubuntu 20.04
- Unity OS

1.2 Firmware requirements

Printer firmware 5.8.12 is required to use the CUPS driver with an HDP5000 card printer connected by USB. Printer firmware 6.9.0 is required to use the CUPS driver with an HDP5600 card printer connected by USB. Follow the user guide for the printer to verify the firmware version.

1.2.1 Linux with USB connection

For each Linux host machine, only one USB connection to a printer is supported.

> **Note:** The following is a known issue concerning USB connection stability.
> **Description:** Some Linux kernel versions have a bug which makes the USB connection to FARGO printers unstable.
> **Workaround:** Upgrade the Linux kernel.

Section **02**

Installation and maintenance

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2.1 CUPS driver download

1. Open a web browser and go to: **https://www.hidglobal.com/drivers**.
2. From the **All Brands** list, select **FARGO**.
3. From the **All OSs** list, select **Linux** or **Linux x64**.
4. From the list of driver files, select either the **HID FARGO HDP5000 Linux driver** or the **HID FARGO HDP5600 Linux driver**. Click **DOWNLOAD**.
5. Read the End User License Agreement and click **I Accept** to download the driver.

2.2 CUPS driver manual installation

> **Important: The HDP5000 or the HDP5600 card printer must not be connected to the computer using a USB cable before the driver is installed.**

1. Copy the downloaded driver archive file into the root directory of the system.

2. With root privileges, run the following command:

```
sudo tar xf /HDP5000-x64.tar.gz -C /
```

or

```
sudo tar xf /HDP5600-x64.tar.gz -C /
```

2.3 CUPS driver automatic installation

> **Important: The HDP5000 or HDP5600 card printer must not be connected to the computer using a USB cable before the driver is installed.**

1. Be sure that the "driver_install.sh" file is stored in the same directory as the downloaded driver file.
2. Add execution privileges to the script file using the following command:

```
chmod +x install_HDP5000_Driver.sh
or
chmod +x install_HDP5600_Driver.sh
```

3. Execute the following script file:

```
sudo ./install_HDP5000_Driver.sh
```

or

```
sudo ./install_HDP5600_Driver.sh
```

The installation begins. As the installation progresses, messages are displayed on the screen. When the installation has completed, you are prompted to reboot your system.

```
                ·Ubuntu14:~/projects$ sudo ./install_HDP5600_Driver.sh
[sudo] password for      :

Begin Installation of HDP5600 Card Printer Driver on GNU/Linux-x86_64
    Found Installation Archive:  HDP5600-x64.tar.gz
    Begin File Extraction...
usr/
usr/share/
usr/share/cups/
usr/share/cups/model/
usr/share/cups/model/HDP5600.ppd
usr/share/cups/profiles/
usr/share/cups/profiles/HDP5600CLR.icm
usr/share/cups/profiles/HDP5600CLR_2.icm
usr/share/fargo/
usr/share/fargo/HDP5600/
usr/share/fargo/HDP5600/HDP5600.xml
usr/lib/
usr/lib/cups/
usr/lib/cups/filter/
usr/lib/cups/filter/rastertofargo-3.2.0
etc/
etc/udev/
etc/udev/rules.d/
etc/udev/rules.d/92-fargo.rules
    File Extraction Complete.
    Update Device Rules...
    Device Rules Updated.
Installation of HDP5600 Card Printer Driver is complete.
```

2.4 Upgrade the CUPS driver from an older version

Follow the installation instructions in **2.1 CUPS driver download** to download the driver file. Then, see **2.2 CUPS driver manual installation** or **2.3 CUPS driver automatic installation** to overwrite the existing driver with the new driver.

> **Note:** Depending upon the desired configuration options, you may have to delete and reinstall the printer using the new PPD file. Additional modification of the default print job configuration options may be necessary.

2.5 Remove a driver

There is not an uninstall process to remove a driver. Therefore, the driver files must be deleted manually. The following table shows the locations and names of the files that are installed on the system for the driver.

To remove a driver, locate these files and delete them from your system.

File	Description
/usr/share/cups/model/HDP5000.ppd or /usr/share/cups/model/HDP5600.ppd	PPD file for the HDP5000 or HDP5600 card printer.
/usr/libexec/cups/filter/rastertofargo-x.y.z	Raster filter driver for the FARGO HDP card printers.
/etc/udev/rules.d/92-FARGO.rules	Linux device management rules file.
/usr/share/cups/profiles/HDP5000CLR.icm or /usr/share/cups/profiles/HDP5600CLR.icm	Color profile file for the HDP5000 or HDP5600 card printer.
/usr/share/cups/profiles/HDP5000CLR_L.icm or /usr/share/cups/profiles/HDP5600CLR_L.icm	Color profile file for the HDP5000 or HDP5600 card printer.
/usr/share/fargo/HDP5000/HDP5000.xml or /usr/share/fargo/HDP5600/HDP5600.xml	Printer configuration file for the HDP5000 or HDP5600 card printer.

2.6 Upgrade the printer firmware

1. Download the new firmware zip package from **https://www.hidglobal.com/drivers**.
2. Unzip the archive to extract the *.frm file.
3. From a terminal window, enter one of the following (modifying the path as needed):

```
lpr -P HDP5000 FIRMWAREFILE NAME.frm
or
lpr -P HDP5600 FIRMWAREFILE NAME.frm
```

```
lp -d HDP5000 FIRMWAREFILE NAME.frm
or
lp -d HDP5600 FIRMWAREFILE NAMR.frm
```

4. Wait for the printer to complete the upgrade procedure.

> **Note:** The .frm file is not located in the driver package

2.7 Determine the printer IP address

Follow the instructions in the *HDP5000, HDP5600, and HDPii Plus User Guide* (L000950) to obtain the IP address of the printer.

2.8 Add a printer connection using a USB cable

1. Connect the USB cable to the printer.
2. Power on the printer.
3. Open a web browser and go to **http://localhost:631/**.
4. Open the CUPS home page and click the **Administration** tab.
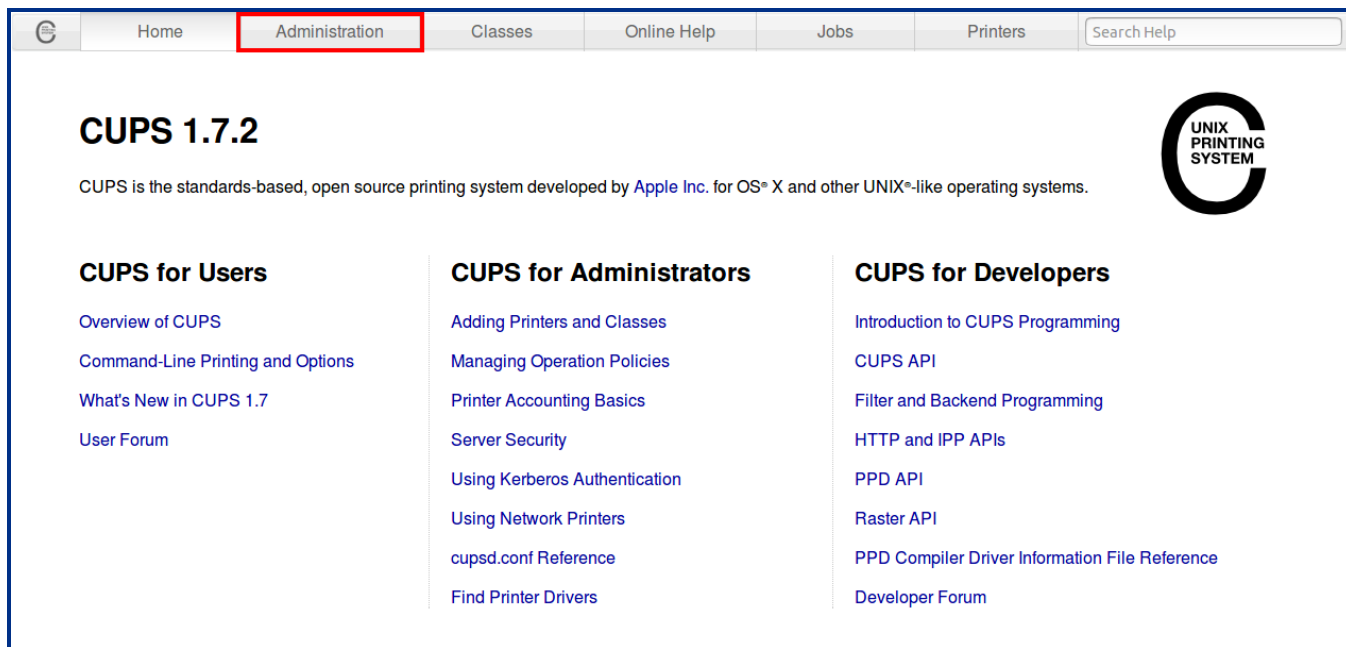
5. Click **Add Printer**.
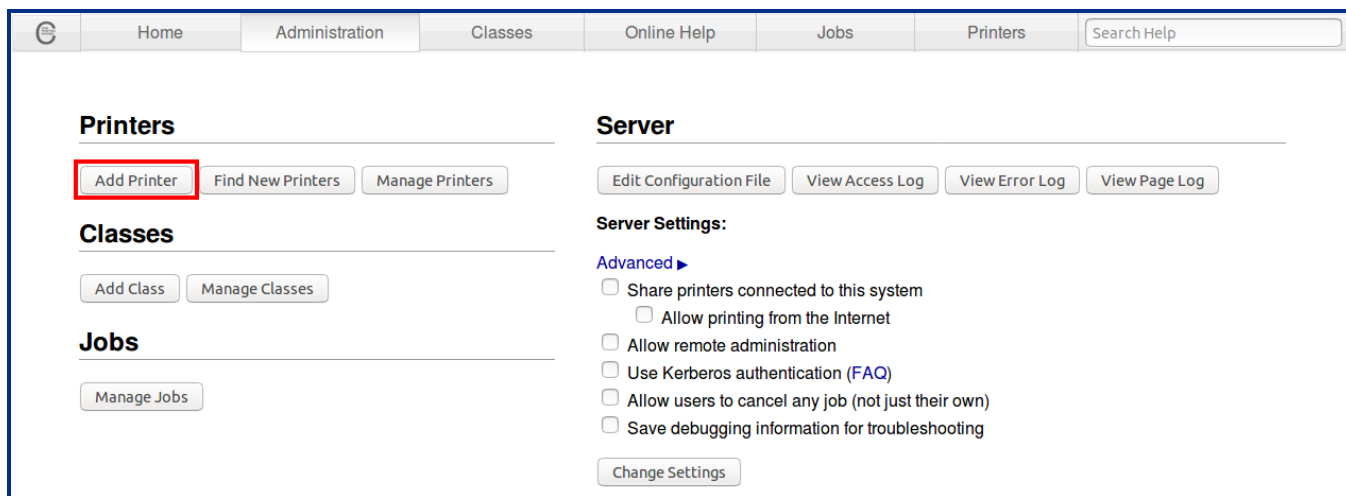
6. If the CUPS **Authentication Required** message is displayed when adding a printer, enter your login **username** and **password** to continue. See your CUPS documentation for more information about permissions and authentication procedures.

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7. Select the USB-connected printer or the http printer.

8. If you selected
   - A USB printer, make sure the USB connections between the printer and the Linux workstation are firm and that the printer is powered on.
   - An http printer, enter the IP address for the printer followed by the port number 9100 using the format
     `socket://aaa.bbb.ccc.ddd:9100`
     where `aaa.bbb.ccc.ddd` is the IP address of the printer.
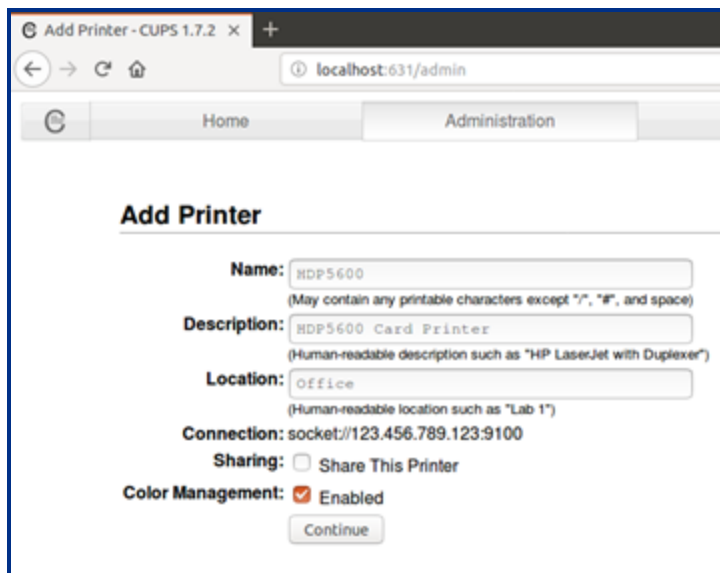
9. Depending upon the requirements, the printer data can be modified in the **Add Printer** window:
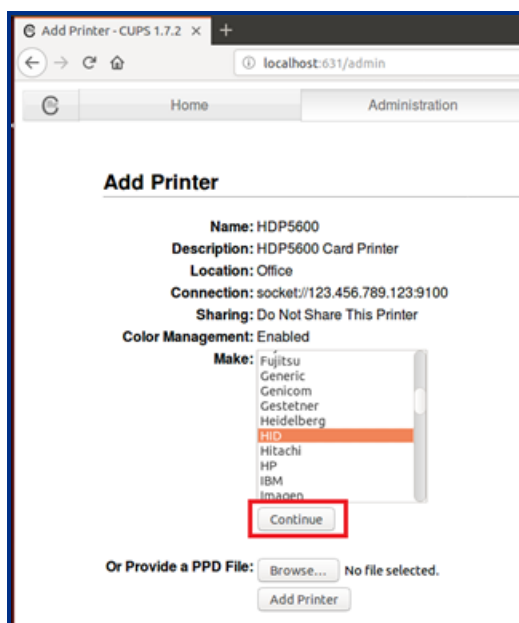
10. In the **Make** list, select **HID** and click **Continue**.

11. In the **Model** list, select the **HDP5600** model and click **Add Printer**.

Section **03**
Managing the printer

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3.1 CUPS web interface

The CUPS web-based interface is disabled by default on some operating systems. If you receive a message that it is disabled, enter the following at the command line:

```
cupsctl WebInterface=yes
```

To access the CUPS web-based interface for printer management enter the following URL:

```
http://localhost:631/printers
```

Note: For a remote server, substitute the appropriate host name string in place of localhost.

3.2 Printers tab

Configuration of the HDP5600 printer is completed through the printer queue. The printer queue is accessed from the CUPS home page.

> **Note:** Information about the CUPS web interface can be found by selecting the **Home** tab and clicking the associated link.

1. Click the **Printers** tab to access the printer queue.
2. Select **HDP5600** from the **Queue Name** list.
   The printer queue opens to display all printer default information.
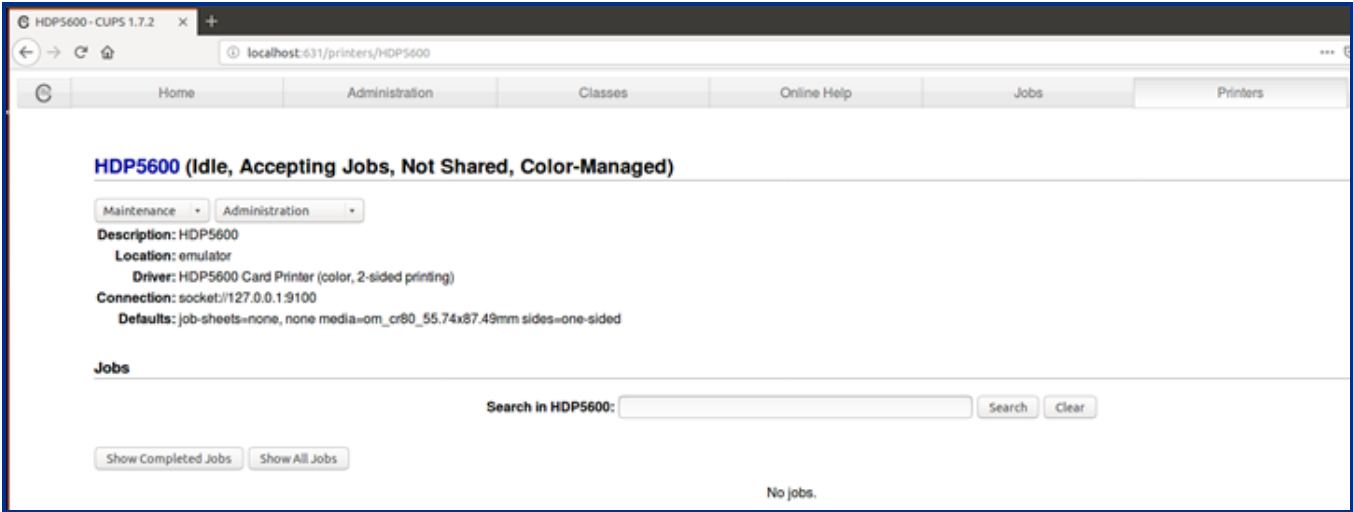
Printer options	Options
Maintenance	• Print Test Page • Pause Printer • Reject Jobs • Move All Jobs • Cancel All Jobs
Administration	• Modify Printer • Delete Printer • Set Default Options • Set As Server Default • Set Allowed Users

3.3 Option configuration

Print job option configuration is completed by using the **Set Default Options** window of the CUPS web interface. This window is accessed from the **Print Queue Administration** window.

On the **Administration** tab, select **Set Default Options**.
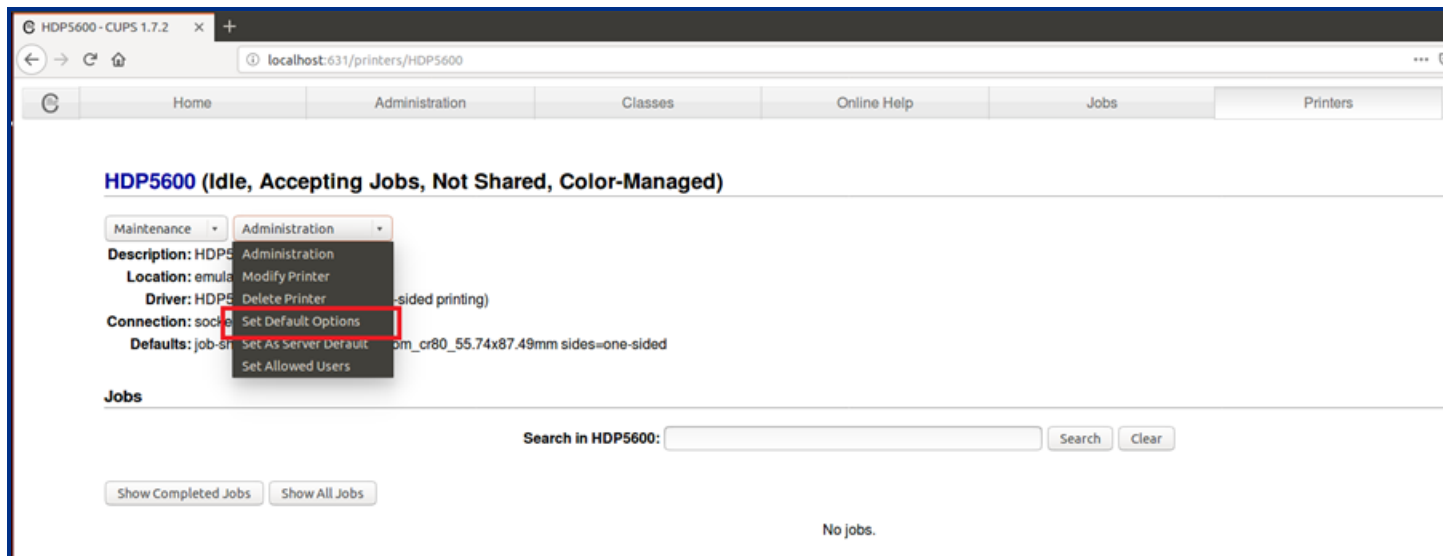
The options on this window vary depending upon the selected printer.
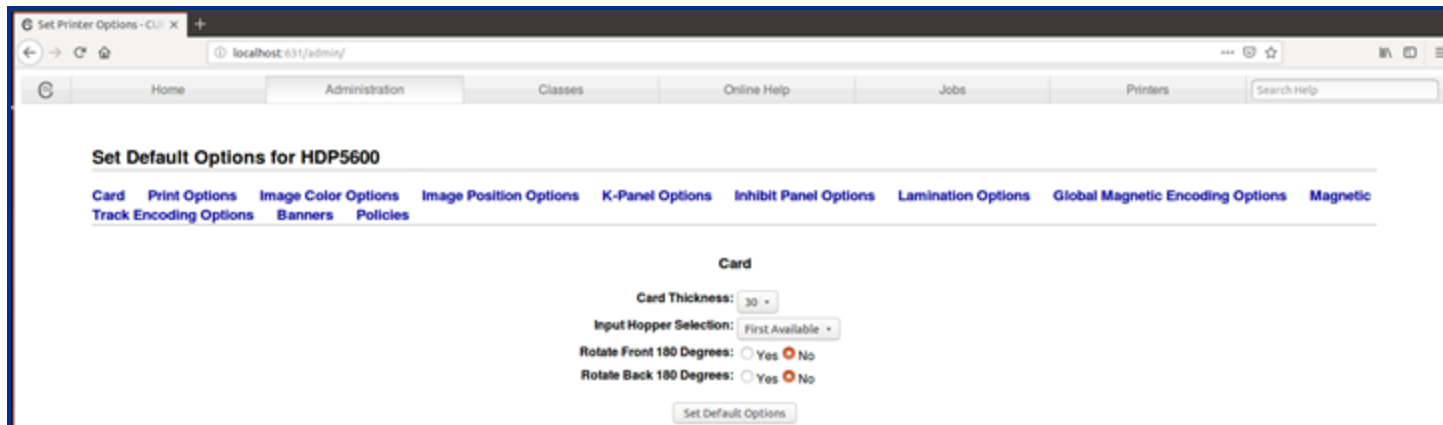
3.4 Setting default options

The following is an example of the **Set Default Options** window. The selections you make to this list become the default options for your printer. To set the default options:

1. Set each option to your desired default.
2. Click **Set Default Options**. A message stating that the default settings have been successfully changed is displayed.

Note: After a brief period, this window automatically transfers back to the **Print Queue Administration** window and the printer configuration process is complete.

3.5 View printer specific options from the command line

Each printer has its own set of supported options that are detailed in the driver PPD file. However, you cannot access this file directly. The `lpoptions` command provides a list of the available options supported by the printer. At a command line, enter:

```
lpoptions -p [printer] -l
```

where [printer] is the current printer name.

Each of the available options is displayed on a new line. Each option listing

- Starts with the option name followed by a slash
- Continues with the text description for that option
- Finishes with a colon

Following the colon is a list of all selection values that are supported for that option. An asterisk (*) in front of a selection value indicates that this is the default selection for that option.

For a listing of available printer names, enter the following command:

```
lpstat -p
```

3.6 Set printer-specific options from the command line

For many print jobs, the default printer options are sufficient. However, at times you may need to change the options for a particular file you are printing.

The `lp` and `lpr` commands allow you to pass printer options using the –o option prefix:

```
lp -d [printer] -o landscape -o scaling=75 -o media=A4 [filename]
```

or

```
lpr -P [printer] -o landscape -o scaling=75 -o media=A4 [filename]
```

3.7 Printing from the command line

CUPS provides both System V (lp) and Berkeley (lpr) printing commands. To print a file to the current default printer, use this basic print command:

```
lpr -P [printer] [filename]
```

or

```
lp -d [printer] [filename]
```

3.8 Printing with magnetic stripe encoding

To print with magnetic stripe encoding use the following command format:

```
lp -d [printer] -o "MagTrack1=%25MAGTEST1%3F MagTrack2=%3B1234567890%3F
MagTrack3=%3B1234567890%3F" [filename]
```

Section **04**
Print job configuration options

4.1 Print job configuration options introduction

Each of the print job configuration options that are supported by the HDP5600 card printer are described here. However, not all options are available on all printers. Therefore, with each printer selected, only the options available for that device are displayed.

The Print Job configuration options are located at: **Printers** > **[your printer name]** > **Administration** > **Set Default Options**.

4.2 Card options

Field	Description
Card Thickness	Sets the card thickness for the print job. Options are: • 10 mm • 20 mm • 30 mm • 40 mm To configure this field from the command line, enter: `CardThickness=Selection` where `Selection` is **10**, **20**, **30**, or **40**.
Input Hopper Selection	Specifies which hopper the printer feeds a card. Options are: • Top: Allows the printer to feed from the top hopper. • Bottom: Allows the printer to feed from the bottom hopper. • First Available: Feeds a card from the last successful hopper location first and then switches to the other hopper. This is the default. To configure this field from the command line, enter: `InputHopper=Selection` where `Selection` is **FirstAvailable**, **Hopper1**, or **Hopper2**.

Field	Description
Rotate Front 180 Degrees	Rotates the image on the front of the card by 180 degrees. Options are: • Yes • No - This is the default. To configure this field from the command line, enter: `RotateImageFront=Selection` where `Selection` is **True** or **False**.
Rotate Back 180 Degrees	Rotates the image on the back of the card by 180 degrees. Options are: • Yes • No - This is the default. To configure this field from the command line, enter: `RotateImageBack=Selection` where `Selection` is **True** or **False**.

4.3 Print options

Set Default Options for HDP5600

Card   Print Options   Image Color Options   K-Panel Options
Inhibit Panel Options   Lamination Options   Global Magnetic Encoding Options   Magnetic
Track Encoding Options   Banners   Policies

Print Options

Ribbon Type:	YMCFK
Film Type:	Clear
Print Both Sides:	● Yes ○ No
Split 1 Set of Ribbon Panels:	○ Yes ● No
Print Back Image on Front of Card:	○ Yes ● No
Print Back Side Only:	○ Yes ● No
Disable Printing (Feed Card Only):	○ Yes ● No
Dual Pass (F-Panel):	● Yes ○ No
Invert F-Panel Image:	○ Yes ● No
Encrypt Job Data:	○ Yes ● No

Set Default Options

Field	Description
Ribbon Type	Allows you to manually select the installed ribbon. Options are: • YMC • YMCK – This is the default. • YMCK Half Panel • YMCKK • YMCKI • YMCKIKI • YMCIKH • YMCKH • YMCFK • Premium Resin • KI To configure this field from the command line, enter: `Ribbon=Selection` where `Selection` is **YMC**, **YMCK**, **YMCK_Half**, **YMCKK**, **YMCKI**, **YMCKIKI**, **YMCIKH**, **YMCKH**, **YMCFK**, **KPremium**, or **KI**.
Film Type	Allows you to select the type for the film currently loaded in the printer. Options are: • Clear • Holographic • High Durable Clear To configure this field from the command line, enter: `Film=Selection` where `Selection` is **Clear**, **Holographic**, or **HighDurableClear**.

Field	Description
Print Both Sides	Determines whether duplex printing is enabled or disabled. Options are: • Yes: This option enables duplex printing. If the printer is equipped with a flipper module, then odd numbered sides of the print job are printed on the front side of the card and even numbered sides are printed on the back side of the card. • No - This is the default. This option disables duplex printing. If the print job has multiple sides, then each side is printed on a separate card. To configure this field from the command line, enter: `PrintBothSides=Selection` where `Selection` is **True** or **False**.
Split 1 Set of Ribbon Panels	Determines if the ribbon panel is full or split. By default, each side of the card uses a full set of ribbon panels, regardless of the ribbon type selection. Options are: • Yes • No - This is the default. Enable this option to automatically print (when printing using a full color with resin type ribbon): • Full-color on the front side of the card. • Resin black on the back side of the card. If using the YMCKO ribbon type, this option automatically prints • Full-color on the front side of the card. • Resin black on the back side of the card. The overlay panel is printed on the front side of the card. To configure this field from the command line, enter: `SplitRibbon=Selection` where `Selection` is **True** or **False**.
Print Back Image on Front of Card	Determines where the back image is printed. When this option is enabled, the first card side is printed on the back side of the card and the second card side is printed on the front card side. Options are: • Yes • No - This is the default. To configure the field from the command line, enter: `PrintBackOnFront=Selection` where `Selection` is **True** or **False**.
Print Back Side Only	Enables the card image to be printed on the back side of the card. Options are: • Yes • No - This is the default. To configure this field from the command line, enter: `PrintBackOnly=Selection` where `Selection` is **True** or **False**.

Field	Description
Disable Printing (Feed Card Only)	Enables image data to not be printed on the card. This option is useful when only card encoding is desired. Options are: • Yes • No - This is the default. To configure this field from the command line, enter: ```DisablePrinting=Selection``` where `Selection` is **True** or **False**.
Dual Pass (F-Panel)	This refers to fluorescing dye being applied to a separate panel of the film. It is recommended that the default Dual Pass option is used if the fluorescent image is used where other dye is used or if the Invert F-panel Image option is selected. Options are: • Yes • No - This is the default. To configure this field from the command line, enter: ```DualPass=Selection``` where `Selection` is **True** or **False**.
Invert F-Panel Image	This refers to the ability to cause light or white areas of the image to fluoresce and dark colors to remain dark on the printed card when exposed to a UV light. You can select the Invert F-Panel Image option to cause the black in the design to show as dark on the card. This option is recommended if you are printing a photo. Options are: • Yes • No - This is the default. To configure this field from the command line, enter: ```InvertFPanelImage=Selection``` where `Selection` is **True** or **False**.
Encrypt Job Data	Provides AES encryption of data sent to printer when enabled. This feature is useful when a printer is shared or connected via Ethernet. Options are: • Yes • No - This is the default. To configure this field from the command line, enter: ```EncryptJobEnable=Selection``` where `Selection` is **True** or **False**.

4.4 Image color options

Field	Description
Color Mode	The input color mode of the raster image processor. Options are: • Color RGB • Color RGBK (RGB + black) To configure this field from the command line, enter: `ColorMode=Selection` where `Selection` is **RGB** or **RGBK**.
Color Matching	Shifts colors to a different color model so the colors in the printed image are more closely matched to how they appear on the monitor. The default selection provides a closer match to the RGB color specifications. Options are: • Default Color Management - This is the default. • Legacy Color Management - This is the default. • None (third party color matching software) To configure this field from the command line, enter: `ColorMatching=Selection` where `Selection` is **ICC1**, **ICC2** or **None**.
Resin Dither	Selects which dithering method is used. Options are: • Optimize for Graphics - This is the default. Use this option when printing barcodes and graphics with resin. • Optimize for Photos: Use this option when printing photo quality images with resin. To configure this field from the command line, enter: `ResinDither=Selection` where `Selection` is **Graphics** or **Photos**.

Field	Description
Dye-Sub Intensity (YMC)	Selects the intensity of the dye-sub. The default is 0. Options are: • Adjust the value higher (+) to use more heat when transferring dye-sub colors to the card. This produces a darker, more saturated image. • Adjust the value lower (-) to use less heat when transferring dye-sub colors to the card. This produces a lighter, less saturated print. To configure this field from the command line, enter: `DyeSubIntensity=Selection` where `Selection` is a numeric value from -50 to 50.
Resin Heat Front (K)	Selects the heat intensity used on the front side of the card. The default is 0. Options are: • Adjust the value higher (+) to use more heat to transfer resin to a card when printing resin black on the front side of the card. • Adjust the value lower (-) to use less heat to transfer resin to a card when printing resin black on the front side of the card. To configure this field from the command line, enter: `ResinHeatFront=Selection` where `Selection` is a numeric value from -50 to 50.
Resin Heat Back (K)	Selects the heat intensity used on the back side of the card. The default is 0. Options are: • Adjust the value higher (+) to use more heat to transfer resin to a card when printing resin black on the back side of the card. • Adjust the value lower (-) to use less heat to transfer resin to a card when printing resin black on the back side of the card. To configure this field from the command line, enter: `ResinHeatBack=Selection` where `Selection` is a numeric value from -50 to 50.

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4.5 Image position options

Set Default Options for HDP5600

Card   Print Options   Image Color Options   Image Position Options   K-Panel Options
Inhibit Panel Options   Lamination Options   Global Magnetic Encoding Options   Magnetic
Track Encoding Options   Banners   Policies

Image Position Options

Vertical Offset: 0 ▾

Horizontal Offset: 0 ▾

Transfer Temperature (Celsius): 178.0 ▾

Transfer Dwell Time (Seconds Per Inch): 2.3 ▾

Set Default Options

Field	Description
Vertical Offset	Selects the vertical offset of the image on the card. The default is 0. Options are: • Adjust the value higher (+) to move the image towards the back side of the printer. • Adjust the value lower (-) to move the image towards front side of the printer. To configure this field from the command line, enter: `ImageVOffset=Selection` where `Selection` is a numeric value from -100 to 100.
Horizontal Offset	Selects the horizontal offset of the image on the card. The default is 0. Options are: • Adjust the value higher (+) to move the image towards the card output side of the printer. • Adjust the value higher (-) to move the image towards the card input side of the printer. **Note:** Adjusting the Horizontal Offset may result in ribbon breakage. To configure this field from the command line, enter: `ImageHOffset=Selection` where `Selection` is a numeric value from -100 to 100.
Transfer Temperature (Celsius)	Sets temperature for InTM transfer in celsius. To configure this field from the command line, enter: `TransferHeat=Selection` where `Selection` is a numeric value from 150 to 190.
Transfer Dwell Time (Seconds Per Inch)	Sets dwell time for InTM transfer in seconds per inch. To configure this field from the command line, enter: `TransferDwell=Selection` where `Selection` is a numeric value from 10 to 30.

4.6 K-Panel options

Set Default Options for HDP5600

Card   Print Options   Image Color Options   Image Position Options   K-Panel Options
Inhibit Panel Options   Lamination Options   Global Magnetic Encoding Options   Magnetic
Track Encoding Options   Banners   Policies

K-Panel Options

Front YMC Under K: ○ Yes ● No
Back YMC Under K: ○ Yes ● No
Front K-Panel Area: [Full Card ▾]
Back K-Panel Area: [Full Card ▾]
Resin Threshold: [75% ▾]

[Set Default Options]

Field	Description

Front YMC Under K
Back YMC Under K
	Determines if YMC is printed under the resin black on the front or back of the card. Options are:
	• Yes: Enables YMC dye-sub black to be printed underneath the resin black for pixels that are affected by the Front K-Panel Area option. This option provides a gradual transition between background colors and the edges of text and bar codes printed with resin black.
	• No: This is the default. YMC dye-sub black is not printed under the resin black for pixels that are affected by the Front K-Panel Area option. This option maximizes the sharpness of text and bar codes printed with resin black.
	
	To configure this field from the command line, enter:
	`YMCunderKFront=Selection`
	
	`YMCunderKBack=Selection`
	
	where `Selection` is **True** or **False**.

Front K-Panel Area
Back K-Panel Area
	Selects if the K-Panel is used on the front or back of the card. Options are:
	• None - This is the default.
	• Full Card: Instructs the printer to use the resin black ribbon panel to print all black pixels found within the image data on the front/back of the card.
	
	To configure this field from the command line, enter:
	`KPanelFrontApply=Selection`
	
	`KPanelBackApply=Selection`
	
	where `Selection` is **None** or **Fullcard**.

Resin Threshold	Changes the level at which the driver moves a pixel to be printed on a resin panel instead of a YMC. To configure this field from the command line, enter: `ResinThreshold=Selection` where `Selection` is a numeric value from 1 to 99.

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4.7 Inhibit panel options

Set Default Options for HDP5600

Card   Print Options   Image Color Options   Image Position Options   K-Panel Options
Inhibit Panel Options   Lamination Options   Global Magnetic Encoding Options   Magnetic
Track Encoding Options   Banners   Policies

Inhibit Panel Options

Inhibit Area Front: None ▾
Inhibit Area Back: None ▾

Set Default Options

Field	Description

Inhibit Area Front
 	
Inhibit Area Back
	Allows to specify the card area that will not be covered with print image. Options are:
	• Yes: Enables YMC dye-sub black to be printed underneath the resin black for pixels that are affected by the Front K-Panel Area option. This option provides a gradual transition between background colors and the edges of text and bar codes printed with resin black.
	• No: This is the default. YMC dye-sub black is not printed under the resin black for pixels that are affected by the Front K-Panel Area option. This option maximizes the sharpness of text and bar codes printed with resin black.
	
	To configure this field from the command line, enter:
	
	`YMCunderKFront=Selection`
	
	`YMCunderKBack=Selection`
	
	where `Selection` is **True** or **False**.

4.7.1 Pre-defined inhibit area regions

These card examples show the effect of the pre-defined inhibit area regions that may be selected using the **Inhibit Area Front** and **Inhibit Area Back** options. Area marked with a red rectangle is omitted when printing.
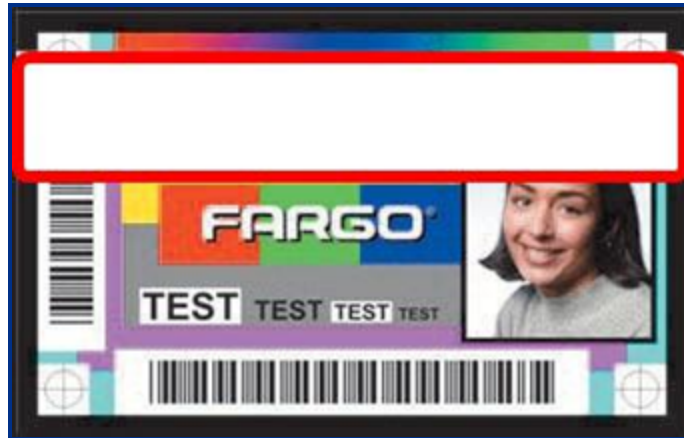
Omit mag stripe area example

Omit smart chip area example

Omit signature area example

4.8 Lamination options

Field	Description
Horizontal Offset	Selects the lamination horizontal offset. The default is 0. Options are: • Adjust the value higher (+) to move the image towards the card output side of the lamination module. • Adjust the value lower (-) to move the image towards the card input side of the lamination module. To configure this field from the command line, enter: `LamPosition=Selection` where `Selection` is a numeric value from -100 to 100.
Dwell Time (sec/in)	Sets the dwell time of the card. The default is 20. Options are: • Adjust the value higher (+) to slow down the card movement while laminating. • Adjust the value lower (-) to speed up the card movement while laminating. To configure this field from the command line, enter: `LamSpeed=Selection` where `Selection` is a numeric value from 8 to 55.
Lamination Side	Selects the side for the lamination. Options are: • None: Laminate will not occur. This is the default. • Front: Laminate will occur on the front side of the card • Back: Laminate will occur on the back side of the card • Both: Laminate will occur on both the front side and back sides of the card • Opposite: The default front side laminate will occur on the back side of the card and the default back side laminate will occur on the front side of the card. It is useful when two different laminate types are used. To configure this field from the command line, enter: `LamSide=Selection` where `Selection` is **None**, **FrontSide**, **BackSide**, **BothSides**, or **OppositeSides**.

Field	Description
Cartridge 1	Selects the cartridge 1 lamination type. Options are: • None - This is the default. • Clear Film • Registered Film • 0.6 Polyguard • 1.0 Polyguard • Polyguard Alternating Patch • Holographic Film To configure this field from the command line, enter: `LamType1=Selection` where `Selection` is **None** , **ClearFilm**, **RegisteredFilm**, **PolyGuard_06**, **PolyGuard_10**, **PolyGuardAltPatch**, or **HolographicFilm**.
Transfer Temp (Celsius)	Selects the temperature for cartridge 1. The default is 0. Options are: • Adjust the value higher (+) to increase transfer temperature. • Adjust the value lower (-) to decrease transfer temperature. To configure this field from the command line, enter: `LamTransferTemp1=Selection` where `Selection` is a numeric value from -100 to 100.
Cartridge 2	Selects the cartridge 1 lamination type. Options are: • None - This is the default. • Clear Film • Registered Film • 0.6 Polyguard • 1.0 Polyguard • Polyguard Alternating Patch • Holographic Film To configure this field from the command line, enter: `LamType2=Selection` where `Selection` is **None** , **ClearFilm**, **RegisteredFilm**, **PolyGuard_06**, **PolyGuard_10**, **PolyGuardAltPatch**, or **HolographicFilm**.
Transfer Temp (Celsius)	Selects the temperature for cartridge 2. The default is 0. Options are: • Adjust the value higher (+) to increase transfer temperature. • Adjust the value lower (-) to decrease transfer temperature. To configure this field from the command line, enter: `LamTransferTemp2=Selection` where `Selection` is a numeric value from -100 to 100.

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4.9 Global magnetic encoding options

Set Default Options for HDP5600

Card   Print Options   Image Color Options   Image Position Options   K-Panel Options
Inhibit Panel Options   Lamination Options   Global Magnetic Encoding Options   Magnetic
Track Encoding Options   Banners   Policies

Global Magnetic Encoding Options

Coercivity: [High (2750 Oe) ▾]

Shift Left Data: ○ Yes ◉ No

[Set Default Options]

Field	Description
Coercivity	Sets the coercivity for magnetic encoding. Options are: • Super (4000 Oe) • High (2750 Oe) - This is the default. • Medium (600 Oe) • Low (300 Oe) To configure this field from the command line, enter: `Coercivity=Selection` where `Selection` is **4000**, **2750**, **600**, or **300**.
Shift Left Data	Enables the magnetic data to be shifted left as it is encoded onto the magnetic stripe. Options are: • Yes • No - This is the default. To configure this field from the command line, enter: `ShiftDataLeft=Selection` where `Selection` is **True** or **False**.

4.10 Magnetic track encoding options

Field	Description
Track 1 Encoding Mode (Magnetic Encoding)	Sets the encoding mode independently for each of the three magnetic tracks. Options are: • ISO - This is the default. • Custom • JIS • Raw To configure this field from the command line, enter: `MagNTrackMode=Selection` where `N` is **1**, **2**, or **3** and `Selection` is **ISO**, **Custom**, **JIS**, or **Raw**.

Field	Description
LRC Generation	Sets the LRC generation independently for each of the three magnetic tracks. Options are: • None • Even Parity - This is the default. • Odd Parity To configure this field from the command line, enter: `MagNLRCGeneration=Selection` where **N** is **1**, **2**, or **3** and `Selection` is **None**, **Even**, or **Odd**.
Character Size	Sets the character size (in bits per character) independently for each of the three magnetic tracks. Options are: • 4 Bits • 5 Bits - This is the default for magnetic tracks 2 and 3. • 7 Bits - This is the default for magnetic track 1. • 8 Bits To configure this field from the command line, enter: `MagNCharSize=Selection` where **N** is **1**, **2**, or **3** and `Selection` is **4**, **5**, **7**, or **8**.
Character Parity	Sets the character parity independently for each of the three magnetic tracks. Options are: • None • Even Parity • Odd Parity - This is the default. To configure from the command line: `MagNParity=Selection` where **N** is **1**, **2**, or **3** and `Selection` is **None**, **Even**, or **Odd**.
Character ASCII Offset	Sets the character ASCII offset independently for each of the three magnetic tracks. Options are: • Null • Space - This is the default for magnetic track 1. • Zero - This is the default for magnetic tracks 2 and 3. To configure this field from the command line, enter: `MagNASCIIOffset=Selection` where **N** is **1**, **2**, or **3** and `Selection` is **Null**, **Space**, or **Zero**.
Track Bit Density	Sets the encoding bit density independently for each of the three magnetic tracks. Available options: • 75 - This is the default for magnetic track 2. • 128 • 210 - This is the default for magnetic tracks 1 and 3. To configure this field from the command line, enter: `MagNBitDensity=Selection` where **N** is **1**, **2**, or **3** and `Selection` is **75**, **128**, or **210**.

4.10.1 Card printer driver magnetic encoder settings

This table shows the settings that should be used to correctly configure HID card printers.

Encoding mode	Shift left data	LRC generation	Character size	Character parity	ASCII offset	Bit density	Reverse bit order	Add leading zero
ISO	No	Even	Track 1 = 7 Track 2 = 5 Track 3 = 5	Odd	Track 1 = Space Track 2 = Zero Track 3 = Zero	Track 1 = 210 Track 2 = 75 Track 3 = 210	Yes	Yes
Custom	Yes, No	No, Even, Odd	5, 7	No, Even, Odd	Null, Space, Zero	75,128, 210	Yes	Yes
Raw	No	No	4, 8	No	Null	75, 210	Yes, No	Yes, No
JIS	No	Even	8	Even	Null	210	No	No

4.11 Magnetic stripe encode data

Magnetic stripe encode data must be passed to the CUPS driver using the command line. The following command line options have been defined for this purpose:

- Magtrack1
- Magtrack2
- Magtrack3

Each option is set equal to the string of data to be encoded for that track. The string of encode data must be passed to the CUPS driver in URL character encoding mode. See **URL character encoding mode**.

A command line option flag (-o) must precede the first track of magnetic stripe encode data passed on the command line. The second and third tracks, however, may be specified following the first track without including additional command line option flags.

Command line example:

```
lp -d <Printer_Queue_Name> -o "Magtrack1=%25MAGTEST1%3F Magtrack2=%3B1234567890%3F
Magtrack3=%3B1234567890%3F" <Filename>
```

4.11.1 Magnetic stripe encoding - format details

The following sections describe the URL character encoding mode and details the currently supported magnetic stripe encoding modes:

- ISO mode
- JIS II mode
- Custom mode
- Raw mode

4.11.2 URL character encoding mode

The CUPS driver uses URL encoding mode when defining data to be encoded to each of the magnetic stripes. To be recognized, all characters passed to the driver, including any special characters (such as start and end sentinels), must be described with a URL encoding mode.

In URL encoding mode all ASCII characters, except for the reserved character set defined here, are represented by their normal ASCII character codes. Each character in the reserved character set must be represented by a 3-character sequence: a percent character (%) followed by a 2-character representation of the hex equivalent of the ASCII character code.

The following shows the reserved ASCII characters and their associated 3-character URL encoding sequence.

ASCII character	URL encoding	ASCII character	URL encoding
!	%21	#	%23
$	%24	%	%25
&	%26	'	%27
(	%28	)	%29
*	%2A	+	%2B
,	%2C	/	%2F
:	%3A	;	%3B
=	%3D	?	%3F
@	%40	[	%5B
]	%5D		

4.11.3 ISO magnetic encoding mode

The ISO magnetic encoding mode comprises three components:

- Start Sentinel
- Track Character Data
- End Sentinel

The first character of each track data string must be the track specific start sentinel (SS), and the last character must be the track specific end sentinel (ES).

The data characters in between the SS and ES must be limited to the track specific range of valid character codes.

The total number of characters for each track must be limited to the track specific maximum character count.

When segmenting track data, the track specific field separator (FS) must be used.

This table details the required start sentinel, end sentinel, field separator, valid character code range, and the maximum character count for each of the three magnetic tracks.

Track	Start sentinel (SS)	End sentinel (ES)	Field separator (FS)	Valid character code range	Maximum character count
1	%	?	^	ASCII 32-95	78
2	;	?	=	ASCII 48-63	39
3	;	?	=	ASCII 48-63	109

4.11.4 JIS II magnetic encoding mode

The JIS II magnetic encoding mode allows you to specify string data to be encoded on the magnetic stripe using the JIS II encoding format. JIS normally is only for Track 2. Track 1 and 3 are not standard JIS, but is supported. JIS II does not expect a beginning and ending sentinel for the encoding character string.

4.11.5 Custom magnetic encoding mode

The custom magnetic encoding mode allows you to independently specify each of the various encoding parameters for each magnetic track. Individual characters are encoded on each magnetic track using the set of parameters. For custom encoding more flexibility than for JIS II or ISO is provided.

4.11.6 Raw magnetic encoding mode

The raw magnetic encoding mode allows you to specify raw binary string data to be encoded on the magnetic stripe. A specific format of the input data is not assumed and all encoding parameters for each magnetic track are ignored, except for the track bit density. Using RAW format requires the binary data to be specified more completely than for other formats. Such options as parity, LRC, shift left data are not supported. The bit density can be any value between 75 and 210; however, a value not selectable from the UI can only be specified by a command line option.

4.12 Banners option

Field	Description
Starting Banner	Specifies the message that is displayed on the banner (other than the default). Options are: - None - This is the default. - Standard - Confidential - Unclassified - Classified - Secret - Top Secret To configure this field from the command line, enter: `job-sheets = StartBanner, EndBanner` where: `StartBanner` and `EndBanner` are each one of the following: **None**, **Standard**, **Confidential**, **Unclassified**, **Classified**, **Secret**, or **Topsecret**.

Field	Description
Ending Banner	Specifies the message that is displayed on the banner (other than the default). Options are: • None - This is the default. • Standard • Confidential • Unclassified • Classified • Secret • Top Secret To configure this field from the command line, enter: `job-sheets = StartBanner, EndBanner` where `StartBanner` and `EndBanner` are each one of the following: **None**, **Standard**, **Confidential**, **Unclassified**, **Classified**, **Secret**, and **Topsecret**.

4.13 Policies options

Field	Description
Error Policy	Defines the policy that is used when a backend is unable to send a print job to the printer. Options are: • Abort-job: Aborts the job and proceeds with the next job in the queue. • Retry-current-job: Retries the current job immediately. • Retry-job: Retries the job after waiting N seconds, where the cupsd.conf JobRetryInterval directive controls the value of N. • Stop-printer - This is the default. Stops the printer and keeps the job for future printing. The Error Policy is supported using the `lpadmin` command on the command line interface.
Operation Policy	Defines the required authentication type. Options are: • Default - This is the default. • Kerberos The Operation Policy is supported using the `lpadmin` command on the command line interface.

Section **05**
Licenses

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Revision history

Date	Description	Revision
May 2023	Added support for HDP5000.	A.1
June 2022	Initial release.	A.0

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