User's Guide

LXM Card Printer Driver for Linux

Version 1.7

Notice

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Revision Log

Revision	Date	Description of Changes
A	November, 2019	First release of this document. Includes information for version 1.0.
B	December, 2019	Updated for driver version 1.1
C	October, 2020	Updated for driver version 1.2
D	February, 2021	Updated for driver version 1.3
E	October, 2021	Updated for driver version 1.4
F	August, 2022	Updated for driver version 1.5
G	December, 2022	Updated for driver version 1.6
H	January 2024	Updated for driver version 1.7

Contents

Chapter 1: About the Linux Driver

1

This chapter describes installing and using the Entrust™ LXM Card Printer Driver for Linux.

Linux Driver Support

The LXM Card Printer Driver for Linux supports the following:

- The Linux 1.7 driver supports the following operating systems

    - Ubuntu 20.04 LTS

    - Kylin 10

- LibreOffice

- Ethernet and USB communications

- Duplex printing using CMYKP ribbon with the CR805™ printer.

- Duplex printing using YMCKT and KT ribbon on the SD260™ and SD460™ and Sigma printers.

- Rewritable card printing (not supported by the CR805™)

- Ability to print at 300 DPI on SD260, SD460, and Sigma™ Card Printers.

- Ability to print at 600 DPI on CR805™.

- Ability to laminate cards and debow cards

- Driver has 64 bit OS support only.

- IAT Magstripe read and Magstripe encode using the driver SDK

- Loosely coupled smart card encoding using the driver SDK

- Support for DUALi and OMNIKEY Single-Wire smartcard

- Support for non graphical interface.

- Multiple network printer destinations can be installed on the same PC.

The LXM Card Printer Driver for Linux has the following limitations:

- Multiple-copy printing is not supported

- When the driver is set to Simplex and a multi-page job is sent, all pages other than page 1 are discarded.

- Multiple USB printer destinations cannot be installed on the same PC.

Supported Printers

The Card Printer Driver supports the following printers:

- Entrust® SD Series: SD260™, SD460™ Card Printers

- Entrust Artista® CR805

- Entrust® Sigma DS1, DS2

- Entrust® Sigma DS3

Refer to each printer's *Installation and Administrator's Guide* and *User's Guide* for complete information about setting up and using the printers.

- The information in this Guide applies to all supported printers. Printer-specific differences or exceptions are noted, where necessary.
- Other Entrust printers may be supported through the use of a RFID upgrade kit.

Before Installing the Linux Driver

Use the following instructions to install the driver using either a USB or a network connection. The installation procedure is similar for either method; differences are noted.

Prerequisites

- For network installation, ensure that the printer is powered on (the LCD panel displays "Ready"), and the printer is connected to the network. Also ensure that the IP address of the printer is known (refer to Appendix A: "Retrieve the Printer's IP Address" for details).

- For USB installation, ensure that the printer is powered on (the LCD panel displays "Ready") The printer should not be connected to the PC. The installation process will prompt to connect at the appropriate time. Also ensure that the IP address of the printer is known (refer to Appendix A: "Retrieve the Printer's IP Address" for details).

Install the Driver

You have the option to disable Kysec when installing driver on Kylin 10.

To disable Kysec:

1. Type the following on the terminal window before installing the driver.

   ```
   setstatus disable
   ```

2. Reboot.

1. Log into the system and open a terminal window.

   Installing the Linux driver requires Linux root permission.

   Continue to either step 2 or 3 depending on if you are using SH or DEB.

2. For installation using the self-extracting shell script:

   a. sudo bash ./lxm-card-printer-DEB-installer-x.x.xx.sh

   b. Enter the user password if prompted.

   c. The install will display LXM license agreement. Enter **q** to continue.

   d. The install will display **I have read and accept the terms.** Enter **y** to continue.

3. For Drivers using DEB:

   a. mkdir /usr/local/lxm-card-printer

   b. copy license_EULA.txt (in installation package) to /usr/local/lxm-card-printer

   c. sudo apt install ./printer-driver-entrust-lxm_x.x.xx_amd64.deb

4. The LXM Driver Setup Tool should run automatically. If it does not, refer to "Driver Setup Tool Procedure" on page 44.

Installing Multiple Network Printers

The user may have multiple Entrust desktop printers that can be used from a Linux based machine.

> To install the first printer, refer to "Install the Driver" on page 4.

To install the second, third or more printers follow these steps:

1. Open a terminal session.

2. Enter the command:

```
sudo lpadmin -p <Unique-Printer-Name> -v lxm-card-printer-backend://<your-printer-
IP-address> -i /usr/share/cups/model/lxm-card-printer.ppd -E
```

> User will have to manually configure printer driver after install. Refer to "Specify Printer Driver Options" on page 8.

Removing Multiple Network Printers

From a terminal session enter the following command to remove the named printer:

```
sudo lpadmin -x <Unique-Printer-Name>
```

Printer Properties

Use the Printer Properties window to specify printer information and the options to use.

View or Change the Printer IP Address

Use the Printer Properties window to view or change the IP address of the printer.

> If opted out of running the post-installation LXM Driver Setup Tool, the printer IP address (Device URI field) is 0.0.0.0 or 127.0.0.1 If the printer has not been installed with a USB cable, adding the printer IP address to the Device URI field is still required to use the printer.

1. Double-click the printer icon and select **Properties** to open the Printer Properties window.

2. Select **Settings** in the left pane and locate the "Device URI" field.
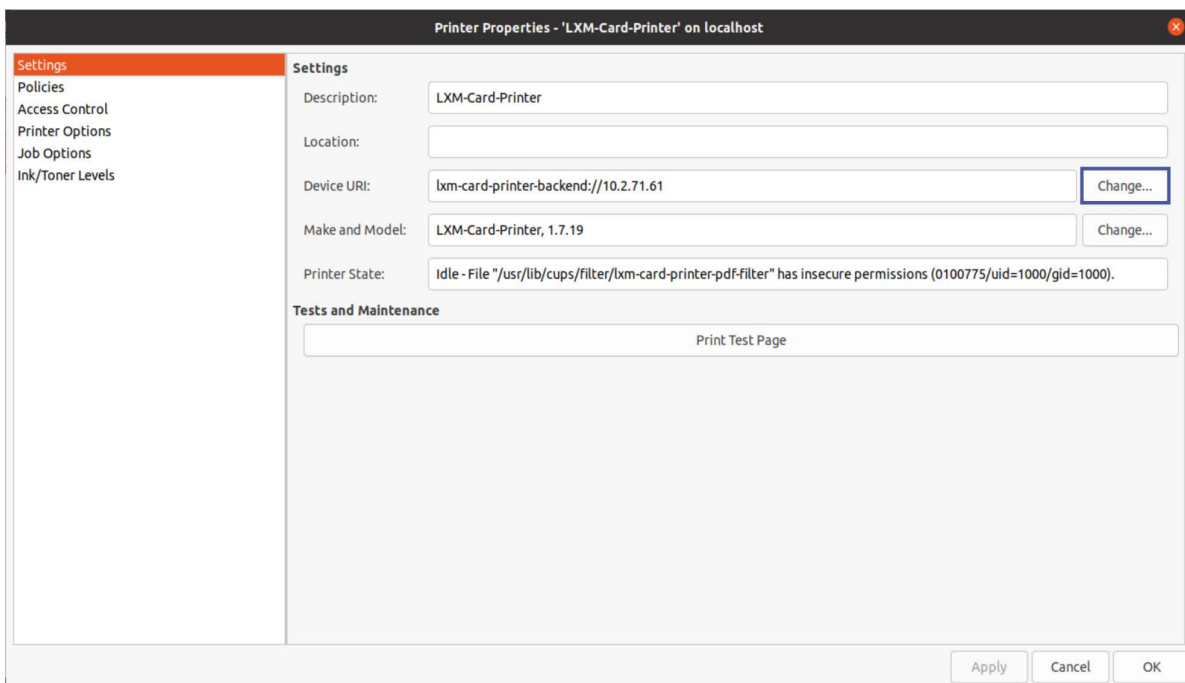
3. Click **Change**. (If a windows displays asking to enter a password, enter credentials and click **Authenticate**.) The "Change Device URI" window appears.

4. Click **Enter URI** in the "Change Device URI" window, in the left pane.

5. Enter the printer IP address in the "Enter device URI" field, in the format **lxm-card-printer-backend//xx.x.xx.xx**. Note that the "lxm-card-printer-backend//" prefix must be present. Refer to Appendix A: "Retrieve the Printer's IP Address" if the IP address is not known.
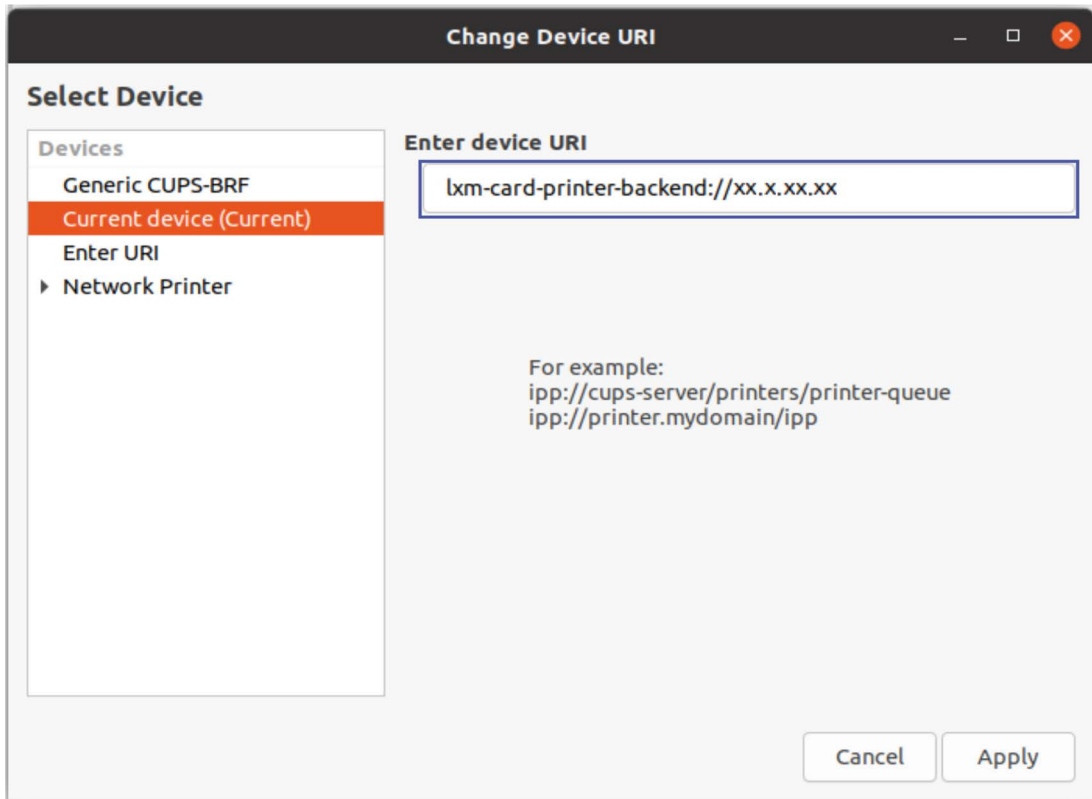
6. Click **Apply** to save changes. Click **Cancel** to exit without saving.

> The **Print Test Page** button sends a Linux test card to the printer to verify communication between the computer and printer. However, because the card quality may be poor, it's best to use the LXM Driver Setup Tool to print a test card. Refer to "Driver Setup Tool Procedure" on page 44 for details.

Specify Printer Driver Options

Specify Printer Driver Options Using the Command Line

lpadmin

>   User can use lpadmin to configure driver options for the printer.

>   **lpadmin syntax**

>   -p <printer name> configures the named printer

>   -o name=value Sets a driver option for the printer.

>   **Example**

>   Configure LXM-Card-Printer for duplex printing

>   lpadmin -p LXM-Card-Printer -o DualSidePrinting=Duplex

>   - User is required to be part of lpadmin group on Ubuntu OS.
>   This is varying from one distribution to another distribution.

lpoptions

>   Driver options can be listed using the -l option with the lpoptions command.

>   **Example**

>   List the printer specific options and their current settings for LXM-Card-Printer

>   lpoptions -p LXM-Card-Printer -l

For More information on printer driver options, refer to Step 2 of "Specify Printer Driver Options Using User Interface" on page 11.

Driver Feature	Name	Supported Options
Printer type	PrinterType	DTC RET SIG
Resolution	Resolution	300dpi 600dpi
Ribbon name	RibbonName	YMCKT KT CMYKP
Page size	MediaSize	ISOID1 ISOID1Retransfer
Rotate	Rotation	RotateNone RotateFront RotateBack RotateBoth
Print on both sides	DualSidePrinting	Simplex Duplex
Rewrite	RewriteBlock	No Yes RewriteFrontUseMaskFile
Print using K panel on front of the card	FrontKPrint	FrontKPrintNone FrontKPrintApply
Print using K panel on back of the card	BackKPrint	BackKPrintNone BackKPrintApply
Top Coat Front	FrontTopcoat	FrontNoTopcoat FrontFull FrontBlockSC

Driver Feature	Name	Supported Options
Top Coat Back	BackTopcoat	BackNoTopcoat BackFull BackBlockMS3T
Retransfer twice	RetransferActionPasses	RetransferActionPassesNo RetransferActionPassesFront RetransferActionPassesBoth
Retransfer Front Side Print Area	PrimerApplication	PrimerFullCard PrimerSCBlock
Retransfer Back Side Print Area	PrimerApplicationOnBack	PrimerFullCard PrimerMSBlock
K Panel Obscuration	RibbonObscuration	RibbonObscurationOff RibbonObscurationOn
Lamination L1	L1	L1None L1Front L1Side1Twice L1Back L1Both
Lamination L2	L2	L2None L2Front L2Side1Twice L2Back L2Both
Debow Card	Debow	DebowNone DebowYes
Impress	LaminatorImpress	LaminatorImpressNone LaminatorImpressFront

Specify Printer Driver Options Using User Interface

Use the Printer Options tab to specify the printer options to use.

The Printer Options window may show a message reading "Conflicts." In this case, the **Apply** button is grayed-out and inaccessible. This occurs when two or more printer settings are in conflict. A **Conflicts** button also appears in this case. Click **Conflicts** to view and change any settings causing the conflict(s) before proceeding.
If the conflict cannot be resolved, it will not prevent you from printing.

1. Select **Printer Options** in the left pane.

The initial default settings (shown below) following installation of the driver are appropriate for a Sigma (Direct to card) printer. The settings can be changed for other printer types.
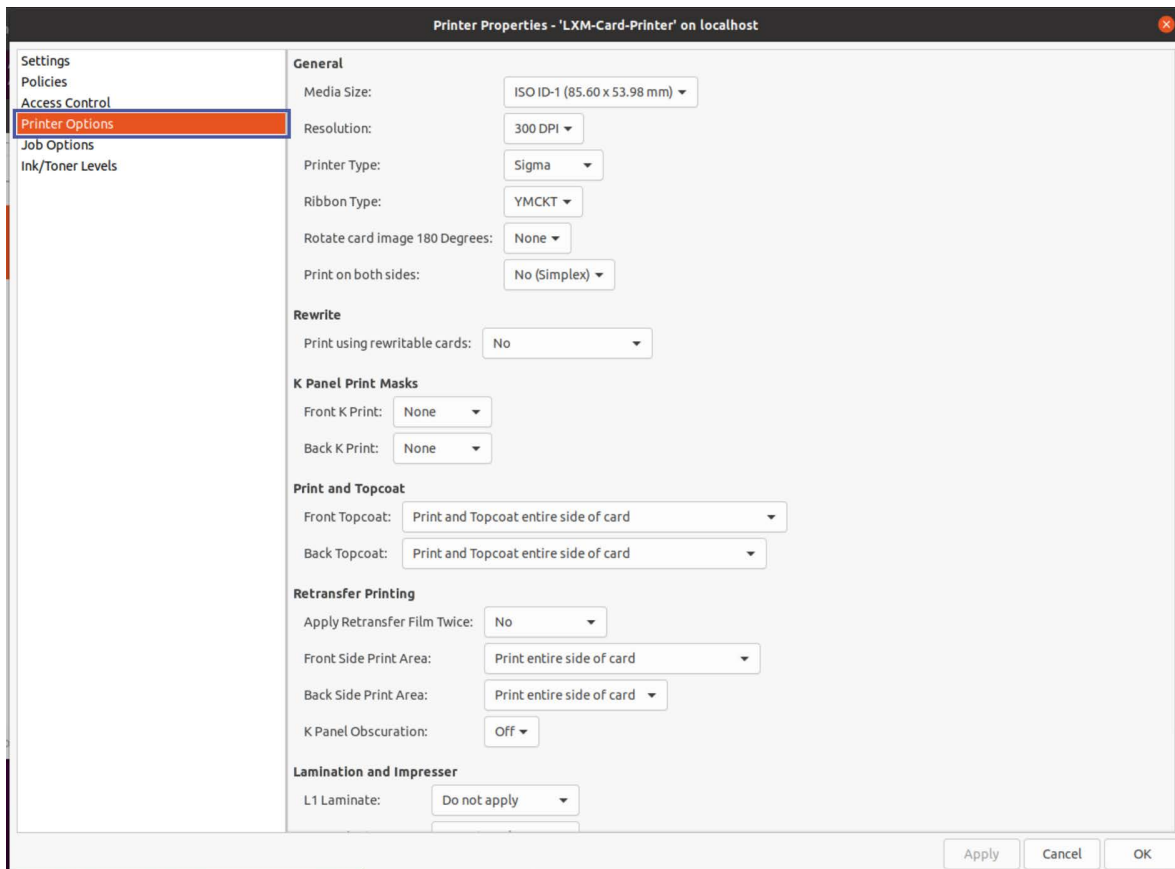
2. Select the required options for the type of printer in use. Options that are required for use with a specific printer type are noted below; all other choices are optional.

- Media size:
    - ISO ID-1 Retransfer - for use with the CR805 printer
    - ISO ID-1 (85.60 x 53.98 mm) - select this option when using an SD/CD and Sigma printer
- Resolution
    - 600 DPI - for use with the CR805 printer
    - 300 DPI - select this option when using an SD/CD and Sigma printer
- Printer Type:
    - DTC - select this option when using an SD260™ Card Printer, or SD460™ Card Printer.
    - Retransfer - for use with the CR805 printer
    - Sigma Card Printer
- Ribbon Type
    - YMCKT (select this option when using an SD/CD and Sigma printer)
    - KT (select this option when using an SD/CD and Sigma printer)
    - CMYKP (select this option when using an CR805 printer)
- Rotate card image 180 Degrees:
    - None - no rotation of the card image occurs
    - Front - the front of the card is rotated 180 degrees
    - Back - the back of the card is rotated 180 degrees
    - Both - both sides of the card are rotated 180 degrees
- Print on Both Sides:
    - No (simplex printing)
    - Yes (duplex printing)

- Rewrite:

  ⓘ   This option cannot be used with a CR805 printer

  ⓘ   Refer to "Rewritable Card Printing" on page 16 for details

  - No
  - Yes (Erase Entire Card)
  - Use Mask Image File
- K Panel Print Masks:
  - Refer to "K Panel Printing" on page 20 for details.
  - To select the mask, refer to "Select a K Panel Option" on page 27.
- Print and Topcoat: (cannot be applied with CR805)
  - Front Topcoat
    - Print and Topcoat entire side of card
    - Do not apply Topcoat to entire side of card
    - Block Print and Topcoat on ISO 7816 Contacted Smart Card
  - Back Topcoat
    - Print and Topcoat entire side of card
    - Do not apply Topcoat entire side of card
    - Block Print and Topcoat on ISO 3-Track Magnetic Stripe
- Retransfer Printing (cannot be applied with SD/CD and Sigma printers)
  - Apply Retransfer Film Twice
    - No
    - Front Side Only
    - Both Sides
  - Front Side Print Area
    - Print entire side of card
    - Block on ISO 7816 Contacted Smart Card
  - Back Side Print Area
    - Print entire side of card

– Block on ISO 3-Track Magnetic Stripe

> **ℹ** You cannot apply retransfer film over the magnetic stripe or signature panel on the back side of the card. A second layer of film applied over those features would make them unusable.

> **ℹ** If selecting Block on ISO 3-Track Magnetic Strip, you must select either No or Front Side Only for "Apply Retransfer Film Twice".

♦ K Panel Obscuration

– Off

– On

> **ℹ** K Panel Obscuration prints a randomized pattern that make the ribbon negative unreadable.

- Lamination and Impresser

> **ℹ** Select the lamination options for each laminator installed on the printer.

> **ℹ** When applying an overlay to a card, the card may become bowed slightly due to heat from the laminator. Specify a Debow Card option to return the card to its proper shape.

Select from the following options:

♦ L1 Laminate and L2 Laminate. Specify an option for each laminator.

> **ℹ** The L2 laminator is optional in the SD460 system. If the L2 laminator is not installed, do not select an L2 Laminate option.

– Do not apply - no overlay material is applied to the card

– Front side only - applies the overlay to the front of the card

– Twice on front side - applies two layers of the overlay material to the front of the card; use this option only with a topcoat overlay

– Back side only - applies the overlay to the back side of the card

– Both sides - applies the overlay to both sides of the card

◆ Debow Card:

   – Do not apply - select this option when using a CR805 printer (since SD/CD printers do not support debowing)

   – Apply

◆ Laminator Impress:

> If the laminator impresser is installed and to be used, select from the impress options:

   – Do Not Apply

   – Front

> Click **Apply** to save the selections, or click **OK** to save the selections and close the Printer Properties window. Click **Cancel** to exit without saving.

> If the laminator system is equipped with the optional impresser, select to add an impression to the front of the card. The impresser uses an installed die to stamp an impression on the card. The impresser uses heat to fuse the laminator overlay material to the card, adding an extra measure of security.

> Use the LXM Printer Driver to specify if impressing the card is needed. The impresser can stamp up to three impressions on either the left, center, or right part of the card front.

> Impresser settings are specified using Printer Manager or the Printer Dashboard. Refer to the "Laminator" section of the printer's Installation and Administrator's Guide for information about using Printer Manager, or the Printer Dashboard Help.

> Some Sigma and retransfer card printers support the optional Tactile Impression Module (TIM) that is installed at the back of the printer. The LXM Card Printer Driver does not support TIM.

Rewritable Card Printing

Rewritable cards are used with applications that contain variable information, allowing erase and reprint multiple times on the same card. The options for erase patterns include "entire card," which erases the whole card, or a user-defined erase pattern, which specifies the portion of the card to erase.

> Rewritable cards are erased and printed only on the front side of the card.

A user-defined erase pattern uses .png files that are installed as part of the Linux driver installation. View the table below for file name details. The sample files are installed in the following folder:

/usr/local/lxm-card-printer/masks/originals/

> The sample files installed in the /usr/local/lxm-card-printer/masks/originals/ folder are replaced each time the Linux driver is installed.

The .png files are black-and-white images that can be modified to specify the portion of the card to erase, based on the card design. The white area of the image (RGB=255,255,255) represents the part of the card that is not erased, and the black area (RGB=0,0,0) represents the area to erase. Use an image editing program, such as GIMP, to modify the driver-provided files.

Orientation	.png File
Portrait	RewritableEraseFront.png

Modify an Erase Pattern

1. Open the driver-provided .png file that describes the orientation of the card design. The example below shows RewritableEraseFront.png.
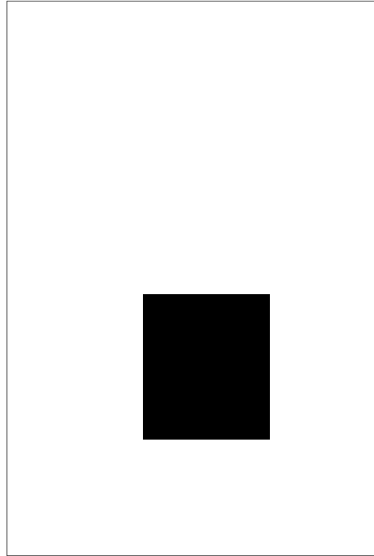
2. Create a new erase pattern by drawing a shape that corresponds to the area of the card to be erased. The example shows a custom erase area that erases and rewrites the right side of a portrait-oriented card.
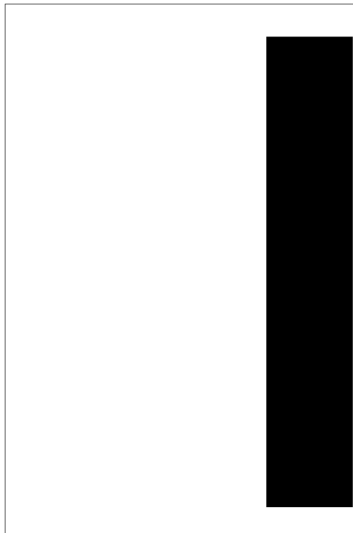
3. Save the file in the /usr/local/lxm-card-printer/masks folder. Use the same name as the original file. The Linux driver checks the folder for the .png file when **Rewrite** is selected in the Printer Properties window.

> The user-defined mask files saved in the /usr/local/lxm-card-printer/masks folder are not replaced when installing a new version of the Linux driver.

Select a Rewrite Option

Use the Printer Properties window to specify the erase pattern to use. The options for erase patterns include entire card, which erases the whole card, or a user-defined area, which erases a portion of the card based on the .png file saved in the /usr/local/lxm-card-printer/masks folder.

1. Open the Printer Properties window.

2. Select **Printer Options** in the left pane.

3. Locate the **Print Using Rewritable Cards** options.

About the Linux Driver
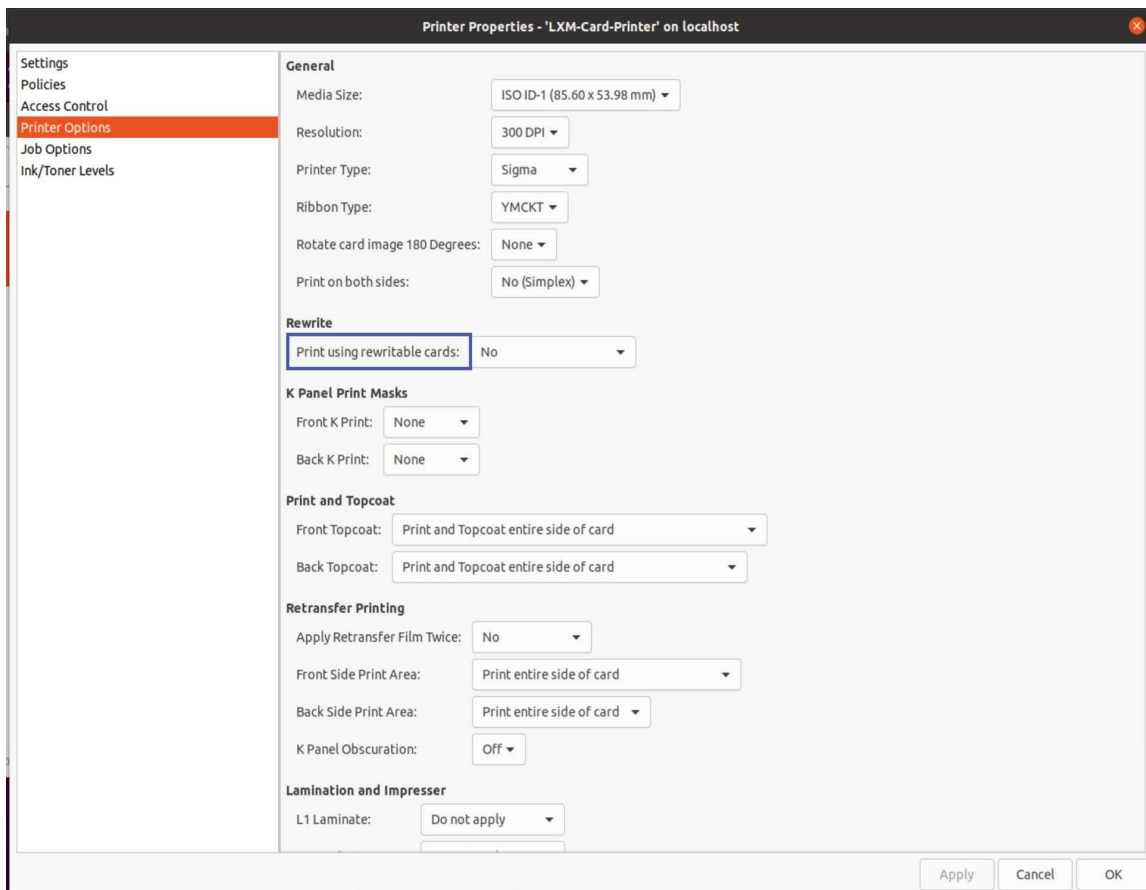
4. Select one of the following Printer Using Rewritable Cards options:

No	Do not use the rewrite option.
Yes (Erase Entire Card)	Erase and rewrite the entire front side of the card.
Use Mask Image File	Use the custom, user-defined .png file to erase and rewrite the card. The .png file used is based on the card orientation specified (refer to "Printer Properties" on page 6).

The Print and Topcoat settings are ignored when a Rewrite option is selected.

5. Click **Apply** to save the selections, or click **OK** to save the selections and close the Printer Properties window. Click **Cancel** to exit without saving.

Refer to the printer's *User's Guide* or *Installation and Administrator's Guide* for complete information about how to prepare the printer to use rewritable cards.

If the front of the card has both printing and a rewrite area, it requires two passes through the printer to complete the card.

K Panel Printing

The Linux Card Printer Driver allows the areas of the card where the K panel of the color print ribbon should be specified. This can include areas such as the following:

- Black text on a white background

- Black monochrome images (such as a bar code) on a white background

- Color images that should be printed using the K panel

- Black text or images on a color background

The driver uses mask files that indicate the areas to print using the K panel. The driver checks the area identified by the K panel mask and places the five black-most shades (from a palette of 256 shades) on the K panel image.

Several default files are installed with the driver. These mask files can be modified and applied to a single card design, or used to create multiple masks that are applied to different card designs. Refer to the following for more information:

- Use the Default K Panel Masks on page 21

- K Panel Mask Examples on page 29

> ℹ️ K panel printing is supported for both the front and back of cards. The mask file names are the same for each, but with "front" or "back" specified for the appropriate type.

Examples of how to print cards for three different K panel scenarios are also provided. Refer to the following for details:

- "K Panel Mask Examples" on page 29

> ℹ️ For those interested in viewing an example of the advantages of K panel printing, printing a card without K panel selections first, and then printing the same card again, with K panel options selected, for comparison is recommended.

Use the Default K Panel Masks

The default mask files are added as part of the driver installation. The mask files that should be selected vary depending on the type of printer in use. View the information below for file name details.

The files are installed in the following folder: /usr/local/lxm-card-printer/masks/originals

- The files are black-and-white.png files that specify the area for the K panel printing. The black areas of the images (RGB=0,0,0) represent the parts of the card that are printed using the K panel, and the white areas (RGB=255,255,255) represent the color print areas.

- The *Black.png mask files specify the monochrome text and graphics that should be printed using the K panel. The *Graphics.png mask files specify the color graphics that should be printed using the K panel.

- To use a K panel mask file, use an image editing program, such as GIMP, to modify the driver-provided files based on the card design.

- Card sized (2.125"x3.375" for DTC printers and 2.24"x3.5" for retransfer printers) PNG image files which contain black colored areas denoting where the driver should attempt to print exclusively with the K panel of the print ribbon.

Black mask and graphics mask behave differently. Below is a description of their differences.

- Black Mask

  - Tells the driver to analyze the specified area for black or near-black pixels

  - RGB values of (0) to (5) are all printed as K panel. The masking threshold can be changed, refer to "Changing the Black Masking Threshold" on page 24.

  - Tells the printer to print those pixels with the K panel of the print ribbon in addition to the color printing

  - To print bar code users should select black mask.

  - Using Black Mask driver removes the black or near-black pixels before YMC panel and adds it to K panel.

- Graphics Mask

  - Tells the driver to convert the specified area to grayscale

  - Based on printer type, the driver may apply a dithering algorithm to the specified pixels to achieve a grayscale effect

  - Removes the specified area from the color portion of the image.

If both a Black and Graphics mask are specified on the same card design and the masks have overlapping regions, the Black mask takes priority in those regions. When applicable, this ensures that color printing happens as much as possible and is intended to provide the highest quality output.

KT Ribbon

- If user selects **None** then entire card is dithered and printed using K panel.

- Graphics mask is not used when user selects **Use Masks selection**.

- If user selects **Use Masks** selection and black mask file is present then the black portion of mask is analyzed for black or near-black pixels and printed with K panel. The white portion of the mask is dithered and printed with K panel. For example, user might not want barcodes to be dithered for KT ribbon. In this case, they would use black mask.

- If user selects **Use Masks** selection and black mask file is not present then driver applies black mask to full card. The entire card is analyzed for black or near-black pixels and only black enough pixels are printed on the card.

300 DPI (1012px x 640px) DTC and Sigma Printers

Orientation	.png File
Portrait	MaskBlackBackDTC.png
	MaskBlackFrontDTC.png
	MaskGraphicsBackDTC.png
	MaskGraphicsFrontDTC.png

600 DPI (2100px x 1343px) Retransfer Printer

Orientation	.png File
Portrait	MaskBlackBackRET.png
	MaskBlackFrontRET.png
	MaskGraphicsBackRET.png
	MaskGraphicsFrontRET.png

Changing the Black Masking Threshold

The user has the option of making the printer print using the black ribbon instead of YMC if the pixels are dark enough. This is done by adjusting the threshold of Black. To adjust the threshold, navigate to the configuration file /etc/lxm-card-printer.conf, and change the value by modifying diagnostics.maskthreshold.

The K panel mask must still be modified to set what part of the card the black mask is printing on. Refer to .

The default threshold is (5). By adjusting it to (128) most dark pixels will be printed with the black mask. For the most pixels to be considered and printed as black, adjust the threshold to (160).

Below are examples of what will happen to the card at different threshold adjustments.

This is what YMC will print when the black masking threshold is set to 5,5,5 (default)
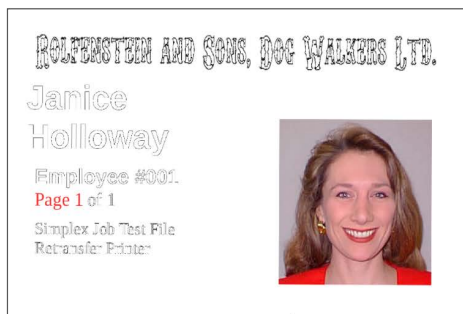
This is what K will print when the black masking threshold is set to 5,5,5 (default)
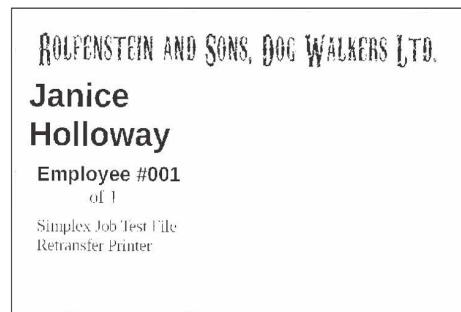
This is what YMC will print when the black masking threshold is set to 128,128,128

This is what K will print when the black masking threshold is set to 128,128,128

About the Linux Driver
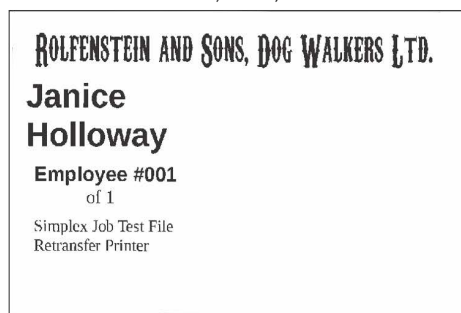
Modify a K Panel Mask File

> Only the 300 DPI DTC printer front panel mask files are shown below, as examples. 600 DPI retransfer printer mask files, as well as back panel files for each type, are also available. View the tables above for details.

1. Copy the .png files to the /usr/local/lxm-card-printer/masks folder.

2. Open the driver-provided .png file that matches the printer type and the side the mask is being applied to.
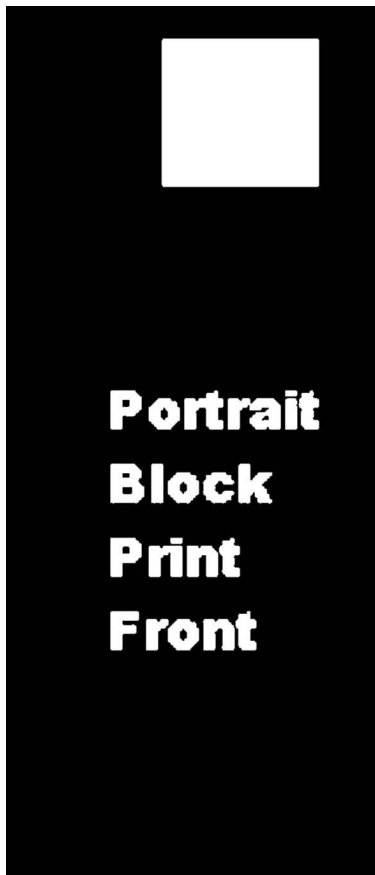
MaskBlackFrontDTC.png
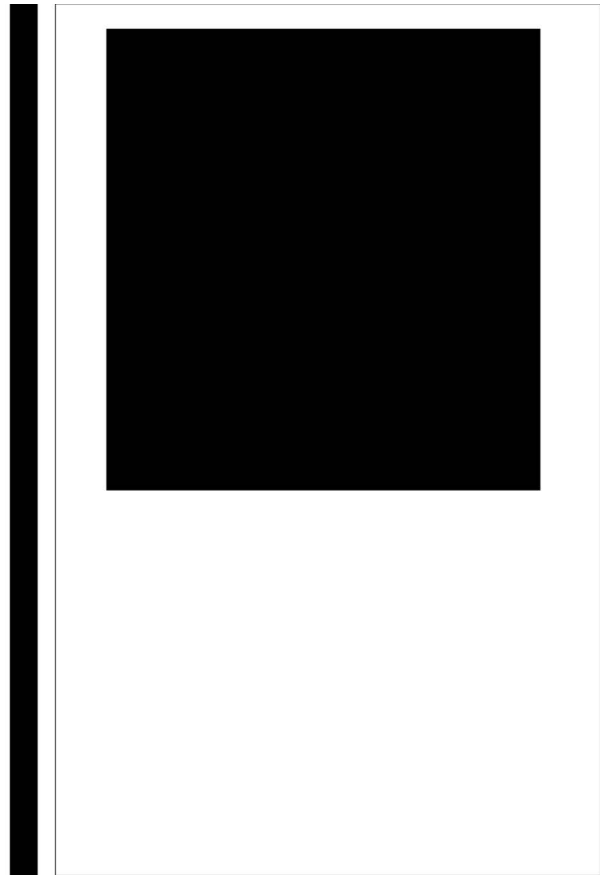
MaskGraphicsFrontDTC.png

3. Draw one or more shapes that correspond to the K panel print areas of the card. The example shows custom K panel print areas for a portrait-oriented card.

MaskBlackFrontDTC.png   **MaskGraphicsFrontDTC.png**
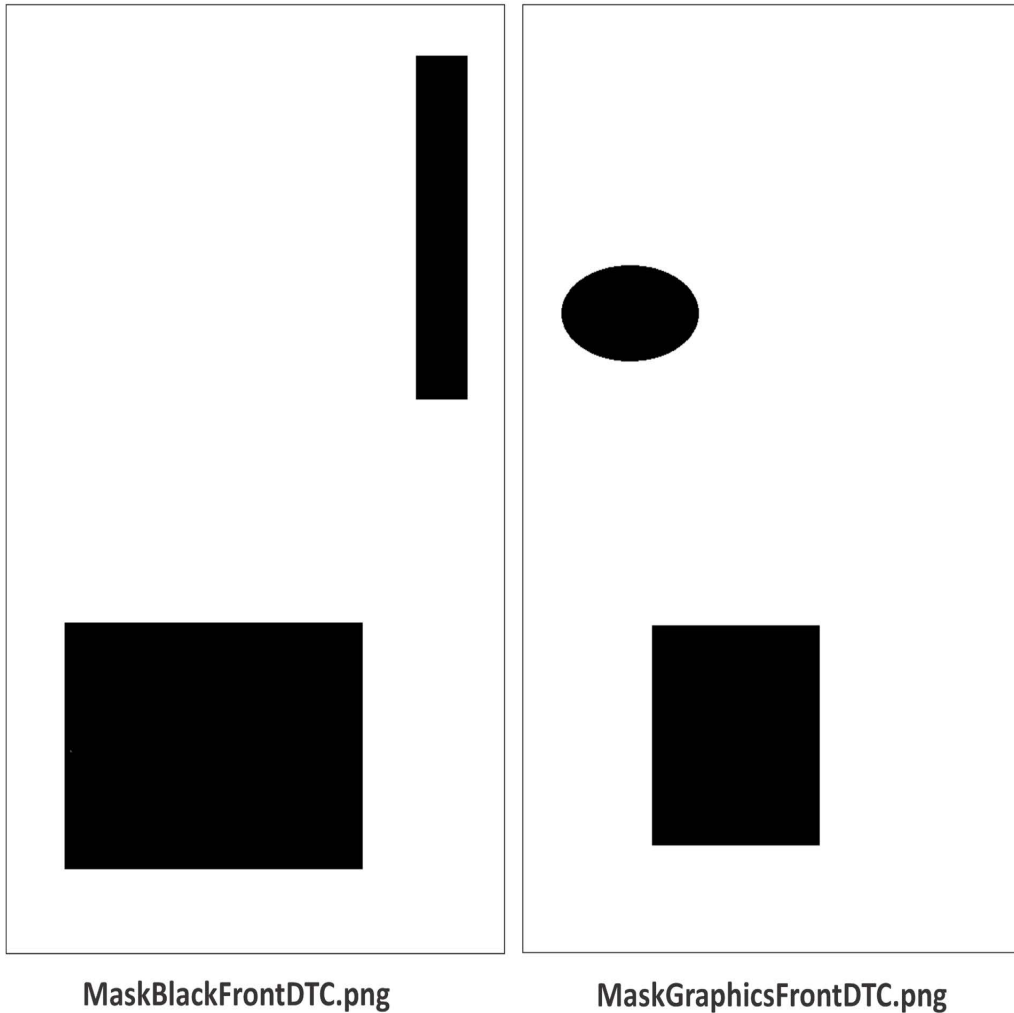
MaskBlackFrontDTC.png specifies the monochrome text and graphics to print using the K panel and MaskGraphicsFrontDTC.png specifies the color graphics to print using the K panel.

> ℹ️ If areas of the card are in both the Black and Graphics masks, the Black mask takes precedence.

4. Save the files using the same name in the /usr/local/lxm-card-printer/masks folder.

Select a K Panel Option

Do the following to enable K panel printing on the card.

1. Open the Printer Properties window.

2. Select **Printer Options** in the left pane.

3. To select a front panel mask:

    a. Locate the **Front K Print** options.
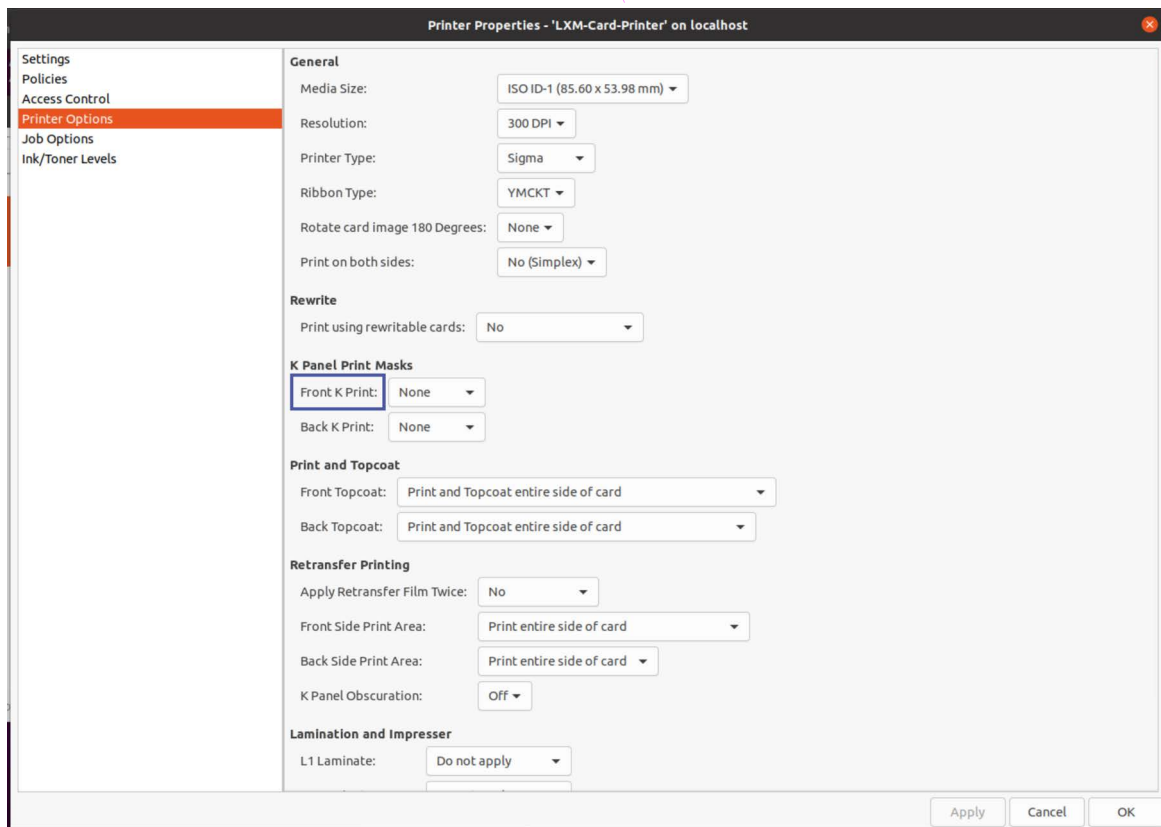
b. Select one of the following Front K Print options:

None   Do not use a K panel mask.

Use Masks   Use the mask files to print using the K panel.

The application's settings may override the settings specified in the Linux driver Printer Options.

4. To select a back panel mask:

a. Locate the **Back K Print** options.
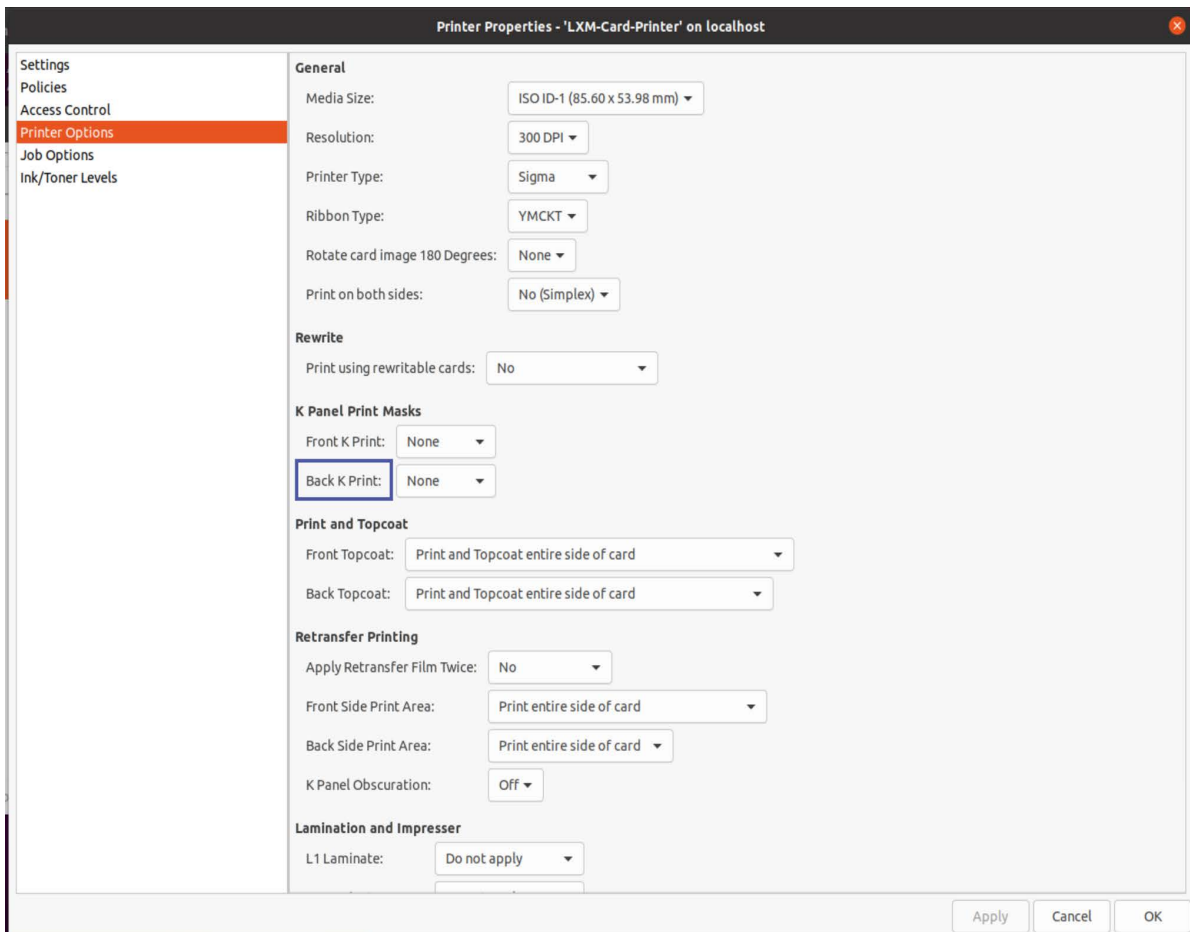
b. Select one of the following Back K Print options:

None   Do not use a K panel mask.

Use Masks   Use the mask files to print using the K panel.

> The application's settings may override the settings specified in the Linux driver Printer Options.

5. Click **Apply** to save the selections, or click **OK** to save the selections and close the Printer Properties window. Click **Cancel** to exit without saving.

K Panel Mask Examples

K panel masks can be configured for specific print scenarios.

Examples of masks used to print cards on a retransfer printer for three different sample situations outlined below, as well as examples of the final, expected outputs for each situation, are provided in the driver installation package.

The files are located in a supplemental tarball called lxm-card-printer-samples-x.x.x.tar.gz.

Before the samples can be used, the files must be extracted to disk:

1. Open a terminal window.
2. Enter the following command to extract the files:

```
tar -xvf lxm-card-printer-samples-x.x.x.tar.gz
```

The files are extracted to the computer in two folders:

- DTC (Direct To Card)
- RET (Retransfer)

These two folders follow a similar file structure. The example below outlines the structure for reference.

Directory structure of DTC Documents:

- SimplexDocuments
  - BlackTextOnColorBackground
  - BlackTextOnly
  - KMaskColorGraphics
  - MonoGraphicsWithBlackText

- RewriteableCard
- DuplexDocuments
    - BlackTextOnColorBackground
    - BlackTextOnly
    - KMaskColorGraphics
    - MonoGraphicsWithBlackText

Directory structure of RET Documents:

- SimplexDocuments
    - BlackTextOnColorBackground
    - BlackTextOnly
    - KMaskColorGraphics
    - MonoGraphicsWithBlackText
- DuplexDocuments
    - BlackTextOnColorBackground
    - BlackTextOnly
    - KMaskColorGraphics
    - MonoGraphicsWithBlackText

Each folder under SimplexDocuments represents a print sample. The example below outlines the structure in the BlackTextOnly folder for reference:

- SimplexDocuments
    - BlackTextOnly
        - Expected_Output
        - BlackTextOnly.odt
        - MaskBlackFrontDTC.png

Where:

- The "Expected_Output" folder contains an image or images of the final printed card as it should appear.

- The mask files contain all mask images used with that sample. These can be copied or clicked/dragged directly into the /usr/local/lxm-card-printer/ masks folder.

- The .odt file is the actual sample document which can be opened and printed via LibreOffice or an equivalent editor.

  Please be aware that these samples may produce different results based on which editor is used. The documents were created on Fedora 19, in LibreOffice 4.1.0.0-9.beta2

The subsections below explain how to print the three different types of sample cards using the provided K panel masks.

- "Simplex Card, BlackTextOnly" on

- "Simplex Card, KMaskColorGraphics" on

- "Duplex Card, MonoGraphicsWithBlackText" on

Simplex Card, BlackTextOnly

Scenario: Using a retransfer printer to print a single-sided card in black using the K panel only.

1. Double-click the printer icon or right-click and select **Properties** to open the Printer Properties window.

2. Select **Printer Options** in the left pane.

3. Under the "K Panel Print Masks" section, locate the "Front K Print" option.

4. Select **Use Masks** from the drop-down list and click **Apply**.

5. Open a file-explorer program and navigate to <print samples extraction location>/RET/SimplexDocuments/BlackTextOnly.

6. Locate the file **MaskBlackFrontRET.png**. Example of this mask file:
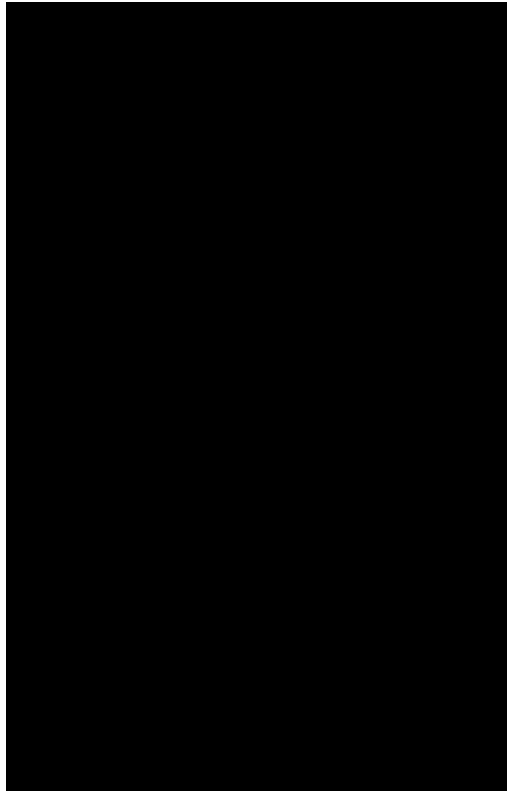
7. Copy **MaskBlackFrontRET.png** and save it to /usr/local/lxm-card-printer/ masks.

8. Navigate back to <print samples extraction location>/RET/ SimplexDocuments/BlackTextOnly.

9. Locate and open the file named **BlackTextOnly.odt** using the LibreOffice Writer or equivalent text editor.

10. Print the document.

The front side of the card is printed in black using the mask specified.

The printer's output should look the same as the card pictured in output_ front.jpg, located at <print samples extraction location>/RET/ SimplexDocuments/BlackTextOnly/Expected_Output.

SAMPLE TEXT
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Dictumst quisque sagittis purus sit amet volutpat consequat mauris nunc. Ultricies mi quis hendrerit dolor magna eget est lorem ipsum. Nunc sed id semper risus in hendrerit gravida rutrum.

"BlackTextOnly"
Retransfer Printer
Page 1 of 1
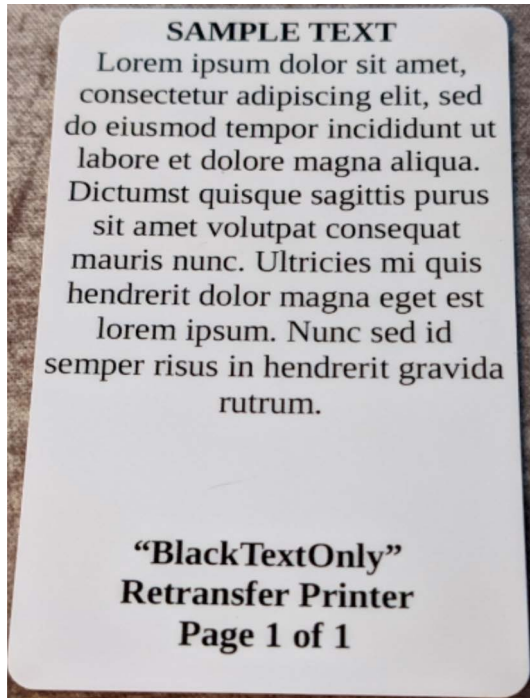
output_front

Simplex Card, KMaskColorGraphics

Scenario: Using a retransfer printer to print a single-sided card using a K mask and a graphics mask for dithering grayscale images.

1. Double-click the printer icon or right-click and select **Properties** to open the Printer Properties window.

2. Select **Printer Options** in the left pane.

3. Under the "K Panel Print Masks" section, locate the "Front K Print" option.

4. Ensure that the default setting of **None** appears in the drop-down list.

5. Under the "K Panel Print Masks" section, locate the "Back K Print" option.

6. Select **Use Masks** from the drop-down list and click **Apply**.

7. Open a file-explorer program and navigate to <print samples extraction location>/RET/SimplexDocuments/KMaskColorGraphics.

8. Locate the file **MaskBlackFrontRET.png**. Example of this mask file:

9. Copy **MaskBlackFrontRET.png** and save it to /usr/local/lxm-card-printer/ masks/.

10. Navigate to <print samples extraction location>/RET/SimplexDocuments/ KMaskColorGraphics.

11. Locate the file **MaskGraphicsFrontRET.png**. Example of this mask file
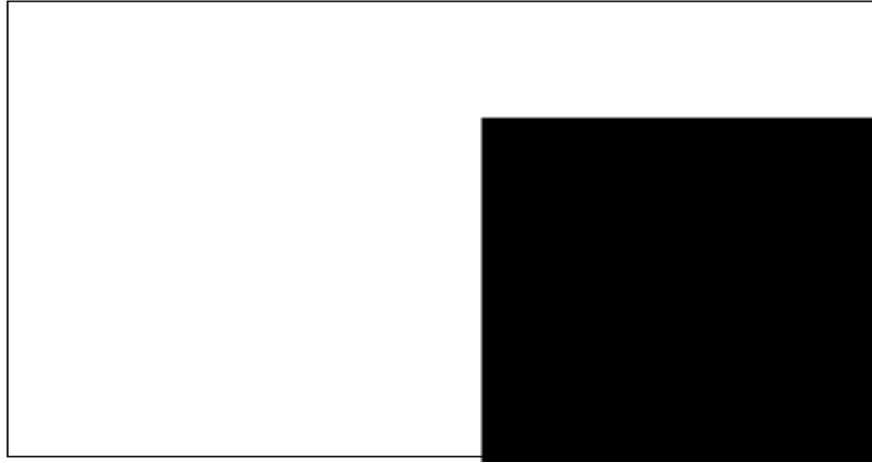
12. Copy **MaskGraphicsFrontRET.png** and save it to /usr/local/lxm-card-printer/masks.

13. Go back to <print samples extraction location>/RET/SimplexDocuments/ KMaskColorGraphics.

14. Locate and open the file named **KMaskColorGraphics.odt** using the LibreOffice or an equivalent editor.

15. Print the document.

The front side of the card is printed exclusively with the K panel, but areas in the graphics mask have been dithered to provide a grayscale look.

The printer's output should look the same as the card pictured in output.jpg, located at <print samples extraction location>/RET/SimplexDocuments/ KMaskColorGraphics/Expected_Output, also shown below.
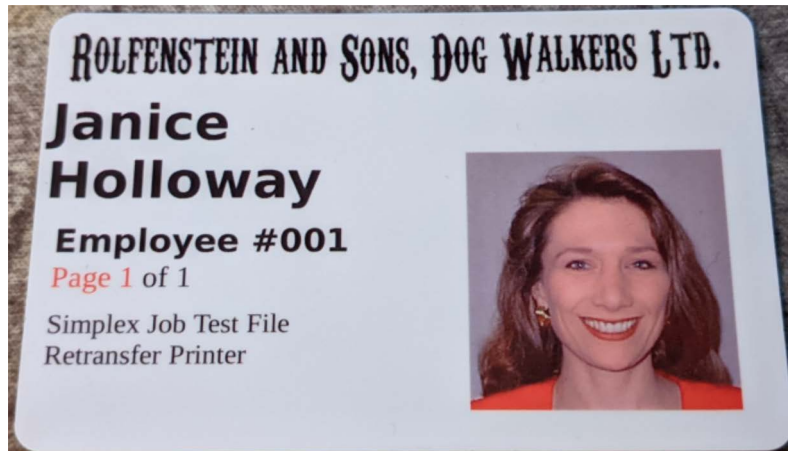
Duplex Card, MonoGraphicsWithBlackText

Scenario: Using a retransfer printer to print a two-sided card with both the front and back sides printed exclusively with the K panel.

1. Double-click the printer icon or right-click and select **Properties** to open the Printer Properties window.

2. Select **Printer Options** in the left pane.

3. Under the "K Panel Print Masks" section, locate the "Front K Print" option.

4. Select **Use Masks** from the drop-down list.

5. Under the "K Panel Print Masks" section, locate the "Back K Print" option.

6. Select **Use Masks** from the drop-down list and click **Apply**.

7. Open a file-explorer program and navigate to <print samples extraction location>/RET/DuplexDocuments/MonoGraphicsWithBlackText.

8. Locate the files **MaskBlackFrontRET.png** and **MaskBlackBackRET.png**. Examples of these mask files (they are identical in appearance):
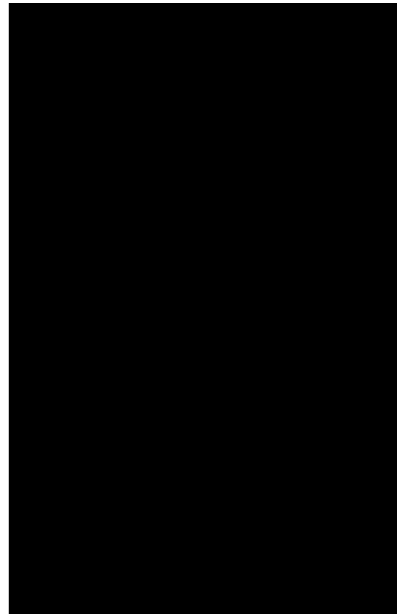
MaskBlackFrontRET   **MaskBlackBackRET**

9. Copy both the **MaskBlackFrontRET.png** file and the **MaskBlackBackRET.png** file and save them to /usr/local/lxm-card-printer/ masks.

10. Navigate to <print samples extraction location>/RET/DuplexDocuments/ MonoGraphicsWithBlackText.

11. Locate and open the file named **MonoGraphicsWithBlackText.odt** using LibreOffice or an equivalent editor.

12. Print the document.

Both sides of the card are printed using the K panel.

The printer's output should look the same as the two sides of the card pictured in Output_Front.jpg and Output_Back.jpg, both located at <print samples extraction location>/RET/DuplexDocuments/MonoGraphicsWithBlackText/ Expected_Output, also shown below.

Creating K Panel Masks

Multiple K panel mask files can be created and saved and can be applied to different card designs. Since an organization can have several card designs, having a different K panel mask file for each design makes it simpler to switch between them.

To create additional K panel masks, follow the steps below (also refer to "Changing the Black Masking Threshold" on for additional information).

1. Copy the driver-provided .png files to the /usr/local/lxm-card-printer/masks folder.

2. Open each .png file that matches the orientation of the card design.

3. Modify the files to reflect the first card design.

4. Save the files with a file name that indicates the card design it's used for (for example, national-id-k-mask and national-id-k-mask-graphics).

5. Save the files to the /usr/local/lxm-card-printer/masks folder, or to a different location on the computer.

6. Repeat step 1 through step 5 to create additional mask files for each of the card designs.

About the Linux Driver

Specify a K Panel Mask File

1. Open the Printer Properties window.

2. Select **Printer Options** in the left pane.

3. Select a K Panel Print Masks option (**Front** or **Back**).

4. Select a K Print option (**None** or **Use Masks**). Refer to "Select a K Panel Option" on page 27 for additional details.

> All of the mask files that the user would like to use must have read/write permissions for all users before inputting the command for mask files being used.

5. Open a terminal window.

6. Enter the lp command. For example,

```
lp -d LXM-Card-Printer -o FrontKPrintKMask=<print_filename.png>
-o FrontKPrintGraphicsMask=<graphics_filename.png>
</path-to-card-design/cardname.pdf>
```

> If the mask file options are specified in the lp command, but the Front K Print option is set to None on the Printer Properties window, no mask files are used for the print job.

where:

-d	The name of the destination printer.
-o	The option files to use: • FrontKPrintKMask *<print_filename.png>*—Specify the print .png file to use • FrontKPrintGraphicsMask *<graphics_filename.png>*—Specify the graphics.png file to use Note: These options are not available from the Printer Properties window and must be specified on a command line. The Front K Print option selected on the Printer Properties window indicates the orientation of the card design.
pdf	The path to the card design pdf to which the mask files apply.

Hints & Tips

- If the mask files are located in the /usr/local/lxm-card-printer/masks folder, the path name to the files does not need to be entered.

- If the mask files are located in a different location on the computer, specify the full path to the files. No other locations are checked for mask files.

- If the mask file options is not specified in the lp command, the default mask files installed with the driver are used.

- If the mask file options are specified in the lp command, but the Front K Print option is set to None on the Printer Properties window, no mask files are used for the print job.

- If only one of the mask file options is specified on the lp command, the driver uses the default mask file for the option that was not specified.

- If the mask files specified on the lp command do not exist, no masking occurs for the job.

LXM Driver Setup Tool

The Linux driver includes a LXM Driver Setup Tool that runs automatically at installation, and can be run at any time using the **sudo lxm-card-printer-driver-setup-tool** command. The program is installed at /usr/bin/lxm-card-printer-driver-setup-tool. Only a root user can run the LXM Driver Setup Tool.

The LXM Driver Setup Tool does the following:

- Configures the system to perform detailed logging.

- Runs a series of tests.

- Prints one or more test cards to verify that the printer is able to print.

- Saves the information to a zip file. The file can be sent to technical support for troubleshooting assistance.

- Disables detailed logging, placing the system back into production mode.

Do the following to run the LXM Driver Setup Tool.

1. Log in to the system.

2. Open a terminal window.

3. Enter the following command:

   ```
   sudo lxm-card-printer-driver-setup-tool
   ```

4. When the LXM Driver Setup Tool starts, select one of the following options:

1) Quit without doing anything.	The LXM Driver Setup Tool does not run.
2) Network Printer (Using manually specified printer IP address)	The LXM Driver Setup Tool tests a network-connected printer.
3) USB Printer (Single Printer only)	The LXM Driver Setup Tool tests a USB-connected printer.

   The program runs the following diagnostic tests based on the response. The name of the test being performed and the results of the test display in the terminal window.

Enable Linux Driver Logging

The Linux driver generates log files that can be used for troubleshooting. Enable driver logging by modifying the driver configuration file located at /etc/lxm-card-printer.conf. If this file is not present, refer to "Create a Logging Configuration File" on page 43.

1. Open the configuration file /etc/lxm-card-printer.conf in an editing program.

2. Set the diagnostics.level value to **1**.

3. Save the file, and reproduce the problem.

4. Create a zip file with the following logs.

   a. All files in /var/log/lxm-card-printer folder.

   - lxm-card-printer.log

   - preInstSystemInfo_*.log

   - instLog_*.log

   - postInstSystemInfo_*.log

   - *.png

   - .zip files containing additional information

   b. Locate and copy the following log files.

   - Syslog

   - /var/log/audit/audit.log or /var/log/audit.log

   - /etc/os-release (so we can see exactly what release we're building on)

   - /etc/apt/sources.list (so we can see where packages are downloaded from)

   c. Get the IP address output.

      i. Open the terminal.

      ii. Enter the command "hostname -I" and confirm with [Enter].

      iii. Enter the command "ip addr" and confirm with [Enter].

5. Forward the zip file to technical support.

Create a Logging Configuration File

If there is no configuration file to log troubleshooting data, follow these steps.

1. Create empty /var/log/lxm-card-printer directory.

2. Copy the lxm-card-printer.conf file from the Driver install. It will be present in the log directory.

3. Set the permissions on the lxm-card-printer.conf file and the /var/log/lxm-card-printer directory.

   - chmod 644 /etc/lxm-card-printer.conf

   - chmod 655 /var/log/lxm-card-printer

   - chown root:root /etc/lxm-card-printer.conf

   - chwon root:root /var/log/lxm-card-printer

Driver Setup Tool Procedure

When the LXM Driver Setup Tool (LDST) starts, a prompt asks for the type of connection wanted to establish with the printer.

The program can be quit immediately. Quitting leaves driver unconfigured and will require that to be performed later on for proper printer functionality.

1. Respond to the first prompt.

   - What type of connection would you like to use?

      ♦ Quit without doing anything.

      ♦ Network Printer (Using manually specified printer IP address)

      ♦ USB Printer

2. Respond to the second prompt. The prompt will either show the Network Printer or the USB Printer options, depending on the selection made in the first step.

   - Network Printer: Enter the IP address of the printer.

      ♦ Enter a valid IP address in the form ###.###.###.### where "###" is a number between 0-255.

      ♦ Leaving out any preceding zeros will not affect the entry. For example entering "10.11.12.13" instead of "010.011.012.13".

         > The LXM Driver Setup Tool will now check for communication with the printer at the IP address supplied. The printer should respond within a few seconds depending on network configurations. If a long time has elapsed, ensure the connection is good and that the printer is fully powered on and ready.

   - USB Printer: Follow the prompt to unplug any Entrust printers that are currently connected before continuing.

      ♦ Follow the prompts on the terminal to complete the USB printer setup.

         > The printer will be issued an IP address automatically by the setup tool. This IP address can be used to open the printer's onboard printer manager web page later on.

3. Follow the prompt to select a printer type. This prompt looks like this:

   a. Select Printer and Ribbon Type
      What kind of printer do you have?

      - Direct-to-Card (e.g. SD260, SD460)

      - Retransfer (e.g. CR805)

      - Sigma

      - Skip this step

          (i)   Choosing to skip this step leaves the driver in an unconfigured state with default options set. It is necessary to configure the driver later either through Printer Properties or by running the LDST again.

          (i)   The default setting is a Sigma printer and YMCKT ribbon.

4. If a SD260/460 printer is selected, select from the list of supported ribbon types for that type of printer.

   - Select the type of ribbon installed in the printer in order to enable full printer functionality.

   - Skipping this step and using the default values may result in printer errors.

5. Follow the prompt for printing a test card. The prompt will look like this:

   a. Print Test Card. Prepare the printer, and then choose from these options:

   ♦ Print a color test card

   LXM-Card-Printer-Test-Card-001

   ♦ Do not print a test card

   b. Follow the on-screen instructions following test card printing.

   > ⓘ Color test cards can include monochrome (black and white) cards for users with KT ribbon installed.

   If the configuration cannot be restored, run the LXM Driver Setup Tool again to clean up the changes it made.

The LXM Driver Setup Tool produces a series of log files and saves them to the /tmp/lxm-card-printer-diagnostics.zip file when it completes. Send the .zip file to technical support for troubleshooting assistance, if needed.

> ⓘ
> - While the LXM Driver Setup Tool is running, press **Ctrl+C** to end the program. However, some system configuration parameters are altered during diagnostics, and they may be left in debug states. Pressing **Ctrl+C** when a prompt message displays restores the settings for normal printing.
> - Do not send any jobs to the printer while the LXM Driver Setup Tool is running. The LXM Driver Setup Tool cancels all queued print requests.
> - After updating the LXM Driver Setup Tool, confirm the settings are correct in the printer properties and printer options tab.

Update the Linux Driver

If a previous version of the Linux driver already is installed on the computer, uninstall the driver, then reinstall to the latest version.

Uninstall the Linux Driver

Follow the steps below to uninstall the LXM Card Printer Driver for Linux. If you run into any errors while uninstalling the Driver, uninstall the driver manually. Refer to "Manual Uninstall Steps" on page 47.

1. Open a terminal window.

2. Enter the following command:

```
sudo apt purge printer-driver-entrust-lxm.x86-64
```

3. Enter the password when prompted.

4. A prompt displays asking to continue the uninstall. Enter **y** to continue.

   The Linux driver is removed from the system.

Manual Uninstall Steps

If any errors occur while uninstalling the driver use the following steps.

1. Manual driver removal steps for Ubuntu 20 and Kylin.

   a. Open a terminal window.

   b. systemctl stop lxm-card-printer

   c. systemctl disable lxm-card-printer

   d. sudo lpadmin -x lxm-card-printer

   e. sudo rm /var/lib/dpkg/info/printer-driver-entrust

   f. sudo rm -rf /var/log/lxm-card-printer

   g. sudo dpkg --configure -a

   h. sudo apt purge printer-driver-entrust-lxm.x86-64

Printer Error Messages

The Linux driver displays printer error messages in a pop-up window.

Refer to the printer's *User's Guide* for complete information about printer error messages and how to resolve them.

Install the needed Python modules to enable the error UI if it is not functioning.

If the Driver does not display error messages, the user can retrieve them by using SDK.

Chapter 2: Linux Driver SDK

2

Install the SDK

The Linux driver SDK allows the driver to be used in interactive mode. Installing the SDK installs the SDK library, C++ sample code, and compiled samples that demonstrate how to use the SDK.

The SDK package is included in the self-extractor and is automatically extracted to /usr/local/lxm-card-printer.

> The SDK is only installed by the self-extracting shell script installer.

It is not deleted upon driver uninstall/removal. It is not modified if the same version is reinstalled. The user must manually delete the SDK directory if they find the need to do so.

> The Linux driver SDK uses the Cairo programming library to generate PDF files for printing. Download the Cairo library at https://cairographics.org.

Manually Installing the SDK

To install the SDK manually, follow these steps.

1. Open a terminal window.

2. Enter the following command to extract the SDK files:

```
tar -xvf /path_to_tar.gz_file/lxm-card-printer-sdk-x.x.x.tar.gz
```

> The Linux SDK files are extracted to the computer in the lxm-card-printersdk-x.x.x folder.

Developer Environment

The sample code was developed using the following tools.

- GCC version with the CPP11 standard.

- libcairo

- Cups

    - Available at https://www.cups.org/

    - Use the following command to install: `sudo yum install cups`

        ℹ️ It may be necessary to run the following command:
        `sudo yum install system-config-network kdebase`

- Make utility

Find additional Information at: https://www.gnu.org/software/make/manual/make.pdf

Interactive Operations

An application must perform the interactive operations in the following order:

- A Start Job request is always the first operation.

    Make sure to clear all printer errors and that the printer is in the Ready state before sending the StartJob command.

- An End Job or Cancel Job request is always the last operation.

- An End Job request must not be issued until print operations for the job have been sent to the printer.

StartJob

The SDK client transmits the following XML file.

```xml
<?xml version="1.0" encoding="utf-8"?>
<StartJob>
    <PrinterName>LXM-Card-Printer</PrinterName>
    <InputHopperSelection>1</InputHopperSelection>
    <CardEjectSide>Back</CardEjectSide>
</StartJob>
```

The driver gets the IP address of the printer specified in the PrinterName element of the XML file. The driver initiates a connection with the printer using the IP address and gets the printer status.

The SDK client waits for the response from the driver. The driver returns the following XML for the response. The XML contains information about whether the request succeeded or failed and, if it failed, information about the error that was detected. The LinuxJobID is 0 because the job has not started yet.

```xml
<?xml version="1.0" encoding="utf-8"?>
    <PrinterStatus>
        <ClientID>STATUSTEST</ClientID>
        <LinuxJobID>0</LinuxJobID >
        <PrinterJobID>780</PrinterJobID>
        <ErrorCode>111</ErrorCode>
        <ServiceCode></ServiceCode>
        <ErrorSeverity>4</ErrorSeverity>
        <ErrorString>Message 111: Card not picked.</ErrorString>
        <DataFromPrinter><![CDATA[ ]]></DataFromPrinter>
    </PrinterStatus>
```

The printer status structure contains the following elements:

Element	Description of the element value
ClientID	A unique identifier of the client that created the job. *Note: This element is not used at this time.*
LinuxJobID	The Linux job ID assigned by the operating system.
PrinterJobID	The print job ID assigned by the driver.
ErrorCode	If the command succeeded, the ErrorCode is 0 (zero). A non-zero value means an error was detected. For non-zero ErrorCode values, the ServiceCode, ErrorSeverity and ErrorString elements also contain values.
ServiceCode	If an error was detected, the printer may return a service code to further identify the cause of the error. *Note: A service code is not returned by all printers.*
ErrorSeverity	Errors are classified into severity levels (1, 2, 3, 4, or 5). The severity level determines which recovery actions are possible.
ErrorString	A short human-readable description of the error, including the error number. This matches the message that displays on the printer LCD panel.
DataFromPrinter	If the command was intended to read data from the card in the printer and the read operation was a success, this element contains the data in the CDATA section.

The ErrorSeverity can have the following values:

Error Severity	Description	Possible Recovery Actions
1	Alert: Unrecoverable issue for job	Cancel job
2	Critical: Unrecoverable issue for job	Cancel job
3	Error: Unrecoverable issue for card; recoverable issue for job	Restart or cancel job
4	Warning: Recoverable issue for card	Resume or cancel job
5	Notice: Information only	None required

> If there is an interactive or non-interactive job in progress, StartJob fails with error 506, A card is currently processing.

Resume, Cancel, or Restart

The SDK client connects with the Linux driver and transmits the following XML file. The client fills in the PrinterJobID that it receives from the StartJob command. The driver connects with the printer and sends the Resume, Cancel, or Restart command. The driver does not return any response to the SDK.

```
<?xml version="1.0" encoding="utf-8"?>
<PrinterAction>
    <PrinterName>LXM-Card-Printer</PrinterName>
    <Action>100</Action>
    <PrinterJobID>780</PrinterJobID>
    <ErrorCode>111</ErrorCode>

</PrinterAction>
```

Action Value	Description
100	Cancel
101	Resume
102	Restart

> The error code is 0 for smart card programming.

Print

The SDK client creates the PDF print jobs using the Cairo library and sends it to the Linux driver.

EndJob

The SDK client connects with the driver and transmits the following XML file. The driver does not return any response to the SDK. The driver connects with the printer and sends the EndJob command to end interactive mode.

```xml
<?xml version="1.0" encoding="utf-8"?>
<EndJob>
    <PrinterName>LXM-Card-Printer</PrinterName>

</EndJob>
```

Linux SDK Sample Code

The SDK sample code demonstrates specific card personalization tasks using best practices for job sequencing and basic error handling. Use the samples to better understand how to integrate the driver in the application.

The SDK includes the following samples:

- magstripe_sample.out

- printing_sample.out

- status_sample.out

- kiosk_emboss_sample.out

- smartcard_sample.out

- smartcard_singlewire_mifare_duali_sample.out

- smartcard_singlewire_omnikey_sample.out

Access the latest version of sample source code and compiled samples through the following URL path:

/usr/local/lxm-card-printer/lxm-card-printer-sdk-x.y.z

Each sample includes help text that describes the parameters and options that can be entered. To view the help, enter the following command prompt with no parameters:

*./path_to_samples/samplename*_sample.out

The Linux driver monitors the printer for errors and job status when a print job is sent.

Note that only one application can submit jobs to a printer at a time using the SDK. The SDK does not support two or more applications connecting to the printer at the same time.

If an SDK job is submitted to the printer while the printer is busy, the following error message appears:

```
Checking for printer ready...
```

```
Printer NOT READY!
```

```
Printer is not ready! Please ensure no jobs are currently running and the
printer is not in an error state and retry.
```

Magstripe Sample

The driver supports magstripe read and magstripe encode. The magstripe sample programs call the driver to start a job, encode a magstripe, read the magstripe, print, and ends the job. The print and magstripe data is hardcoded in the sample.

Magstripe Features

Magstripe Encode

The commands used to encode only the magnetic stripe on a card are:

1. **StartJob** - The printer starts the job and picks the card.

2. **MagstripeEncode** - The application sends the encode location and XML magnetic stripe track data.

3. **EndJob** - The printer ejects the card into the output hopper

XML Magnetic Stripe Track Data Format

When using interactive mode magnetic stripe encoding, the magnetic stripe track data must be provided in the XML format the printer expects. The track data itself must be encoded as UTF-8 and then converted to base64 ASCII. Your application also is responsible for sending track data that is valid for the magnetic stripe format configured at the printer.

The following example shows the application that will send the following XML file to encode three tracks of IAT data: track 1 = TRACK1, track 2 = 1122, track 3 = 321.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<magstripe >
    <track number="1">
        <base64Data>VFJBQ0sx</base64Data>
    </track>
    <track number="2">
        <base64Data>MTEyMg==</base64Data>
    </track>
    <track number="3">
        <base64Data>MzIx</base64Data>
    </track>
</magstripe >
```

> The magstripe sample will send above hard code data to encode magstripe on back of the card.

Magstripe Read

Using SDK, data can be read from the tracks of a card's magnetic stripe on the front or back side of the card.

A job consisting of magnetic stripe read, magnetic stripe encode, and printing would use the following operations:

Magstripe Read and Magstripe Encode can be done in any order.

1. **Start Job** - The printer starts the job and picks the card.

2. **Magnetic Stripe Encode** - The application sends the magnetic stripe track data.

3. **Magnetic Stripe Read** - The application reads the magnetic stripe track data.

4. **Print card side(s**) - Use the Cairo library to generate a PDF file.

5. **End Job** - The printer completes printing and then ejects the card into the output tray

Like all other SDK requests, the printer status XML structure is returned to your application. The magnetic stripe track data is returned inside the CDATA element of the printer status structure. This data comes directly from the printer without any modification from the driver. The track data must be converted from base64 ASCII to the format required by your application.

XML Magnetic Stripe Track Read Data Format

The following example shows the printer status XML structure that is returned by driver SDK.

```
<?xml version="1.0"?>
<PrinterStatus>
  <ClientID>STATUSTEST</ClientID>
  <LinuxJobID>0</LinuxJobID >
  <PrinterJobID>780</PrinterJobID>
  <ErrorCode></ErrorCode>
  <ServiceCode></ServiceCode>
  <ErrorSeverity></ErrorSeverity>
  <ErrorString></ErrorString>
  <DataFromPrinter>
    <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<magstripe xmlns:SOAP-ENV="http://www.w3.org/2003/05/soap-envelope"
xmlns:SOAPENC="http://www.w3.org/2003/05/soap-encoding" xmlns:xsi="http://www.w3.org/
2001/
XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:DPCLMagStripe="urn:dpcl:magstripe:2010-01-19" xsi:type="DPCLMagStripe:MagStripe"
SOAP-ENV:encodingStyle="http://www.w3.org/2003/05/soap-encoding">
<track number="1">
<base64Data>zw9PkBBQQzw9PkBBQUVJTVFVWV1hZWltcXV5fICEiIyQlJicoKSorLA==</
```

```
base64Data>
</track>
<track number="2">
<base64Data>MDEyMzQ1Njc4OTo7PD0+jc4OTo7PD0+MDEyMzQ1Ng==</base64Data>
</track>
<track number="3">
<base64Data>MDEyMzQ1Njc4OTo7PDDEyMzQ1Njc4OTo7PD0+MDEyMzQ1Njc4OTo7PD0=</
base64Data>
</track>
</magstripe>]]>
   </DataFromPrinter>
</PrinterStatus>
```

- Printer sends magstripe read data as base64 data. Sample will decode the data from base64 and then display it to user.

Magstripe Sample Program

This demonstrates magstripe encoding, magstripe reading, and printing. It uses hardcoded data for magstripe encoding and printing.

Magstripe Usage

magstripe_sample.out --printer {printer name} [--encode] [--read] [--print] [--log {None | Console | File | Both}]

Sample always does encode before read.

Magstripe Options

Option Name	Option Abbreviation	Description and Examples
--printer {printer name}	NA	The name of the printer. Example: --printer LXM-Card-Printer.
--encode	-e	During the job, driver sends hardcoded magstripe encode data to back side of card.
--read	-r	During the job, driver reads magstripe from back side of card, decodes the data from base64 and then displays it.
--print	-p	During the job, driver prints hardcoded print data to front side of card.
--log	NA	Enable logging and specify the where to direct the log. If --log is not present, logging is not performed. Options: [None | Console | File | Both] Where: --log None. No logging is performed. This is the default. --log Console. Logging information displays on the terminal that sent the job. --log File. Logging is saved to a file in the directory where the application that sent the job is running. --log Both. Logging information displays on the terminal and is saved to a file.

Magstripe Examples

```
magstripe_sample.out --printer LXM-Card-Printer -e --log Both
```

Encodes magstripe on back side of card. Logging information displays on the terminal and is saved to a file.

```
magstripe_sample.out --printer LXM-Card-Printer -e -r -p
```

Encodes magstripe on back side of card, reads magstripe from back side of card and prints. No logging is performed.

Printing Sample

The print sample demonstrates print functions of the printer and driver.

Printing Features

The sample has options to do the following:

- Print text or an image, or both, on a card.

- Print simplex (one-sided) or duplex (both sides) of a card.

- Send the print information to a printer.

- Erase and rewrite on an entire card.

- Use K panel mask files to print text and images using the K panel. Specify names of user-defined mask files; for example, for multiple card designs that require different mask areas.

- Apply lamination to the card.

- Rotate the card 180 degrees.

- Log job information. Display the log information on the terminal, save it to a file, or both.

Printing Sample Program

Printing Usage

printing_sample.out [--printer {printer name}] [--sample {name}] [additional options]

This demonstrates print functions of the printer and driver.

Option Name	Option Abbreviation	Description and Examples
--printer {printer name}	NA	The name of the printer. Example: --printer LXM-Card-Printer. You must specify a printer name or an output file name. You may specify both.
--sample {1 | 2 | 3 | 4}	NA	The name of the sample to print. Where: 1 - (Defult) Color printing with image and text 2 - Black and white printing (K panel only) with just text 3 - Rewriteable card 4 - Duplex card
--output-file {name}	NA	The name of the output file to save to. You must specify an output file name or a printer name. You may specify both.

Option Name	Option Abbreviation	Description and Examples
-x {station + mode}	NA	Specifies the type of lamination to preform and where to preform it. There cannot be any spaces between the station and mode values. Valid station values are: • 1 • 2 Must come before lamination mode. Valid mode values are: • none • front • frontTwice • back • both L1 Front and L2 Twice Example: -x 1front -x 2frontTwice
-r {None | Front | Back | Both}	NA	Rotates the indicated card image side by 180 degrees.
-n {None | Front | Back | Both}	NA	Preform a second application of retransfer film on the indicated side.
-k {None | Front | Back | Both}	NA	Preforms k-mask on the indicated card side
-l {1 | 2}	NA	Laminator impresser. Where: 1 - Do not apply 2 - Laminator Impress at front

Option Name	Option Abbreviation	Description and Examples
-t {1 | 2 | 3}	NA	Print and Topcoat on front. Where: 1 - Do not apply Topcoat entire side of card 2 - Print and Topcoat entire side of card 3 - Block print and Topcoat on ISO 7816 contacted smart card
-q {1 | 2 | 3}	NA	Print and Topcoat on back. Where: 1 - Do not apply Topcoat entire side of card 2 - Print and Topcoat entire side of card 3 - Block print and Topcoat on ISO 3-track Magnetic Stripe
-w {1 | 2 | 3}	NA	Rewrite Where: 1 - No 2 - Yes (Erase Entire Card) 3 - Use Mask Image File
-p {1 | 2}	NA	Retransfer front side print area Where: 1 - Print entire side of the card 2 - Block on ISO 7816 Contacted Smart Card
-c {1 | 2}	NA	K Panel Obscuration Where: 1 - Off 2 - On

Option Name	Option Abbreviation	Description and Examples
-d {1 | 2}	NA	Laminator debow card. Where: 1 - Do not apply 2 - Apply
--log	NA	Enable logging and specify the where to direct the log. If --log is not present, logging is not performed. Options: [None | Console | File | Both] Where: • --log None. No logging is performed. This is the default. • --log Console. Logging information displays on the terminal that sent the job. • --log File. Logging is saved to a file in the directory where the application that sent the job is running. • --log Both. Logging information displays on the terminal and is saved to a file.

Printing Examples

```
printing_sample.out --printer LXM-Card-Printer --sample 1 -k Front
```

Print a simplex card with k-mask applied to front side of card.

```
printing_sample.out --printer LXM-Card-Printer --sample 4 -k Both
```

Print a duplex card with k-mask applied to front and back side of card.

```
printing_sample.out --printer LXM-Card-Printer --sample 1 -t 2
```

Print a simplex card with topcoat on entire card side.

```
printing_sample.out --printer LXM-Card-Printer --sample 1 -t 3
```

Print a simplex card with topcoat on entire card except ISO 7816 Contacted Smart Card.

```
printing_sample.out --printer LXM-Card-Printer --sample 1 -w 2
```

Rewrite a simplex card and erase entire card first.

```
printing_sample.out --printer LXM-Card-Printer --sample 1 -p 2
```

Print a simplex card on Retransfer printer using primer with block on ISI 7816 Contacted Smart Card.

```
printing_sample.out --printer LXM-Card-Printer --sample 1 -l 2
Print a simplex card and LaminatorImpress on front.
```

Print a simplex card and LaminatorDebow on front.

Status Sample

The printer status sample retrieves printer options and returns the printer status. It includes options to log job information and to cancel all jobs.

Status Features

Printer Status

The PrinterStatus element contains the state of the printer at the time of the request. An application can use this to determine if the printer is online and ready to accept a job.

PrinterStatus Value	Description
Unavailable	The printer is not connected or is powered off.
Ready	The printer is available to accept a job.
Busy	The printer is processing a job.
Paused	The printer has errors or has been paused.
Suspended	The printer's front panel, or the Printer Manager application, is being used.
Initialize	The printer is powering up and not ready to accept a job.
Shutdown	The printer is powering down and cannot accept a job.

Printer Information

Element Value	Description
PrinterAddress	The IP address of the printer.
PrinterModel	The model of the printer.
PrinterSerialNumber	The serial number of the printer.
PrinterVersion	The firmware version installed on the printer.

Message Number

The MessageNumber element contains the error number if the printer is in an error state. A value of 0 (zero) means there is no error. (Refer to the printer's *User's Guide* for a complete list of messages and their recovery information.)

Printer Connection Information

Element Value	Description
ConnectionPortType	Identifies the physical connection being used to communicate to the printer. The possible values are: ● Network ● USB
ConnectionProtocol	Identifies the protocol used to communicate with the printer. The possible values are: ● Version1 ● Version2 ● Version2Secure *Note: Version2Secure is required if all the data exchanged between the driver and printer to be encrypted is wanted. It is not available for all printers.*

Printer Options

Element Value	Description
OptionInputhopper	The input hopper configuration for this printer. The values are: • SingleFeed • SingleHopper • SingleHopperWithExceptionSlot • MultiHopper6WithExceptionSlot • HopperAutoDetect *Note: Printers that support hopper detection return the value HopperAutoDetect for OptionInputHopper.*
OptionMagstripe	The magnetic stripe configuration for this printer. The possible values are: • None • ISO • JIS
OptionRewritable	Identifies if this printer supports rewritable cards. The possible values are: • None • Installed *Note: For printers that support rewritable cards, the rewritable feature must be enabled and the printer configured correctly.*
OptionSecondaryMagstripeJIS	The secondary magnetic stripe configuration for the printer. The possible values are: • None • Installed
OptionSmartcard	The smart card configuration for this printer. The possible values are: • None • Installed • Single wire

Element Value	Description
OptionDuplex	The duplex configuration for this printer. The possible values are: • Manual • Auto
OptionPrinterBarcodeReader	Indicates if a bar code reader is installed. The possible values are: • None • Installed
OptionLocks	The lock configuration for this printer. The possible values are: • None • Installed
LockState	The lock state if the printer has the lock option installed. The possible values are: • Locked • Unlocked *Note: This element is missing if the OptionLock value is None.*
PrintEngineType	The type of printer reporting the information. The possible values are: • DirectToCard_DyeSub • Retransfer_Pigment
PrintHead	Indicates if the printer includes a printhead. The possible values are: • None • Installed
ColorPrintResolution	The color printing resolutions supported by this printer. This is a list of values separated by a "|" character. The value list may include: • 300x300 • 300x600 *Note: This element is missing if the PrintHead value is None.*

Element Value	Description
MonochromePrintResolution	The monochrome printing resolutions supported by this printer. This is a list of values separated by a "|" character. The value list may include: • 300x300 • 300x600 • 300x1200 *Note: This element is missing if the PrintHead value is None.*
TopcoatPrintResolution	The topcoat resolution supported by this printer. The possible values are: • 300x300 • Unknown
ModuleEmbosser	Indicates if this printer includes a CEM embosser. The possible values are: • None • Installed
EmbosserVersion	The embosser firmware version if the system includes an embosser. *Note: The element is missing if the EmbossModule value is None.*
Laminator	Indicates if the printer includes a laminator and, if so, whether it has one or two lamination stations. The possible values are: • None • L1 • L1, L2
LaminatorFirmwareVersion	The laminator firmware version if the system includes a laminator. *Note: This element is missing if the Laminator value is None.*
LaminatorImpresser	Indicates if the laminator includes the card impresser option. The possible values are: • None • Installed

Element Value	Description
LaminatorScanner	Indicates if the laminator includes the bar code scanner option. The possible values are: • None • Installed
ObscureBlackPanel	K Panel Obscuration prints a randomized pattern that make the K panel unreadable. • Off • On

Status Printer Info Example

The text on the following two pages shows a sample printer status XML file returned by the status request. The information that is returned depends on the values provided by the printer.

For the value PrintRibbonType, the following ribbon type options are defined by the number shown in the table below.

Ribbon Type	Value
CMYKP	151191553
KT	16976897
K	17039361
K	17039362
K	17039363
YMCKT	21037057
YMCKT	16908289
YMCKT	21037058
YMCKT	21102593
YMCKT	16842753

```
<?xml version="1.0" encoding="UTF-8"?>
<PrinterInfo>
```

```
<PrinterStatus>Ready</PrinterStatus>
<MessageNumber>0</MessageNumber>
<JobQueueState>0</JobQueueState>
<PowerState>0</PowerState>
<Locks>1</Locks>
<LockState>0</LockState>
<PortType>0</PortType>
<OptionRewritable>1</OptionRewritable>
<PrinterAddress>10.156.1.201</PrinterAddress>
<PrinterModel>Sigma DS3</PrinterModel>
<PrinterSerialNumber>XC10025</PrinterSerialNumber>
<FirmwareNumber>D4.2.3-2</FirmwareNumber>
<ConnectionProtocol>2</ConnectionProtocol>
<Magstripe>MagstripeISO</Magstripe>
<OptionSecondaryMagstripeJIS>0</OptionSecondaryMagstripeJIS>
<Smartcard>Single wire</Smartcard>
<Duplex>1</Duplex>
<InputHopperType>2</InputHopperType>
<HopperAutoDetect>1</HopperAutoDetect>
<PrintHead>1</PrintHead>
<ColorPrintResoluton>300x300 |300x600</ColorPrintResoluton>
<MonochromePrintResoluton>300x300 |300x600 |300x1200</MonochromePrintResoluton>
<TopcoatPrintResoluton>300x300</TopcoatPrintResoluton>
<EmbossModule>0</EmbossModule>
<MultiHopperVersion>Not Detected</MultiHopperVersion>
<LaminatorHeaterPercentReady>0</LaminatorHeaterPercentReady>
<L1Laminate>0</L1Laminate>
<L2Laminate>0</L2Laminate>
<LaminatorImpresser>0</LaminatorImpresser>
<LaminatorScanner>0</LaminatorScanner>
<TactileImpresser>0</TactileImpresser>
<OptionPrinterBarcodeReader>0</OptionPrinterBarcodeReader>
<RetransferHeaterPercentReady>0</RetransferHeaterPercentReady>
<Kiosk>0</Kiosk>
<RearPick>0</RearPick>
<LaserModule>0</LaserModule>
<LaserVisionRegistration>0</LaserVisionRegistration>
<LaserVersion>Not Detected</LaserVersion>
<ObscureBlackPanel>0</ObscureBlackPanel>
<Cloaking>0</Cloaking>
<Indent>0</Indent>
<UVCureModule>0</UVCureModule>
<PrintRibbonType>21037057</PrintRibbonType>
<RibbonRemaining>48</RibbonRemaining>
<RibbonSerialNumber>E00550000DA03A0D</RibbonSerialNumber>
<RibbonLotCode>072920233</RibbonLotCode>
<RibbonPartNumber>525100004</RibbonPartNumber>, 2936
<RibbonRegionCode>100</RibbonRegionCode>
<UVCurableRibbon>0</UVCurableRibbon>
<PrintEngineType>0</PrintEngineType>
<EnhancedDTCPrinter>1</EnhancedDTCPrinter>
<RetransferFilmSupplyCode>999999</RetransferFilmSupplyCode>
<RetransferFilmPartNumber>0</RetransferFilmPartNumber>
<RetransferFilmPercentRemaining>0</RetransferFilmPercentRemaining>
<IndentRibbonType>0</IndentRibbonType>
<IndentRibbonRemaining>0</IndentRibbonRemaining>
<IndentRibbonPartNumber>0</IndentRibbonPartNumber>
<TopperRibbonType>0</TopperRibbonType>
```

```
            <TopperRibbonRemaining>0</TopperRibbonRemaining>
            <L1LaminateType>0</L1LaminateType>
            <L1LaminateRemaining>0</L1LaminateRemaining>
            <L1LaminatePartNumber>0</L1LaminatePartNumber>
            <L2LaminateType>0</L2LaminateType>
            <L2LaminateRemaining>0</L2LaminateRemaining>
            <L2LaminatePartNumber>0</L2LaminatePartNumber>
            <TactileImpresserFoilType>0</TactileImpresserFoilType>
            <TactileImpresserFoilRemaining>0</TactileImpresserFoilRemaining>
            <TactileImpresserPartNumber>0</TactileImpresserPartNumber>
            <Inputhopper>1</Inputhopper>
            <RibbonSequenceNumber>0</RibbonSequenceNumber>
            <DPCL1>1</DPCL1>
            <DPCL2>1</DPCL2>
            <DPCL1Secure>1</DPCL1Secure>
            <DPCL2Secure>1</DPCL2Secure>
            <ExceptionSlot>1</ExceptionSlot>
            <SixInputhopper>0</SixInputhopper>
            <Outputhopper>1</Outputhopper>
            <Rejecthopper>1</Rejecthopper>
            <MagstripeAamvaEncoding>0</MagstripeAamvaEncoding>
            <MagstripeSaflokEncoding>0</MagstripeSaflokEncoding>
            <MagstripeTimeloxEncoding>0</MagstripeTimeloxEncoding>
            <MagstripeVingEncoding>0</MagstripeVingEncoding>
            <SmartCardContactSwitch>0</SmartCardContactSwitch>
            <SmartCardDualiDeAbcm>1</SmartCardDualiDeAbcm>
            <SmartCardTunnel>1</SmartCardTunnel>
            <EmbossModuleIndent>0</EmbossModuleIndent>
            <EmbossModuleTop>0</EmbossModuleTop>
            <EmbossModuleLocks>0</EmbossModuleLocks>
            <PrinterMode>1</PrinterMode>
            <CustomMonoChromePanelSupport>1</CustomMonoChromePanelSupport>
            <PrinterName>LXM-Card-Printer</PrinterName>
        </PrinterInfo>
```

Status Sample Program

Status Usage

The text below shows SDK status sample usage text, used for the retrieval of printer options and returning of the printer status.

Enter the following in a terminal window to obtain the printer status information:

```
printer_status.out --printer {printer name} [--log {None | Console | File |
Both}] [-c]
```

Status Options

Option Name	Option Abbreviation	Description and Examples
--printer {printer name}	NA	The name of the printer. Example: --printer LXM-Card-Printer.
--log	NA	Enable logging and specify the where to direct the log. If --log is not present, logging is not performed. Options: [None | Console | File | Both] Where: • --log None. No logging is performed. This is the default. • --log Console. Logging information displays on the terminal that sent the job. • --log File. Logging is saved to a file in the directory where the application that sent the job is running. • --log Both. Logging information displays on the terminal and is saved to a file.
-c	NA	Cancels all jobs in the printer.

Status Examples

```
printer_status.out --printer LXM-Card_printer -c --log console
```

Cancels all current jobs int he printer then collects printer status information and displays to the terminal.

Kiosk and Embossing Sample

The kiosk_emboss sample allows the user to utilize the special features of a kiosk system. This includes the ability to select the input hopper used, to select the card dispense location and designate if the dispensed card is facing up or down. The kiosk_emboss sample can also emboss, indent cards, and apply topping foil to a card using a CE-series or DS4-ES1 instant issuance system. The emboss and indent data is part of the sample and cannot be changed. The sample also includes options to poll for job completion status and error conditions.

The Linux Card Printer Driver supports the CE870 Kiosk system and Sigma Kiosk system.

For the Card Printer Driver to support the kiosk system, the driver must be able to recognize the kiosk system. This is controlled by the DriverEnable option in the printer firmware. The option is set using one of the following methods:

- The DriverEnable option is enabled during manufacturing.

- Installation of an Enable Driver Upgrade Kit (part number 529425-001) on Sigma DS4k printers.

> The DriverEnable option cannot be changed by a user.

Kiosk Emboss Features

Pick and Output Options Using SDK

 The pick/output options will vary by job when using driver SDK.

CE870 Printer With or Without Embosser

- Pick
    - Front
- Output
    - Rear Dispense

Sigma Printer With Embosser

- Pick
    - Front (includes multi-hopper, single hopper, or manual pick)
    - Rear Manual
- Output
    - Rear Dispense

Sigma Printer Without Embosser

- Pick
    - Front (includes multi-hopper, single hopper, or manual pick)
    - Rear Manual
- Output
    - Front Tray
    - Rear Dispense

CE870 Printer Manager Settings

The following Printer Manager settings also are used with a kiosk system. These are WebService-access level settings. The *CEM/ES1 Embosser Service Manual* contains complete information about setting up a kiosk system.

Printer Setting > Emboss > KioskRetrieveLocation	Specifies where to place a card that was dispensed via kiosk output, but not taken by the user (from the embosser or from an external card reader), from the following: • OutputHopper—Place cards in the embosser output hopper. This is the default setting. • RejectTray—Place cards in the embosser reject tray.
Printer Setting > Emboss > KioskWaitDelay	Sets the maximum amount of time that a card is parked inside the kiosk assembly for a user to take until the card is retracted. The default is 60 seconds. When set to 0, the system waits indefinitely for the user to take the card.

Sigma Printer Dashboard Settings

The following Printer Dashboard settings are used with the Sigma kiosk system. The *Sigma Service Manual*, *Printer Dashboard Help Manual* and *CEM/ES1 Embosser Service Manual* contains complete information about setting up a kiosk system.

Settings > Behavior > EmbosserDispense	Available only for printers with kiosk embosser. If enabled, cards will be dispensed to the embosser. If disabled, cards will be dispensed through the rear of the printer. Default value is enabled.
Settings > Transport > DispenseTimeout	Time in seconds that a user must take card until it will be retracted back into the system.
Settings > Transport > RetrieveLocation	Good cards that are taken back by the printer because they were not taken by the user in time. Options are: ● RejectTray, ● OutputHopper
Settings > Behavior > RejectCardLocation	Failed cards eject location. These cards failed due to printer errors. Options are: ● RejectTray ● OutputHopper (Default) An attached embosser will always reject cards to the reject tray
Settings > Pick> RearPickTimeout	Time in seconds that a user must insert the card for rear pick.

Emboss

Use an emboss SDK to specify the font and position of embossed and indented data.

Embossing will only be supported through driver SDK interface.

Embosser XML is made up of the following elements.

Embosser Font Number

The font number CE systems use to specify the emboss or indent character set, the front or back of the card, and in some cases the supply to use. The usable font numbers are based on the emboss wheel installed in the embosser.

The usable font numbers are based on the emboss wheel installed in the embosser. Several fonts from the following list typically are supported by a given wheel:

1	Emboss Standard Gothic [front 10 cpi]
2	Emboss Farrington 7B [front 7 cpi]
3	Indent OCRB [back 10 cpi]
4	Indent Master Card Slanted [back 14 cpi]
5	Indent OCRB Size IV [front 7 cpi]
6	Indent Master Card Slanted [front 14 cpi]
7	Indent OCRB Front [front 10 cpi]
8	Indent Master Card Inverted [back 7 cpi]
9	Indent Helvetica [front 14 cpi white ribbon]*
10	Indent Helvetica [front 14 cpi black ribbon]*
11	Tactile Identifier Mark

- Add 20 (decimal) to override default side.
- This option does not apply for rear indent and should be set to Zero.

Emboss/Indent Position

Two values that specify the starting location of the emboss/indent operation. The emboss/indent position indicates the start of the emboss or indent data.

horz_offset Whole number in mils (1/1000 of an inch) from left edge of card to center of first character.

vert_offset Whole number in mils (1/1000 of an inch) from bottom edge of card to the vertical midpoint of the characters.

The emboss/indent position indicates the start of the emboss or indent data.

horz_offset	Whole number in mils (1/1000 of an inch) from left edge of card to center of first character
vert_offset	Whole number in mils (1/1000 of an inch) from bottom edge of card to the vertical midpoint of the characters. This position does not apply to rear indent and should be set to Zero.

The following restrictions apply to the horizontal and vertical offsets.

Horizontal Offset Limits

Topping	**Maximum Value**	**Minimum Value**
On	3025	280
Off	3275	100

Vertical Offset Limits

Topping	**Maximum Value**	**Minimum Value**
On	860	135
Off	1460	135

Emboss Data Restrictions

The text to be embossed or indented at a given location using the font number specified.

Embosser data has the following restrictions for the characters allowed.

- The emboss data range is from 20 hex to FF hex.

- Reserved XML characters (3c hex and 3e hex) are not allowed as emboss characters.

Embosser Topping

Printers that include an embosser typically apply topping foil to the embossed characters on a card. The embosser topping option allows you to specify whether or not to apply topping foil to the embossed characters. The setting applies to all embossed cards.

Card Eject Side

The Card Eject Side setting allows you to specify which side of the card is facing up when it is ejected into the output hopper. Cards normally enter the output hopper with the last side printed facing up. For example, a one-sided card always has the front side facing up. A duplex card with printing on both sides enters the output hopper with the back side facing up. However, some sites may want the cards to be stacked in the output hopper with a certain side facing up for easier distribution. By specifying a Card Eject Side option, the printer can flip the card before it enters the output hopper so that the selected side faces up.

The Card Eject Side option is not supported for embosser or desktop laser systems. It is supported for manual and automatic duplex, laminator, and kiosk systems.

Get the Status of an Interactive Job

Your application can retrieve the status for the current interactive job to determine if the printer is still actively processing the card or if the card is complete. The PrinterJobID is used to identify the job. This ID is part of the Printer Status structure returned from the Start Job request.

```
<?xml version=\"1.0\"?>
<!--job status xml-->
<JobStatus>
    <PrinterJobID>5860</PrinterJobID>
</JobStatus>
```

The Job Status request returns the following xml.

```
<?xml version="1.0" ?>
<!-- Job status xml file. -->
<JobStatus>
    <ClientID>dpclTester</ClientID>
    <LinuxJobID>5</LinuxJobID>
    <PrinterJobID>5680</PrinterJobID>
    <JobState>JobActive</JobState>
    <JobRestartCount>0</JobRestartCount>
    <PrinterName>LXM-Card-Printer</PrinterName>
</JobStatus>
```

Element	Description of the element value
JobState	The state of the job. The value is one of the following: JobActive, JobSucceeded, JobFailed, JobCancelled, or NotAvailable. Kiosk printers have two additional states: CardReadyToRetrieve and CardNotRetrieved.
JobRestartCount	The number of times the job was retried. This is always zero for interactive jobs.

Using the JobState value, your application can determine if the card is still being processed by the printer or, if it has completed, whether it was personalized successfully. Refer to "Printer Job Status" on page 85.

If your application sends jobs to a kiosk printer, the JobState value indicates if the card is ready to be retrieved, or was not retrieved and moved to the reject tray. Your application needs to poll for job completion after submitting the job until the JobState value is returned.

Printer Job Status

The JobState can be one of these values.

Element Value	Description
JobActive	A card is still being personalized by the printer.
JobSuccedded	The card is complete. The job completed without a detected error.
JobFailed	The card is complete. An error forced the job to terminate before the card personalization process completed.
JobCancelled	The card is complete. The job was cancelled before the card personalization process completed.
NotAvailable	There is no information for the PrinterJobID provided. Either the value provided is wrong or this is no longer the current job.
CardReadyToRetrieve (For Kiosk only)	The card is complete. User can retrieve the card from printer. This support is available for Kiosk printer only.
CardNotRetrieved (For Kiosk only)	The card is complete. Printer took the card back because it was not retrieved in time. This support is available for Kiosk printer only.

Kiosk Emboss Sample Program

Kiosk Emboss Usage

> kiosk_emboss_sample.out --printer {printer name} [--input {1-6 | r1}] [--output]
> [--emboss] [--side {front | back}] [--poll] [--log {None | Console | File | Both}]

Kiosk Emboss Options

> The Kiosk sample has been added to specify the hopper number, output
> location, optional embossing and indenting, side of dispensed card up, and poll
> for job completion.

Option Name	Option Abbreviation	Description and Examples
--printer {printer name}	NA	The name of the printer. Example: --printer LXM-Card-Printer.
--input {1-6	r1}	-i	Selects which input hopper to pick from. Numbers 1-6 are hoppers 1-6 and r1 is rear pick. Default is 1.
--output	-k	Gives the user the ability to specify the output hopper for Sigma printers with embosser. The default is the card being dispensed to the rear of the printer. If -k is specified, then card will be ejected to the front output tray. If the user does not pick the card within a specified time, the card is always dispensed to the front ouput hopper.
--emboss	-e	Gives the user the ability to send hard coded emboss data if the printer has the emboss option.

Option Name	Option Abbreviation	Description and Examples
--topping	-t	Gives the user the ability to disable topping on an embossed card. The default is the card will be topped after embossing. If -t is specified then topping will not be applied. This option applies only when -e option is used, otherwise an error is thrown.
--side {front | back}	-s	Gives the user the ability to specify which side of the card faces up when dispensed to the output hopper. Values are "front" and "back".
--poll	-j	Poll for job completion. Checks the job and printer status every 2 seconds.
--print	-p	Prints the time and date on a landcape card.
--log	NA	Enable logging and specify the where to direct the log. If --log is not present, logging is not performed. Options: [None | Console | File | Both] Where: • --log None. No logging is performed. This is the default. • --log Console. Logging information displays on the terminal that sent the job. • --log File. Logging is saved to a file in the directory where the application that sent the job is running. • --log Both. Logging information displays on the terminal and is saved to a file.

Kiosk Emboss Examples

```
kiosk_emboss.out --printer LXM-Card-Printer -p -i r1 -k -e -j
```

Pick the card from rear input slot, print one-sided landscape card, emboss, apply topping, eject the card to the front of the printer and poll for job completion.

```
kiosk_emboss.out --printer LXM-Card-Printer -p
```

Pick the card from input hopper 1, print one-sided landscape card and eject the card to the rear of the printer.

```
kiosk_emboss.out --printer LXM-Card-Printer -p -i r1 -s front -j
```

Pick the card from the rear input, print a one-sided landscape card, eject the card to the rear of the printer with the front side facing up, and will poll for job completion.

```
kiosk_emboss.out --printer LXM-Card-Printer -p -i 2 -k -e -t
```

Pick the card from input hopper 2, print, emboss and prevent topping to a one-sided landscape card, and eject to the front output tray.

```
kiosk_emboss.out --printer LXM-Card-Printer -p -j
```

Pick the card from hopper 1, print a one-sided landscape card, and poll for job completion.

Read and Write Data to Loosely Coupled Smartcard

The SDK sample programs call the driver to start a job, park a card, and end the job. The smart card sample parks a card in the smart card station and moves the card from the station. It includes options to print text and resume, resume without printing, or cancel the job, and to log job information. The print data is hardcoded in the sample.

Smart Card Features

Smart Card Encode

A job consisting of smart card encoding and printing uses the following operations in the order specified:

1. **StartJob** - The printer starts the job and picks the card.

2. **ParkCard** - The printer parks the card at the smart card station.

3. **ResumeJob** - The printer moves the card from the smart card station so that the card can be processed further.

4. **Print Card Side** - Use the Cairo library to generate a PDF file.

5. Wait for the print data to be sent to the printer.

6. **EndJob** - The printer finishes printing and ejects the card into the output hopper.

Smart Card Read

The SDK client connects with the driver and transmits following XML file. The Linux driver sends the smart card park command to the printer using the Park command.

```
<?xml version="1.0" encoding="utf-8"?>
<Park>
    <PrinterName>LXM-Card-Printer</PrinterName>
    <Location>SmartCardFront</Location>
</Park>
```

The SDK client waits for the response from the driver. The Linux driver returns the following XML file for the response. The response indicates if the park action was successful.

```
<?xml version="1.0" encoding="utf-8"?>
    <PrinterStatus>
        <ClientID>STATUSTEST</ClientID>
```

```
        <LinuxJobID>0</LinuxJobID >
        <PrinterJobID>780</PrinterJobID>
        <ErrorCode>111</ErrorCode>
        <ServiceCode></ServiceCode >
        <ErrorSeverity>4</ErrorSeverity>
        <ErrorString>Message 111: Card not picked.</ErrorString>
        <DataFromPrinter><![CDATA[ ]]></DataFromPrinter>
    </PrinterStatus>
```

Smartcard Sample Program

Below are examples of Smartcard Read and Smartcard Encode.

Demonstrates parking a card in the smartcard station, moving the card from the station, and options to select an action and log job information. It uses hardcoded data fro printing

Smartcard Usage

smartcard_sample.out --printer {printer name} [--ask-user] [--log {None | Console | File | Both}]

Smartcard Options

Option Name	Option Abbreviation	Description and Examples
--printer {printer name}	NA	The name of the printer. Example: --printer LXM-Card-Printer.
--ask-user	-a	During the job, produces a prompt asking you for the next action to take : print(test) and resume, resume without printing, or cancel.
--log	NA	Enable logging and specify the where to direct the log. If --log is not present, logging is not performed. Options: [None | Console | File | Both] Where: • --log None. No logging is performed. This is the default. • --log Console. Logging information displays on the terminal that sent the job. • --log File. Logging is saved to a file in the directory where the application that sent the job is running. • --log Both. Logging information displays on the terminal and is saved to a file.

Smartcard Examples

```
smartcard_sample.out --printer LXM-Card_printer -a --log Both
```

Parks a card in the printer smart card station, and asks the user to select the next action. Logging information displays on the computer and is saved to a file.

```
smartcard_sample.out --printer LXM-Card_printer
```

Parks a card in the printer smart card station and moves it from the station. No other actions or logging are preformed.

Read and Write Data to a DUALi Reader Over Single-Wire

This sample demonstrates the smart card operations including reading and writing to the chip for a MIFARE Classic smart card. It uses the single-wire smart card tunnel and DUALi reader commands for a MIFARE Classic application. The sample moves the card into and out of the smart card reader, and includes options to specify whether the smart card chip is on the back of the card, and to print on the front of the card.

The print data is part of all the samples and cannot be changed.

Application Responsibilities with Single-Wire Smart Card

Your application must be able to do the following:

- Verify that the single-wire smart card reader is available in the printer.

- Park the smart card before using the single-wire smart card reader, and move the card out of the reader when the personalization is complete.

- Send data the chip can accept. The driver does not check or alter the data.

- Format the data so it can be understood by the printer and reader. Applications written for PC/SC readers require modification to use the single-wire smart card feature. The PC/SC interface commonly used to interact with USB-connected smart card readers is not directly supported by the driver API.

DUALi Sample Program

DUALi Usage

smartcard_singlewire_mifare_duali_sample.out --printer {printer name} [--ask-user] [--log {None | Console | File | Both}]

DUALi Options

Option Name	Option Abbreviation	Description and Examples
--printer {printer name}	NA	The name of the printer. Example: --printer LXM-Card-Printer.
-back-chip	-b	Indicates that the card should be flipped prior to entering the park position.
--print	-p	Will apply printing on the front of the card after SC operations are complete.
--log	NA	Enable logging and specify the where to direct the log. If --log is not present, logging is not performed. Options: [None | Console | File | Both] Where: • --log None. No logging is performed. This is the default. • --log Console. Logging information displays on the terminal that sent the job. • --log File. Logging is saved to a file in the directory where the application that sent the job is running. • --log Both. Logging information displays on the terminal and is saved to a file.

DUALi Examples

```
smartcard_singlewire_mifare_duali_sample.out --printer LXM-Card_Printer -b --printer --log Both
```

Parks a card in the printer smart card station, programs it (rear placed chip), moves it out of the station, and prints it. Logging information displays on the computer and is saved to a file.

smartcard_singlewire_mifare_duali_sample.out --printer LXM-Card_Printer

Parks a card in the printer smart card station, programs it, and moves it from the station. No other actions or logging are preformed.

Read and Write Data to an OMNIKEY Reader over Single-Wire

The Single-Wire OMNIKEY smart card sample demonstrates parking a card in the printer OMNIKEY smart card reader, performing single-wire smart card functions, and moving the card from the reader.

Application Responsibilities with Single-Wire Smart Card

Your application must be able to do the following:

- Verify that the single-wire smart card reader is available in the printer.

- Park the smart card before using the single-wire smart card reader, and move the card out of the reader when the personalization is complete.

- Send data the chip can accept. The driver does not check or alter the data.

- Format the data so it can be understood by the printer and reader. Applications written for PC/SC readers require modification to use the single-wire smart card feature. The PC/SC interface commonly used to interact with USB-connected smart card readers is not directly supported by the driver API.

OMNIKEY Features

The OMNIKEY reader supports multiple cards types, allowing you to select the type of card used from the following: Mifare, iCLASS, or HIDProx. For each card type, the OMNIKEY reader performs the following functions:

- Mifare. Reads the card ID and status, and reads and writes data to block 2.

- iCLASS. Reads the card ID and status, and reads and writes data to block 18.

- HIDProx. Reads the reads the card ID (UID) and facility code (FAC).

The sample includes options to print. The print data is part of all the the samples and cannot be changed.

OMNIKEY Sample Program

Demonstrates parking a card in the smart card station, programming it using the OMNIKEY singlewire reader, moving the card from the smart card station, and printing to the front of the card. It uses hardcoded data for printing

OMNIKEY Usage

smartcard_singlewire_omnikey_sample.out --printer {printer name} --card-type {SC type} [--print] [--log {none | Console | File | Both}]

OMNIKEY Options

Option Name	Option Abbreviation	Description and Examples
--printer {printer name}	NA	The name of the printer. Example: --printer LXM-Card-Printer.
--card-type {mifare | iclass | hidprox}	NA	Indicates the card type the reader should expect. Where: • --card-type mifare. Preforms actions necessary to operate with Mifare cards. • --card-type iclass. Preforms actions necessary to operate with iCLASS cards. • --card-type hidprox. Preforms actions necessary to operate with HIDprox cards.

Option Name	Option Abbreviation	Description and Examples
--print	-p	Will apply printing on the front of the card after the SC operations are complete.
--log	NA	Enable logging and specify the where to direct the log. If --log is not present, logging is not performed. Options: [None | Console | File | Both] Where: • --log None. No logging is performed. This is the default. • --log Console. Logging information displays on the terminal that sent the job. • --log File. Logging is saved to a file in the directory where the application that sent the job is running. • --log Both. Logging information displays on the terminal and is saved to a file.

OMNIKEY Examples

```
smartcard_singlewire_omnikey_sample.out --printer LXM-Card-Printer --card-type iclass -
-print --log Both
```

Parks an iCLASS card in the printer smart card station, programs it, moves it out of the station and prints it. Logging information displays on the computer and is saved to a file.

```
smartcard_singlewire_omnikey_sample.out --card-type hidprox --printer LXM-Card_Printer
```

Parks a HIDprox card in the printer smart card station, programs it, and moves it from the user.

Chapter 3: Troubleshooting

3

This chapter describes troubleshooting steps for a variety of potential printing issues.

Install and Uninstall Troubleshooting

Issue: Immediately after installing the driver, the Printers window may show an error icon on the LXM-Card-Printer icon (a red circle with a small horizontal line in the middle).

Resolution: After entering a valid IP address, this icon disappears.

Issue: Card does not print.

Cause: After installing a new driver or upgrading the driver, and then attempting to print a card, can sometimes result in the card not printing. No error is recorded.

Resolution: Retry the print job.

Issue: Driver fails to install

Cause:

- Other printers are on the network.

- Network connection setting "Connect Automatically" is checked.

Resolution:

1. Disable the "Connect Automatically" network connection.

2. Turn the Entrust printer on.

3. If installing USB Driver, plug in the USB cable to the PC.

4. Go to settings/Network connections.

5. In the General tab, make sure the "Connect Automatically" is unchecked.

6. Save the setting.

Issue: Install fails with message "command not found"

Cause: Installation script does not have correct privilege to run

Resolution: Type

```
sudo chmod 777 <sudo bash ./lxm-card-printer-DEB-installer-x.x.xx.sh>
```

Issue: User encounters sudo dpkg --configure -a during uninstall -
  Or
  Driver install starts during uninstall
  Or
  Install fails because uninstall did not remove all the files

Resolution:

1. Quit uninstall and do not reboot the PC.

2. Refer to "Manual Uninstall Steps" on page 47.

3. Restart the PC.

Other Troubleshooting

Issue: Clicking once on test card does not send print data to driver.

Cause: On Ubuntu 20 the first print does not come out.
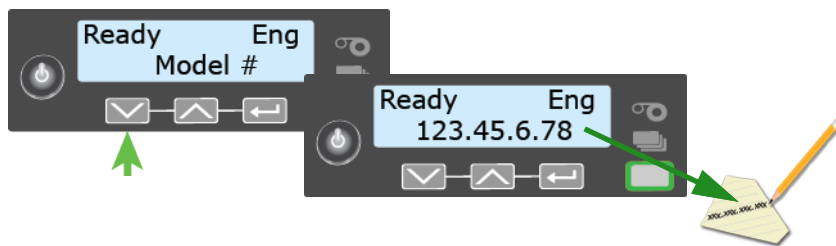
Resolution: Click twice on test card.

Appendix A: Retrieve the Printer IP Address

A
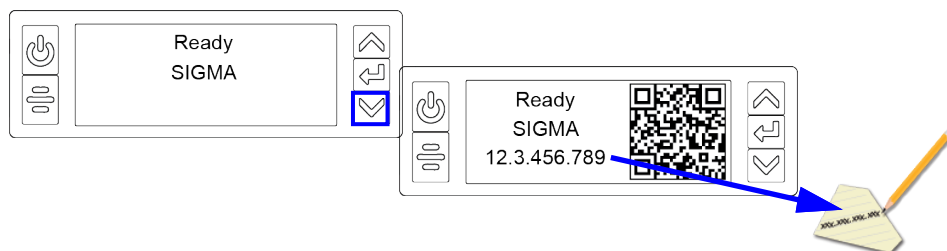
Retrieve the Printer's IP Address

To locate the IP address of the printer, choose from either of the following after running the LXM Driver Setup Tool:

- Press the **Up** or **Down** arrow key when the printer LCD panel displays "Ready."

  - SD260™, SD460™, and CR805™ Retransfer Card Printers:

  - Sigma Card Printers:

    The LCD panel also displays a QR code that can be used to start the Printer Dashboard to view additional printer information and work with the printer.

- Use the LCD menu system's Status menu.

  > *When the printer is configured to use a static IP address, the printer's front panel displays the address even when the printer is not connected to a network. In addition, the LCD displays a "+" if the network is active, or a "-" if the network is inactive, as a prefix to the static IP address.*

To display an IP address using the Status menu, follow these steps:

  > *The user may also press the **Down** or **V** button twice on any model printer to quickly display the IP address.*

1. Make sure the printer is connected.

   a. Connect the printer power.

   b. Connect the printer Ethernet cable or the printer USB cable.

2. Press the **POWER** button to power on the printer (if it is not already powered on).

3. Access the Status menu:

   a. Press the **USER** button to suspend the printer.

   b. Press **ENTER** to open the menu system.

   c. Press the **Down** arrow key to display "Status" on line 2.

   d. Press **ENTER** to open the Status menu.

   e. Press the **Down** arrow key twice to display "Network IPv4" on line 2.

   f. Press **ENTER** to display the printer's IP address.

Record the IP address for later use.