

ENTRUST

SD/CD Series Card Printers

OpenCard Data Format Guide

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Revision Log

OpenCard Data Format Guide

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B	November 2012	General update
C	March 2014	Updated with OpenCard commands
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Chapter 1: About this Manual



This chapter covers how this guide is organized, who should read this guide, and the conventions this guide uses.

This manual details system requirements, formatting, and printing features of OpenCard Data Format for the Datacard® SD/CD Series Card Printers, including support for the following card printer models:

- SD360
- CD800

This manual provides information for two options: the SD/CD Series Card Printers Option, used for printing cards using card format files created with Scalable Vector Graphics standard (SVG), and the Legacy Option, used for printing legacy card layouts originally created for the SP/CP Series printers.

Organization

Information in this manual is organized as follows:

- [Chapter 1: "About this Manual"](#)—Contains information about this manual's organization, its intended audience, and the conventions it uses.
- [Chapter 2: "Getting Started"](#)—Contains an overview of using OpenCard Data Format with the SD/CD Series card printers and the Legacy Option for SP/CP Series printers. It includes requirements for using OpenCard and initial setup procedures.
- [Chapter 3: "Creating Card Formats"](#)—Includes the information about how to create card formats for use with SD/CD Series card printers.
- [Chapter 4: "OpenCard Commands"](#)—Describes the commands that are used in an OpenCard data stream.
- [Chapter 5: "Exporting Legacy Card Layouts, Graphics, and Fonts"](#)—Includes information and procedures for using existing card layouts originally created for SP/CP Series printers to print on SD/CD Series card printers with OpenCard.
- [Chapter 6: "Working with Printer Manager"](#)—Explains how to set up the printer to work with OpenCard card formats.
- [Chapter 7: "Printing Cards"](#)—Provides information about printing cards on SD/CD card printers with OpenCard.
- [Appendix A: "Sample Card Formats"](#)—Provides working samples of card formats.
- [Appendix B: "Setting Up OS/400"](#)—Provides information about how to set up an existing OS/400 system to work with OpenCard.

Intended Audience

This manual is intended primarily for personnel who create and manage files for card formats and data streams, referred to in this guide as card format designers.

Card format designers should have the following knowledge:

- Have a general idea of the appearance and content of the card formats they are defining.
- Understand the type of data to be printed on the cards (text, bar codes, logos).
- Be familiar with printer ribbons and ribbon panels (such as YMCKT ribbon panels).
- Be familiar with the source of the data to be printed on cards.
- Know how to use a command line, browser application, and how to work over a network.

The card format designer's job responsibilities using OpenCard include:

- Work with the Datacard Printer Manager interface menus to view and manage posted card format files, images, fonts, and font families.
- Use the Legacy Option to create to card layouts for printing on Datacard SP55, SP60, CP60, and FP65 model printers and export these card layouts using Telnet. These designers use Printer Manager to import card layouts, fonts, and images to the SD/CD Series card printers.
- Use the SD/CD Series card printers to create card formats in Scalable Vector Graphics (SVG) markup language and use Printer Manager to import card formats, fonts, and images to the SD/CD Series card printers.

Conventions this Manual Uses

This manual uses the following conventions:

Convention	Meaning
SD/CD Series	Refers to Datacard SD360 and CD800 card printers.
Legacy Option	Refers to Datacard SP/CP Series printers, including the SP55, SP60, CP60, and FP65 card printers.
<1234567890>	Text displayed in this manual using the style at left is data stream content. Braces display at the start (<) and end (>), and text (1234567890) indicates data stream text.
Card layout	Refers to the card layout files originally created for use with Legacy SP55, SP60, CP60, or FP65 (SP/CP Series) card printers. Used to describe options and procedures for the OpenCard Legacy Option. For more about the original card layouts for printers, refer to the <i>Data Formatting Guide</i> .
Card format	Document that provides the instructions for card appearance and content. Uses Scalable Vector Graphics (SVG) standard markup language. Used for the SD/CD Option.

Related Publications

For details about the data stream, Telnet, or the original card layout file created for SP/CP Series card printers, refer to the *OpenCard Data Formatting Guide* (part number 539397-001 Rev D, dated November 2007). That manual supports the SP55, SP60, CP60, or FP65 card printers.



Chapter 2: Getting Started

2

The chapter provides an overview of using the SD/CD Series printers with OpenCard Data Format, as well as an overview of the Legacy Option for converting existing card layouts from SP/CP Series printer card layouts. It also explains the requirements for using OpenCard and initial start up procedures.

The SD/CD Series card printers with OpenCard Data Format provide the following options:

- **SD/CD Series Option**—Provides enhanced text and graphics capabilities. Create a card format file in Scalable Vector Graphics (SVG) markup language, and import it for use with SD/CD Series card printers.
- **Legacy Option for Using SP/CP Series Card Layouts**—Provides compatibility with card layouts originally created for the Datacard SP55, SP60, CP60, or FP65 card printers with OpenCard. Export existing card layouts originally created for a legacy SP/CP Series card printer and import them to the SD/CD Series card printer for use with OpenCard.
- **Printer Manager**—Provides a browser-based set of menus for managing print operations for either option listed above. This guide provides an introduction to Printer Manager features relevant to OpenCard.

SD/CD Series Card Printers Option

For SD/CD Series card printers, you create card formats saved as Scalable Vector Graphics (SVG) documents with any text editor or SVG-specific tool, such as SVG-edit. Using these card formats plus the data stream, OpenCard extracts text and magnetic stripe data from the data stream and places this data on cards according to the appearance and location specifications you define in the card format. Rotate text, graphics, and bar codes individually, or rotate the entire design.



Card formats designed with the SD/CD Series option are not supported on SP/CP Series printers.

The SD/CD Series card printers option includes:

- The use of card formats written in SVG markup language
- Support ASCII data streams. Any host computer that can generate an ASCII data stream and send it to a direct socket connection can send card data using OpenCard. (The printer does not support the Extended Binary Coded Decimal Interchange [EBCDIC] character set.)
- Support for any operating system, including Windows, Linux, UNIX.
- Front and back monochrome or color printing, and front and back topcoat.

- ISO magnetic stripe tracks 1–3.
- Support for manual card insertion at prompting.
- Support for TrueType fonts and bar code fonts stored on the printer.

Use text font typefaces that include, but are not limited to, typefaces within font families for Courier, Sans, and Serif, which come bundled with the printer. Define any size for fonts, within the practical limits of the card size and the font families installed on the printer.

Bar code font typefaces are bundled with the printer. They include but are not limited to:

- Code39
 - UPCA
 - EAN13
 - Code128
 - EAN8
- Support for a wide variety of image formats stored on the printer, including:
 - JPEG
 - TGA
 - PBM
 - XPM
 - SVG
 - PNG
 - XBM
 - PPM
 - MNG
 - TIFF
 - PGM

Legacy Option for Card Layouts from SP/CP Series Printers

If your organization currently sends data tagged with OpenCard commands to an SP/CP Series card printer or embosser, you can use the same data stream to produce cards using the Legacy Option features shown in this guide. With the Legacy Option, you export the legacy card layouts originally created for a SP/CP Series card printer, and then import those card layouts and their graphics and fonts to the SD/CD Series card printer.

The Legacy Option supports OpenCard production data formatting containing text and magnetic stripe data items, as well as card layout selection.

Using the Legacy Option with OpenCard, legacy card layouts maintain their original capabilities:

- Front-side monochrome black printing of text, bar codes, and graphics on a single-sided, landscape-oriented card.
- Import up to four black-and-white image files to the printer. The printer does not provide the ability to download a different logo or graphic for each card.



A note about printing: The Legacy Option supports monochrome printing on one side of the card. On color printers, if you use a full-color ribbon in the printer when you send OpenCard data, the printer uses only the K panel in the ribbon. The color panels are not used.

- ISO magnetic stripe tracks 1, 2 and 3
- Printer-resident fonts, font-families and bar codes

To use the Legacy Option to produce cards on the SD/CD Series card printers, you must use text sizes and font typefaces that are available on the Legacy Series printers. These typefaces are within font families for Courier, Sans, and Serif, and are installed on SD/CD Series card printers.

Bar code font typefaces are also bundled with the Legacy Series printers. They include the following:

- Code39
- UPCA
- EAN13
- Code128
- EAN8

Printer Manager Tools

Printer Manager is a browser-based interface for configuring and managing print jobs at the printer. Use Printer Manager to:

- Import the Scalable Vector Graphics (SVG) card format or SP/CP Series printers' legacy OpenCard card layouts to the printer
- Import virtually unlimited images to the printer
- List, import, export, and delete card formats, fonts and font families, and card stocks

OpenCard Requirements

The following components must be in place to use the SD/CD Series card printers with OpenCard Data Format.

Printer Requirements

Use one of the following SD/CD Series card printers fitted with the OpenCard Data Format option.

- SD360
- CD800

Network Requirements

Access or use these printers on networks set up with:

- Computers that are using Transmission Control Protocol/Internet Protocol (TCP/IP) communications.
- Web browsers installed on networked computers.

Other Requirements

- If your organization uses the Legacy Option, you need a Telnet interface that provides card layout menus for exporting existing SP/CP Series card layouts.
- For additional information on system set up requirements, except as noted in this guide, refer to your printer's *Installation and Administrator's Guide*.



- Some printer, network, and system setup requirements for SD/CD Series card printers are overridden by the specifications in this guide.
- SD/CD Series card printers that have OpenCard enabled are not recognized or supported by the XPS Card Printer Driver.

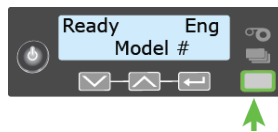
Enabling and Disabling OpenCard

The printer's OpenCard option is activated upon shipment. Should you require to disable or enable the OpenCard option, you can do this either from the printer's LCD menu or from Printer Manager.

Enable or Disable OpenCard with the Printer's LCD Menu

Use the following procedure to enable OpenCard for SD/CD Series printers from the front panel LCD menu.

1. Enter the menu system.
 - a. Press and hold the USER button.

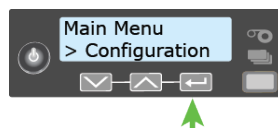


Suspended displays on line 1 of the LCD panel.

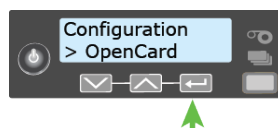
- b. Press the ENTER key to enter the menu system.



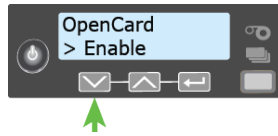
- c. Press the down arrow key until **Configuration** displays on line 2 of the LCD panel.
 - d. Press ENTER key to enter the **Configuration** menu.



2. Enable or Disable OpenCard.
 - a. Press the down arrow key until **OpenCard** displays on line 2 of the LCD panel.
 - b. Press ENTER key to enter the **OpenCard** menu.



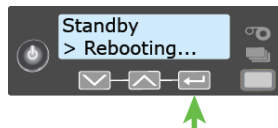
- c. Press the down arrow key until **Enable** or **Disable** displays on line 2 of the LCD panel.



- d. Press the ENTER key. **Apply/Restart** displays on line 2 of the LCD panel.



- e. Press the ENTER key again to apply the setting change. **Standby/Rebooting** displays on the LCD panel and the printer powers off and then on again.

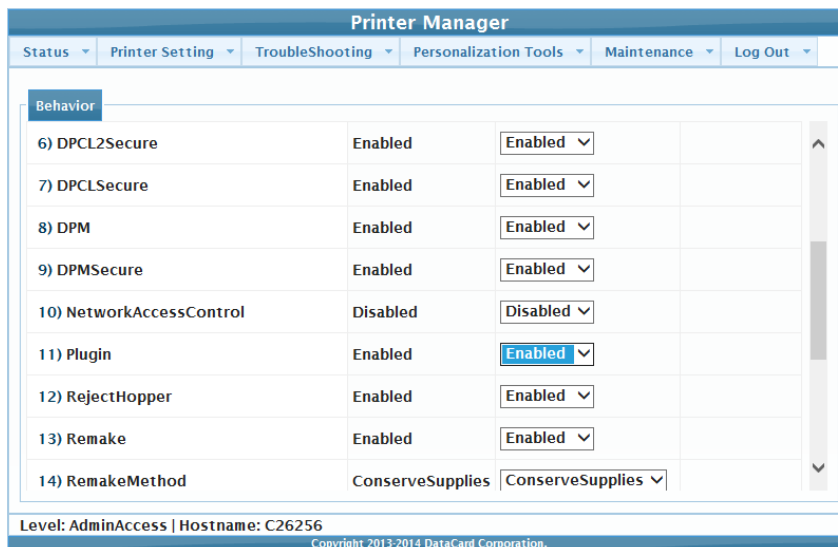


When the LCD panel displays **Ready** in line 1 and an asterisk (*) in the lower-right corner, OpenCard is enabled on the printer.

Enable OpenCard with Printer Manager

To enable OpenCard with Printer Manager, you must have a Printer Manager account access level of WebAdmin or WebService. Refer to your printer's *Installation and Administrator's Guide* for more information about assigning Printer Manager access levels.

1. Before you start, make sure that your printer meets all requirements.
2. Make sure that the SD/CD Series card printer is connected to the computer with a TCP/IP interface.
3. Open Printer Manager. For instructions, refer to ["Opening Printer Manager"](#) on page 59.
4. Select **Printer Setting > Behavior**.
5. Change the setting for PlugIn to **Enabled**.

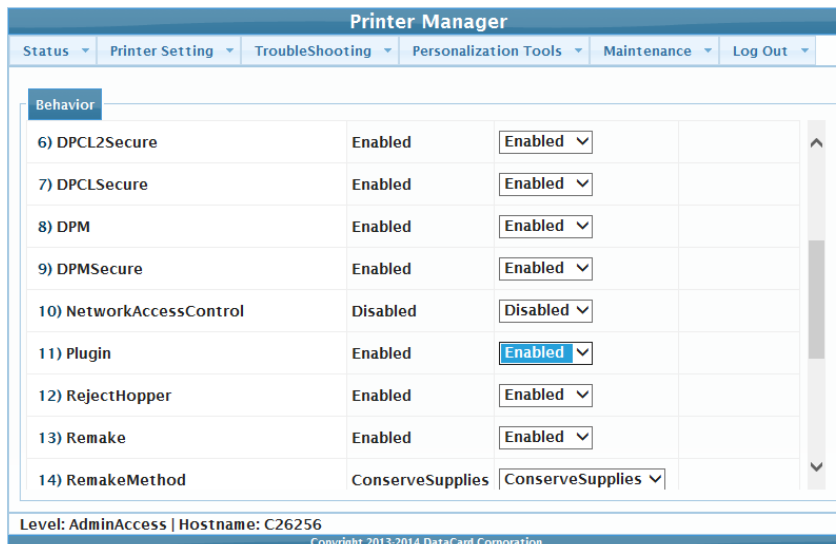


6. Click **Set Current** to save the setting.
7. Log out of Printer Manager.
8. Turn the printer off and then back on for the new setting to take effect. When the LCD panel displays **Ready** in line 1 and an asterisk (*) in the lower-right corner, OpenCard is enabled on the printer.

Enable OpenCard with Printer Manager

To enable OpenCard with Printer Manager, you must have a Printer Manager account access level of WebAdmin or WebService. Refer to your printer's *Installation and Administrator's Guide* for more information about assigning Printer Manager access levels.

1. Before you start, make sure that your printer meets all requirements. Refer to [“OpenCard Requirements”](#) on page 8.
2. Make sure that the SD/CD Series card printer is connected to the computer with a TCP/IP interface.
3. Open Printer Manager. For instructions, refer to [“Opening Printer Manager”](#) on page 59.
4. Select **Printer Setting > Behavior**.
5. Change the setting for PlugIn to **Enabled**.



6. Click **Set Current** to save the setting.
7. Log out of Printer Manager.
8. Turn the printer off and then back on for the new setting to take effect. When the LCD panel displays **Ready** in line 1 and an asterisk (*) in the lower-right corner, OpenCard is enabled on the printer.

Disabling OpenCard with Printer Manager

1. Open Printer Manager.
2. Log In as WebAdmin or WebService.
3. Select **Printer Setting > Behavior**.
4. Change the setting for PlugIn to **Disabled**.
5. Click **Set Current** to send the new setting to the Printer (the printer's LCD displays **Busy** while the printer processes the new setting).
6. Log out of Printer Manager.
7. Turn the printer off and then back on for the new setting to take effect. The LCD panel shows no asterisk in the lower-right corner. OpenCard is now disabled and the printer may now accept input from the XPS Card Printer Driver.

Enable OpenCard Legacy Mode with Printer Manager

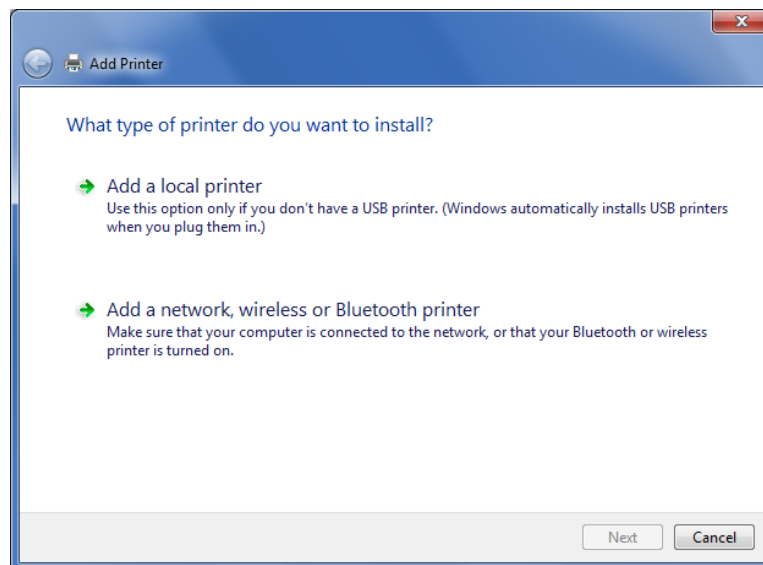
1. Before you start, make sure that your printer meets all requirements. Refer to [“OpenCard Requirements”](#) on page 8.
2. Make sure that the SD/CD Series card printer is connected to the computer with a TCP/IP interface.
3. Open Printer Manager. For instructions, refer to [“Opening Printer Manager”](#) on page 59.
4. Select **Printer Setting > Behavior**.
5. Change the setting for OpenCardLegacyMode to **Enabled**.
6. Click **Set Current** to save the setting.
7. Log out of Printer Manager.
8. Turn the printer off and then back on for the new setting to take effect.

Setting Up a Generic/Text Driver with OpenCard Printers

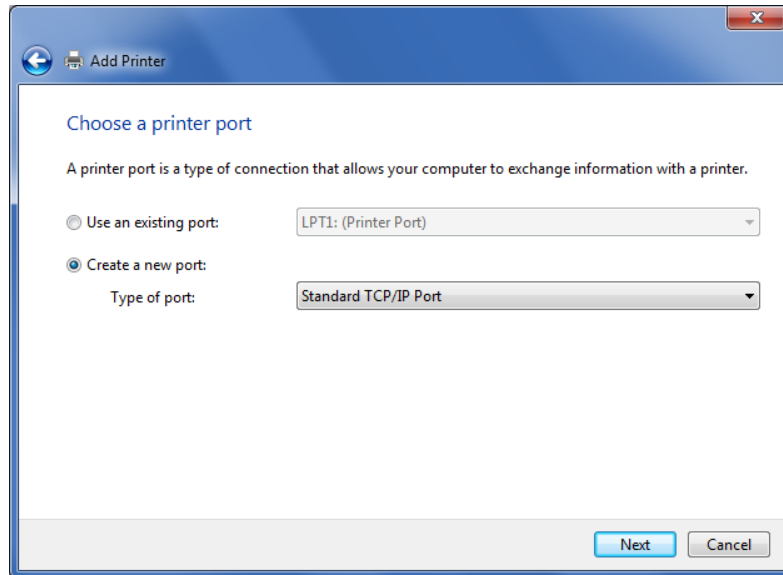
Use this procedure for Windows applications that print using OpenCard format.

Generic/Text Driver for Networks

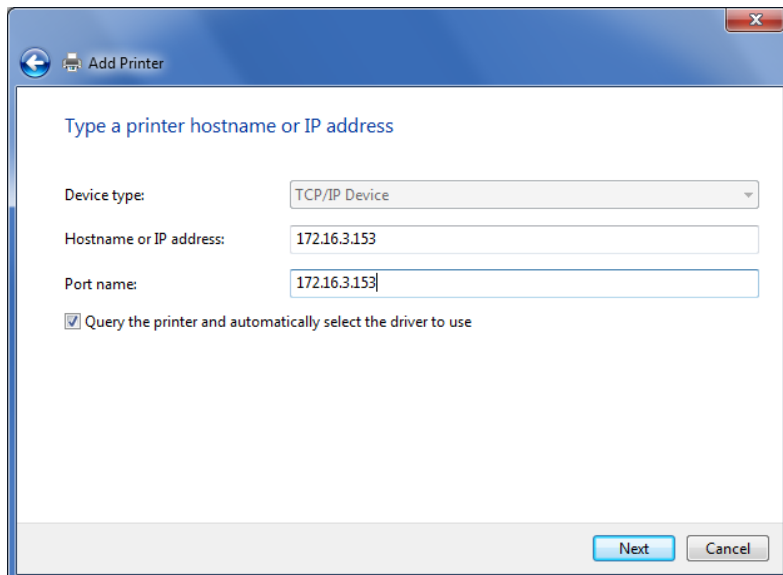
1. Click **Add a printer** on the Device Manager window.
2. Select **Add a local printer** from the Add Printer window.



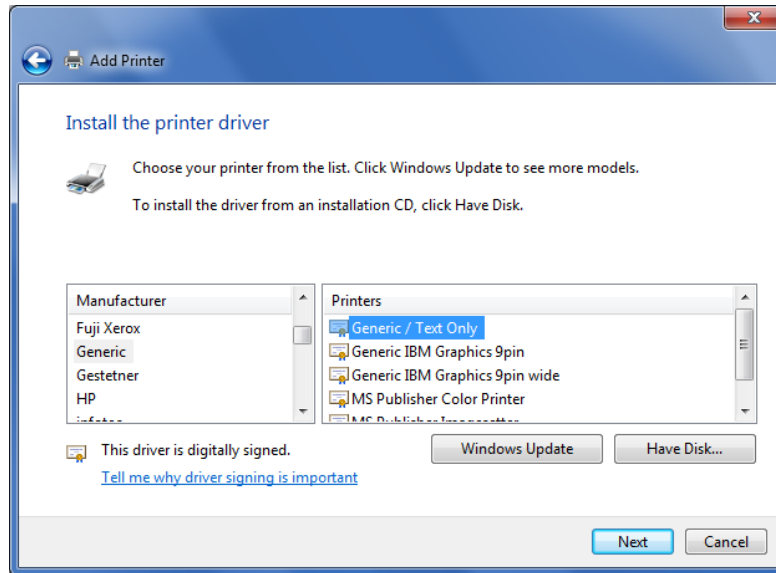
3. Set up a new TCP/IP port.
 - a. Select **Create a new port** on the Choose a printer port window.
 - b. Select **Standard TCP/IP Port** from the drop down menu.



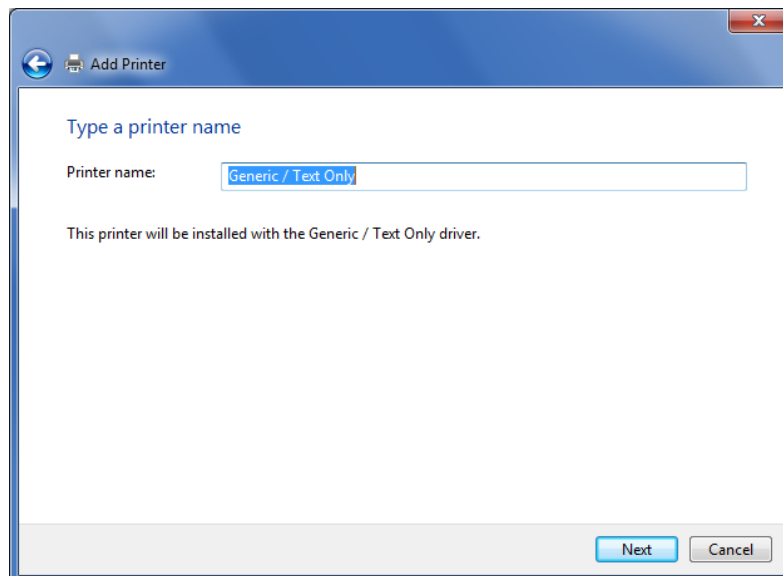
- c. Click **Next**.
4. In the Hostname or IP address text box, enter the IP address of the printer. Then, click **Next**.



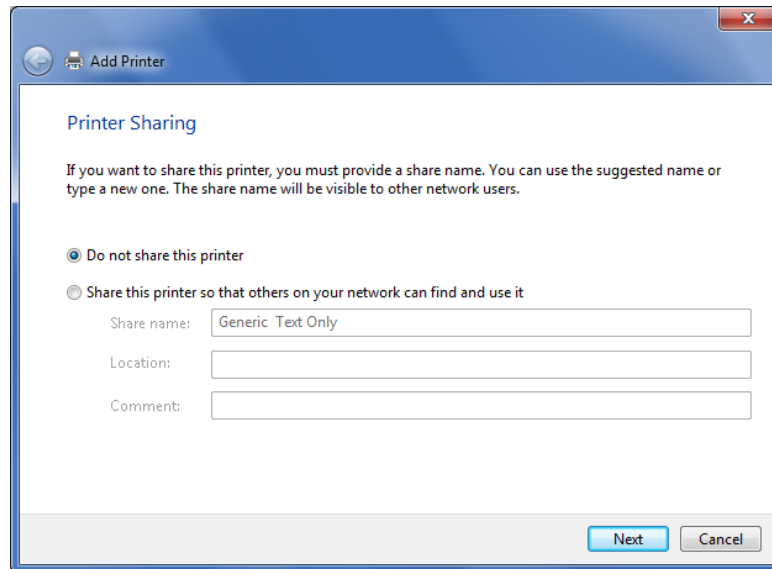
5. Configure the generic driver.
 - a. In the Manufacturer list, click **Generic**.
 - b. In the Printers list, click **Generic/Text Only**.
 - c. Click **Next**.



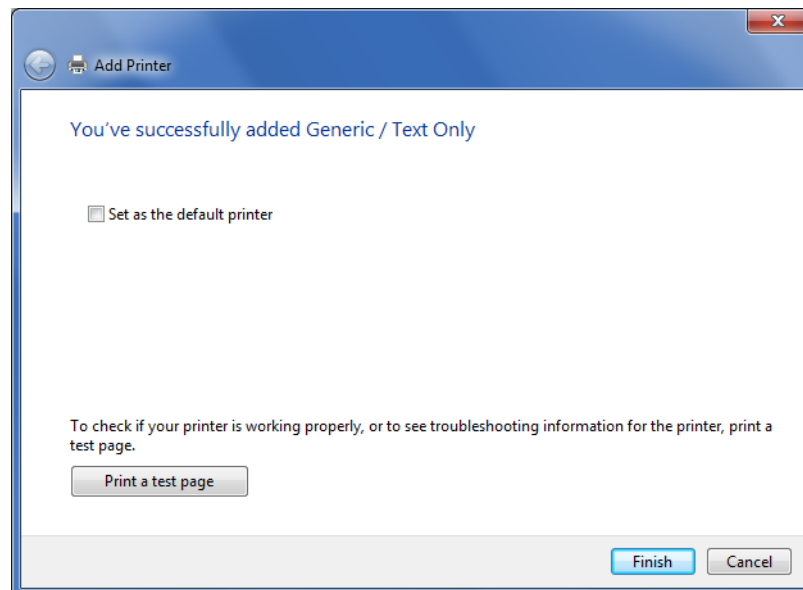
6. In the Printer Name field, enter **Generic / Text Only**. Then, click **Next**.



7. Select **Do not share this printer**. Then, click **Next**.

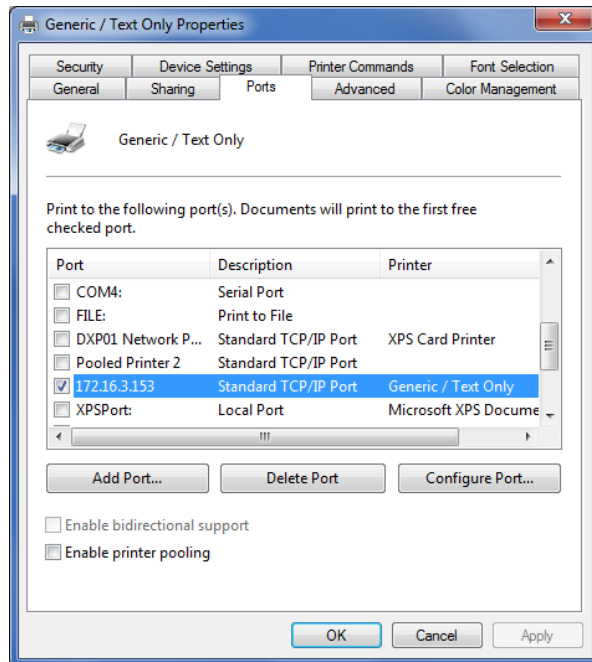


8. Click **Finish**.



9. Verify Generic / Text Only Properties

- a. Right-click the printer name on the Device Manager window and select **Printer properties**.
- b. Click the Ports tab and verify that the IP address is correct.



Generic/Text Driver for USB

1. Install the XPS Printer Driver on the USB port.
2. Retrieve the USB IP address from the printer.
3. Install the Windows Generic Driver and mount the IP address to the USB port.
4. Make sure that the Windows Generic Driver is set to use RAW mode.



Chapter 3: Creating Card Formats

3

This chapter presents an OpenCard process overview, and describes how to create an OpenCard card format to use with the SD/CD Series card printers.

About Card Formats for the SD/CD Series Printers

The card format capabilities of the SD/CD Series printers include the ability to define personalization operations on both the front and back side of a card. OpenCard supports monochrome and color graphics, topcoat and printing on both sides of the card, and magnetic stripe encoding. Enhanced capabilities include support for a full range of industry-standard graphics image formats and any TrueType font for text. In addition, you can define a wide range of image and text transformations.

Card Personalization Process Overview

Card formats merge with the OpenCard data stream to create a personalized card using the following process:

1. Setup

The card format designer creates a card format as an SVG document, creates or acquires the images and fonts called out in the card format, and prepares the data stream. The data stream is a text stream that can contain text lines, an optional magnetic stripe data line, and command lines. Preparing the data stream also includes optionally naming a specific card format with the @G command, which indicates the card format to use, and naming the card stock with the @C command.

2. Import

The card format designer uses Printer Manager to import the card format, images, and fonts to any SD/CD Series printer that is to use the card format.

3. Production

- The printer receives an OpenCard data stream.
- OpenCard locates the correct card format on the printer.

- OpenCard uses the instructions in the card format to merge the data stream text, images, and magnetic stripe data into a card to be printed, similar to a mail merge. As in the mail merge process, the card format contains text and image named variables that OpenCard uses to map to the corresponding items in the data stream.



When a printer receives OpenCard commands with no active card layout on the printer, it prints using the Default card layout file. If there is no active card layout and the printer cannot find the Default card layout file, printing fails and the printer shows an error. To prevent the error, create a card layout file with the filename Default (no file extension).

The Card Format as an SVG Document

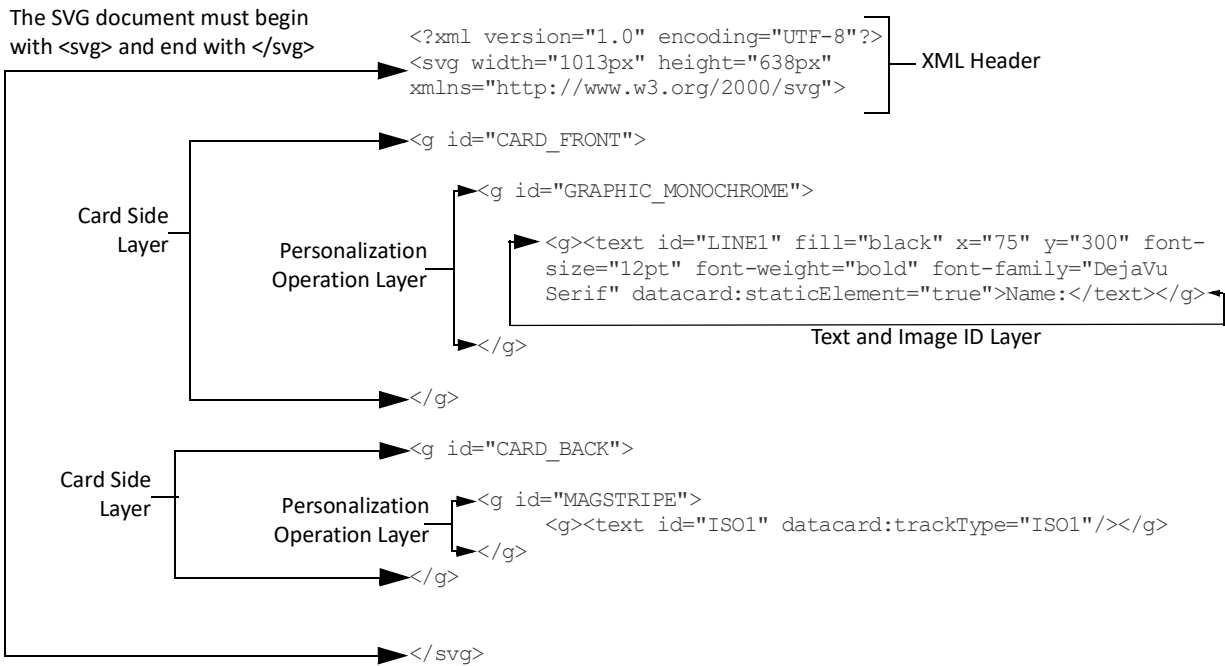
The basis of the SD/CD Series card format is an XML-based document format, Scalable Vector Graphics, or SVG. The World Wide Web Consortium publishes the definition of the SVG format.

To create an OpenCard card format, the SVG standard defines 1) the basic structure of the card format, and 2) the majority of the attributes that define image and text items.

The SVG card format also uses Datacard-specific conventions and extensions compatible with the OpenCard data stream standard, affording access to the full range of capabilities available in SD/CD series printers. For information about the OpenCard data stream standard, refer to the Data Formatting Guide.

Card Format Structure and Conventions

The SVG markup you use to create an OpenCard card format describes the relationships between the elements that make up the card format as layers. Each layer is demarcated with a `<g>` at the beginning and a `</g>` at the end, as shown in the following example:



XML Header—The first line of an OpenCard card format must be a standard XML declaration. The header must also include the SVG declaration shown, with the beginning <svg> and its corresponding </svg> at the end of the card format. An XML header also includes the card dimensions, which correspond to the number of pixels (px) when printing at 300 dpi (width = 3.375" x 300 = 1013 px; height = 2.125" x 300 = 638 px). This is the only resolution supported.

Card Side Layer—Identifies on which side of the card the personalization occurs.

datacard:translations (not shown)—Applied at the same level as a card side layer, datacard:translations are instructions to apply translations to the data stream.

Personalization Operation—Defines monochrome or color graphics, and instructions for magnetic stripe and topcoat.

datacard:flip (not shown)—Applied at the same level as the personalization operation, datacard:flip flips the card to prepare it for personalization.

Text and Image ID Layers—Provide the appearance and placement details for text and images.

Naming a Card Format in the Data Stream

The @G command in the OpenCard data stream defines which card format (or Legacy SP/CP Series card layout) to use to print the card.

- If an @G command is in the data stream, then the printer uses the card format. If the named card format is not loaded on the printer, then the card is rejected and does not print.

- If no @G command exists in the data stream, then the printer software uses the card format named Default. If Default doesn't exist, the card is rejected and the request does not print.

Naming Card Stock in the Data Stream

The @C command in the OpenCard data stream defines which card stock to use. A card stock definition is required when setting up the LCD panel to prompt the user to insert a card in the exception slot of the input hopper. Prompts from the LCD panel are shown only with manual card insertion.

- If an @C command is in the data stream, then the printer uses the card stock requested.
- If the card stock is not defined on the printer, then the printer uses the card stock defined in Printer Manager as Default. If Default doesn't exist, the card is rejected and the request does not print.

ID Naming Conventions

Data	ID Naming Conventions
Dynamic Text Data	To personalize a text line of data, the ID convention is LINE n , where n can be from 1 to 15. An ID of LINE1 then uses data supplied in the first personalization data line of an OpenCard data stream.
Magnetic Stripe Data	To place magnetic stripe data, the magnetic stripe data line must use an ID that conforms to the convention ISO n , where n can be 1, 2, or 3—corresponding to ISO tracks 1, 2, and 3. (Alternatively, when there are no pre-defined magnetic stripe commands in the data stream, you can use a dynamic text ID of LINE n to identify which line text data to place on a specific track.)
Static Data	Static data is data that does not derive its images or text from the OpenCard data stream. Since the data is the same every time, it can be defined in the card format itself. Static data does not have to have an associated ID. If it does have an ID, you can use any name other than the IDs "LINE n " or "ISO n " reserved for dynamic data and magnetic stripe data, as described above.

Adding Elements to the Card Format

This section provides information about how to apply the elements available to create an OpenCard card format. Elements are listed in the order they are applied in the SVG card format document.

Card Side Layers

Within the SVG document, a card format must define a front side layer and/or a back side layer.

- Use an ID of “CARD_FRONT” or “CARD_BACK”.
- Add personalization layers as children of each of the front and back side layers as needed.
- “CARD_FRONT” and “CARD_BACK” are the only layer IDs OpenCard recognizes at this level.

Card Side Layers Example

```
<?xml version="1.0" encoding="UTF-8"?>
<svg width="1013px" height="638px" xmlns="http://www.w3.org/2000/svg">

    <g id="CARD_FRONT">
        ... front side card personalization operations go here ...
    </g>

    <g id="CARD_BACK">
        ... back side card personalization operations go here ...
    </g>

</svg>
```

Re-Mapping Data Characters with datacard:translations

Translations allow for re-mapping of data characters. Using this element, the card format designer can define a list of characters to translate.

The datacard:translations element is placed at the same level as the card side layers because translations are applied to the data stream before it is merged into the card format. Translations affect the value of the data merged into any operation defined in the card format.

Hexadecimal Notation for Translations

For datacard:translations, control characters with values of less than 0x20 (ASCII SPACE character) must be encoded in hexadecimal notation using a leading 0x. For example, represent the null character as 0x00. If a translation maps any data stream character to a null (0x00), then the presence of the null serves to end the data line at that point. Any data following the character that translates to null is not merged into the card format.

datacard:translations Example

The following is an example that signals the printer software to translate:

- Any uppercase “A” character to a lowercase “a”
- Any lowercase “a” to an uppercase “A”
- Any uppercase “B” character to a null (0x00)

OpenCard data stream	<123AaB9876>
Card format	<pre><?xml version="1.0" encoding="UTF-8"?> <svg width="1013px" height="638px" xmlns="http://www.w3.org/2000/svg"> <datacard:translations> <datacard:translate from="A" to="a"/> <datacard:translate from="a" to="A"/> <datacard:translate from="B" to="0x00"/> </datacard:translations> <g id="CARD_FRONT"> ... front side card personalization operations go here ... </g> <g id="CARD_BACK"> ... back side card personalization operations go here ... </g> </svg></pre>
Data merged into card format	LINE1=123aA

Personalization Operations

Within each of the card side elements, the card format designer is able to create personalization operations, each as an SVG layer. Datacard-specified personalization operations include:

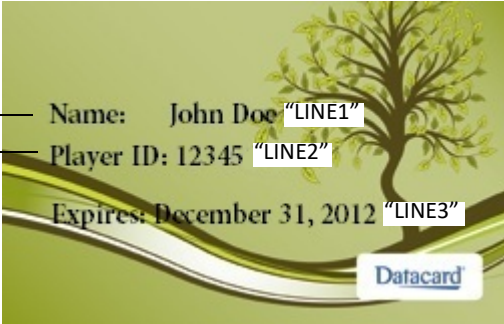
- [Defining Monochrome for Text and Graphics on page 26](#)
- [Defining Color for Text and Graphics on page 27](#)
- [Defining Topcoat Application on page 28](#)
- [Defining Magnetic Stripe Tracks on page 29](#)
- This layer also includes: [Flipping the Personalization Operation with the datacard:flip Attribute on page 31](#)

To define one of these personalization operations, create an SVG layer with the <g> element and set the ID attribute to one of the personalization operations. End the definition with a </g>.

Defining Monochrome for Text and Graphics

Use the GRAPHIC_MONOCHROME operation to define the text and image elements to print using a monochrome “K” ribbon panel at 300 dpi on either side of the card. All formatting details of text and image elements using monochrome are children of this layer, contained between <g id="GRAPHIC_MONOCHROME"> and its corresponding </g>.

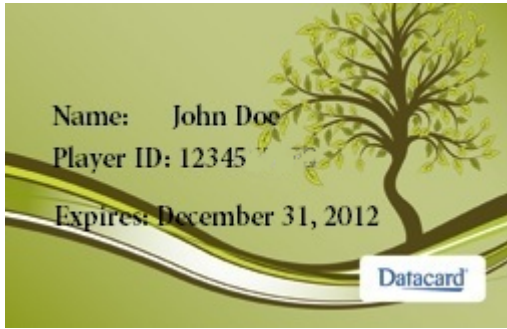
GRAPHIC_MONOCHROME Example

<p>Card format</p>	<pre> <g id="GRAPHIC_MONOCHROME"> <g><text id="NameHeader" fill="black" x="75" y="300" font-size="12pt" font-weight="bold" font-family="DejaVu Serif" datacard:staticElement="true">Name:</text> </g> <g><text id="LINE1" fill="black" x="375" y="300" font-size="12pt" font-family="DejaVu Serif"/> </g> <g><text id="PlayerIdHeader" fill="black" x="75" y="400" font-size="12pt" font-weight="bold" font-family="DejaVu Serif" datacard:staticElement="true">Player ID:</text> </g> <g><text id="LINE2" fill="black" x="375" y="400" font-size="12pt" font-family="DejaVu Serif" datacard:format="XXXXX"/> </g> <g><text id="LINE3" fill="black" x="75" y="525" font-size="11pt" font-family="DejaVu Serif" datacard:appendData="true">Expires </text> </g> </g> </pre>
<p>Card result</p>	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>“NameHeader” —</p> <p>“PlayerIdHeader” —</p> </div>  <div style="margin-left: 10px;"> <p>For this example, placing each of these five text IDs within the GRAPHIC_MONOCHROME operation tells the printer to print each of the them with monochrome ribbon.</p> <p>Note that all other details about size, font, placement and data stream source are part of the text ID.</p> </div> </div>

Defining Color for Text and Graphics

The GRAPHIC_COLOR operation defines all of the text and image elements to print using a three-panel combination of yellow, magenta, and cyan (YMC) at 300 dpi on either side of the card. The details of text and image elements are children of this layer, contained between `<g id="GRAPHIC_COLOR">` and its corresponding `</g>`.


GRAPHIC_COLOR Example

Card format	<pre><g id="GRAPHIC_COLOR"> <g><image id="Background" datacard:staticElement="true" y="0" x="0" height="638px" width="1013px" xlink:href="TreeDebit.jpg" /> </g> </g></pre>
Card result	<p>Any items to be printed in color are defined within the GRAPHIC_COLOR operation. In this example, the background image TreeDebit.jpg requires color processing.</p> <p>Note that the x and y coordinates define the background image placement, and the image dimensions are described in pixels (px), scaled to the full height and width of the card.</p> 

Defining Topcoat Application

The TOPCOAT operation defines the image element to use to apply a topcoat pattern using the T ribbon panel at 300 dpi on either side of the card. The formatting details of image elements are children of this layer, contained between `<g id="TOPCOAT">` and its corresponding `</g>`.

TOPCOAT Example

<p>Card format</p>	<pre> <g id="TOPCOAT"> <g><image id="TopcoatImage" datacard:staticElement="true" y="0" x="0"height="638px" width="1013px" xlink:href="Topcoat_Full.png" /> </g> </g> </pre>
<p>Card result</p>	<p>In this example, the topcoat is applied across the entire width and height of the card 3.375" x 2.125" (or 1013px by 638px)</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="text-align: center; margin-right: 10px;"> <p>topcoat width = 1013px or 3.375"</p> </div>  <div style="text-align: center; margin-left: 10px;"> <p>topcoat height = 638px or 2.125"</p> </div> </div>

Defining Magnetic Stripe Tracks

The MAGSTRIPE operation defines the magnetic stripe tracks to personalize on the front and/or the back side of the card. There are two methods of encoding magnetic stripe tracks:

- Extract text data directly from the data stream and encoding the magnetic stripe using the “LINE n ” text ID
- Extract magnetic stripe text data already identified with magnetic stripe commands and encoding using the “ISO n ” text ID

Encoding Text Data to a Magnetic Stripe Track Using the “LINE n ” Text ID

To populate a magnetic stripe track with text data not originally identified as magnetic stripe data in the data stream, use the “LINE n ” text ID in conjunction with the `datacard:trackType` definition, as shown below.

MAGSTRIPE Example 1

```
<g id="MAGSTRIPE">  
  g><text id="LINE2" datacard:trackType="ISO1"/></g>
```

Encoding Magnetic Stripe Text on a Magnetic Stripe Track Using the “ISO n ” Text ID

To populate a magnetic stripe track with prepared magnetic stripe data, OpenCard data stream uses the following magnetic stripe data identifiers:

trackType	Start Sentinel	End Sentinel
ISO1 (IATA)	% (25 hex)	? (3F hex)
ISO2 (ABA)	; (3B hex)	? (3F hex)
ISO3 (TTS)	_ (5F hex) OR _; (5F3B hex)	? (3F hex)

When the OpenCard data stream has text data prepared for magnetic stripe in this way, identify which information encodes to each track using the “ISO n ” text ID using the following rules:

- The text ID must be “ISO1” for track 1, “ISO2” for track 2, or “ISO3” track 3.
- The `datacard:trackType` value must match the ID name.

The following example shows how text defined for magnetic stripe in the data stream merges with the card format using these mappings. This merged card format becomes the final instructions for sending the data to the correct track on the magnetic stripe.

MAGSTRIPE Example 2

OpenCard data stream	<"%TESTING321?;=1234567890?_?=0987654321?>
Card format	<pre><g id="MAGSTRIPE"> <g><text id="IS01" datacard:trackType="IS01"></text></g> <g><text id="IS02" datacard:trackType="IS02"></text></g> <g><text id="IS03" datacard:trackType="IS03"></text></g> </g></pre>
Data merged into card format	<pre><g id="MAGSTRIPE"> <g><text id="IS01" datacard:trackType="IS01">TESTING321</text></g> <g><text id="IS02" datacard:trackType="IS02">=1234567890</text></g> <g><text id="IS03" datacard:trackType="IS03">=0987654321</text></g> </g></pre>
Card result	<p>Track 1:TESTING321</p> <p>Track 2: 1234567890</p> <p>Track 3:0987654321</p> 

Flipping the Personalization Operation with the `datacard:flip` Attribute

If “true”, this attribute causes the entire personalization operation design to be flipped 180 degrees. Valid values are “true” and “false”, with the default equal to “false” if the attribute is not present. This attribute does not have any effect on a MAGSTRIPE personalization operation.

datacard:flip Example

```
<g id="GRAPHIC_MONOCHROME" datacard:flip="true">
. . . text and image elements go here . . .
</g>
```

Adding Text and Image Layers

Within each personalization operation, you create text and image layers that describe all aspects of the actual text and image, as described in the following:

- [Defining Text ID Layers on page 31](#)
- [Using Bar Code-Specific Attributes on page 38](#)
- [Defining Image Element Layers on page 41](#)

Defining Text ID Layers

Attributes for height, width, font-family, transformations, and other location and appearance details of text data to be personalized to a card are set here. In addition, bar code fonts and other bar code attributes are defined within a text ID layer. Begin each text or image layer with `<g>`, add the text or graphic elements and their attributes, and then end the definition with `</g>`.

When used in a `GRAPHIC_MONOCHROME` or `GRAPHIC_COLOR` layer, OpenCard renders the text data using a TrueType font of the specified font-family at the specified font-size at the specified [x,y] location on the card. Other text attributes may be defined.

When used in a `MAGSTRIPE` layer, the personalization data is simply be encoded to the magnetic stripe track corresponding to the “`datacard:trackType`” defined.

Refer to the “[Text Element Layer Example](#)” on [page 36](#) for a practical example of how text ID layers are constructed.

There are two kinds of IDs that are used in OpenCard systems: dynamic text IDs and static text IDs.

Dynamic Text Elements

Dynamic text describes an element whose personalization is to be taken in whole or in part from an OpenCard data stream. A dynamic text ID must be of the form “`LINE n` ” where n can be from 1 to 15 (for example, “`LINE1`”, “`LINE2`”, ..., “`LINE15`”). An ID of “`LINE1`” uses data supplied in the first personalization data line of an OpenCard data stream.

Static Text Elements

If a text element is static, non-changing personalization, define it using these rules:

- Use any ID value other than the form “LINE*n*”.
- Set the attribute `datacard:staticElement` to “true” to signal that this text item must not be dropped due to there being no ID match with any OpenCard data stream line data.
- Add the static data content at the end of the element.
- Include the end-of-text element (`</text>`) after the last static data character.

x Attribute

The x attribute defines the distance from the left edge of a card to the left edge of the first character of the text line. Default units are in pixels (px).

y Attribute

The y attribute defines the distance from the top edge of a card to the baseline of the text line. Default units are in pixels (px).

Font-Family Attribute

The font-family attribute selects the font for rendering this text line. To view a list of the font families that are currently installed in the printer, select **Printer Manager > Personalization Tools > Managed Items > Font Families**.

Font-Size Attribute

The font-size attribute sets the size at which the text is rendered. Default units are pixels (px), but point size (pt) also is accepted.

At 300 dpi:

$$\text{pixel size} = (\text{point size} / 72) * 300$$

OR

$$\text{pixel size} = \text{point size} * 4.167$$

Font-Weight Attribute

The font-weight attribute specifies the rendering weight of text characters as “normal” or “bold”. The default is “normal” if the attribute is not defined.

Fill Attribute

The fill attribute defines the text color. Find the list of color keyword names (for example, fill="blue") at:

<http://www.w3.org/TR/SVG11/types.html#ColorKeywords>



Color has full effect when used in a GRAPHIC_COLOR personalization operation, but also has an effect on intensity in a GRAPHIC_MONOCHROME operation even though the hue is not printed.

Transform Attribute (Rotating Text)

The transform attribute is an SVG means of performing operations on the entire text element. The most likely used transformation for card format designers is rotating a text element. SVG allows rotation to any degree.

```
x="100" y="400" transform="rotate(90 100, 400)"
```

datacard:staticElement Attribute

When data for the text element is static, this attribute must be set to "true". The static data content must be added at the end of the element and the end-of-text element (</text>) must be included after the last static data character.

Valid values are "true" and "false". The default is "false" if this attribute is not defined.

datacard:staticElement Example

```
<g><text id="NameHeader" fill="black" x="75" y="300" font-size="12pt" font-weight="bold" font-family="DejaVu Serif" datacard:staticElement="true">Name:</text></g>
```

datacard:appendData Attribute

When the first part of the personalization data for the text element is static and the remainder comes from the OpenCard data stream, this attribute must be set to "true". The static data content part must be added at the end of the element and the end-of-text element (</text>) must be included after the last static data character.

Valid values are "true" and "false". The default is "false" if this attribute is not defined.

datacard:appendData Example

```
<g><text id="LINE3" fill="black" x="75" y="525" font-size="11pt" font-family="DejaVu Serif" datacard:appendData="true">Expires </text></g>
```

datacard:format Attribute

Use this attribute to:

- Perform a character-by-character type validation.
- Insert data into the dynamic personalization data.
- Use only the first “*n*” characters from the personalization data.

The following type checking characters may be used to validate characters in the data:

Checking	Definition
9	Numeric only {0 .. 9}
A	Alphabet only {A .. Z, a .. z}
N	Alphabet or numeric {0 .. 9, A .. Z, a .. z}
X	Any character acceptable

datacard:format Example #1

To render a fixed-length bar code text item such as EAN8, the data item from this sample data stream supplies 7 numeric characters. In this case, the following datacard:format attribute can be defined:

```
datacard:format="9999999"
```

- If the data stream sends “1234567”, then this passes the type checking defined by the datacard:format attribute. The EAN8 bar code is rendered successfully.
- If the data stream sends “1234567890123”, then the first 7 characters still successfully pass the type checking. The EAN8 bar code is rendered successfully using only the first seven characters “1234567”.
- If the data stream sends “1234A67”, then the data fails the type checking with an error “Format requires numeric character”. The card is rejected.

datacard:format Example #2

Use the datacard:format attribute to insert characters when:

- The data stream does not contain all of the data characters that must print on the card.
- The characters missing from the data stream are placed in the same place in the final data.

For example, use the datacard:format attribute if the data stream supplies an expiration date as “1016” but the printed card must use the date formatted as “10/16”. In this case, use the following datacard:format attribute:

```
datacard:format="99/99"
```

This inserts the ‘/’ character and verifies that the four data stream characters are numeric.

datacard:remove Attribute

The values accepted are whole number representations only. The default is zero.

If a datacard:remove attribute is defined, then the value of this attribute is used to cut that many data characters from the front of the data stream item that corresponds with the element’s ID.

datacard:remove Example

OpenCard data stream	<1234567890>
Card format	<g><text id="LINE1" fill="black" x="375" y="300" datacard:remove="3" font-size="12pt"font-family="DejaVu Serif"/></g>
Data merged into card format	<g><text id="LINE1" fill="black" x="375" y="300" datacard:remove="3" font-size="12pt"font-family="DejaVu Serif">4567890</text></g>

Text Element Layer Example

Text Element Layer Example

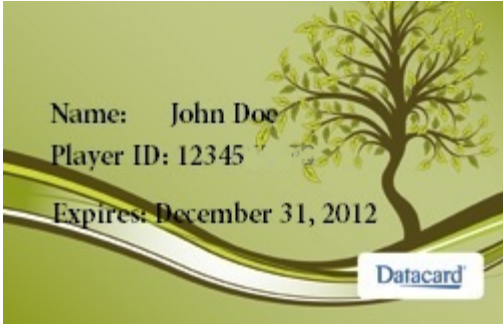
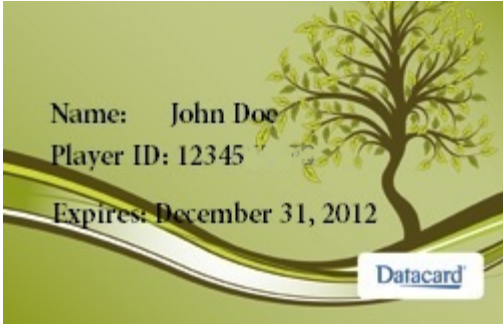
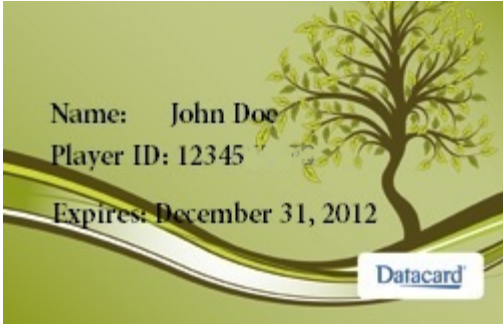
This example shows a GRAPHIC_MONOCHROME layer containing text element layers. The data merged into the card format becomes the instructions for rendering the monochrome text and graphics data.

OpenCard data stream

```
<John Doe  
12345  
Dec. 31, 2012>
```

Card format

```
<g id="GRAPHIC_MONOCHROME">  
  
  <g><text id="NameHeader" fill="black" x="75" y="300"font-size="12pt"  
    font-weight="bold"font-family="DejaVuSerif"  
    datacard:staticElement="true">Name:</text>  
  
  </g>  
  
  <g><text id="LINE1" fill="black" x="375" y="300"font-size="12pt"  
    font-family="DejaVu Serif"/>  
  
  </g>  
  
  <g><text id="PlayerIdHeader" fill="black" x="75" y="400"font-  
size="12pt"  
    font-weight="bold"font-family="DejaVu Serif"  
    datacard:staticElement="true">Player ID:</text>  
  
  </g>  
  
  <g><text id="LINE2" fill="black x="375" y="400"font-size="12pt"  
    font-family="DejaVu Serif" datacard:format="XXXXX"/>  
  
  </g>  
  
  <g><text id="LINE3" fill="black x="75" y="525"font-size="11pt"  
    font-family="DejaVu Serif"  
    datacard:appendData="true">Expires </text>  
  
  </g>  
  
</g>
```

<p>Data merged into card format</p>	<pre> <g id="GRAPHIC_MONOCHROME"> <g><text id="NameHeader" fill="black" x="75" y="300"font-size="12pt" font-weight="bold" font-family="DejaVu Serif" datacard:staticElement="true">Name:</text> </g> <g><text id="LINE1" fill="black" x="375" y="300"font-size="12pt" font-family="DejaVu Serif"/>John Doe</text> </g> <g><text id="PlayerIdHeader" fill="black" x="75" y="400"font- size="12pt" font-weight="bold" font-family="DejaVu Serif" datacard:staticElement="true">Player ID:</text> </g> <g><text id="LINE2" fill="black" x="375" y="400" font-size="12pt" font-family="DejaVu Serif" datacard:format="XXXXX"/>12345</text> </g> <g><text id="LINE3" fill="black" x="75" y="525" font-size="11pt" font-family="DejaVu Serif" datacard:appendData="true">Expires Dec. 31, 2012</text> </g> </g> </pre>			
<p>Card result</p>	<table border="0"> <tr> <td data-bbox="381 1045 649 1419"> <p>Static text IDs</p> <p>Text id NameHeader with the static text "Name"</p> <p>Text id PlayerIdHeader with the static text "Player ID"</p> </td> <td data-bbox="649 1045 1161 1419">  </td> <td data-bbox="1161 1045 1430 1419"> <p>Dynamic text IDs</p> <p>Text id LINE1 dynamically pulls John Doe from line 1 of the data stream.</p> <p>Text id LINE2 dynamically pulls 12345 from line 2 of the data stream.</p> </td> </tr> </table>	<p>Static text IDs</p> <p>Text id NameHeader with the static text "Name"</p> <p>Text id PlayerIdHeader with the static text "Player ID"</p>		<p>Dynamic text IDs</p> <p>Text id LINE1 dynamically pulls John Doe from line 1 of the data stream.</p> <p>Text id LINE2 dynamically pulls 12345 from line 2 of the data stream.</p>
<p>Static text IDs</p> <p>Text id NameHeader with the static text "Name"</p> <p>Text id PlayerIdHeader with the static text "Player ID"</p>		<p>Dynamic text IDs</p> <p>Text id LINE1 dynamically pulls John Doe from line 1 of the data stream.</p> <p>Text id LINE2 dynamically pulls 12345 from line 2 of the data stream.</p>		

Using Bar Code-Specific Attributes

Datacard software has built-in support for the following one-dimensional bar code symbologies:

- CODE39
- UPCA
- CODE128
- EAN8
- Interleaved 2 of 5
- EAN13

These may be called out in any GRAPHIC_MONOCHROME or GRAPHIC_COLOR personalization operation using a text layer. Because the bar code patterns for these built-in bar codes are not generated from a TrueType font, no TrueType font needs to be installed to the printer. However, if human-readable characters are required, the Datacard TrueType font “DCP OCR-B.ttf” must be installed in the printer.

The following attributes apply to the Datacard built-in bar codes. The designer is free to install any other bar code as a standard TrueType font and use standard text layer attributes to work with it.

datacard:barcode Attribute

Valid values are “true” and “false”. The default is “false” if the attribute is not defined.

If “true”, this attribute causes the software to interpret the “font-family” attribute value to be a built-in bar code selection as follows. All font-family names are case sensitive and must be exactly as specified:

Bar code symbology	Font-family
CODE39	font-family="Code39"
CODE128	font-family="Code128"
Interleaved 2 of 5	font-family="I2Of5"
UPCA	font-family="UPC-A"
EAN8	font-family="EAN-8"
EAN13	font-family="EAN-13"

datacard:barRatio Attribute

This attribute specifies the ratio of thickness between a narrow bar and a wide bar for a Code39 bar code. This attribute has no effect on any other built-in bar code. The values supported are:

- datacard:barRatio="2to1" (default if no attribute present)
- datacard:barRatio="3to1"

The final narrow and wide bar thickness for Code39 is determined by a combination of the datacard:barRatio and datacard:barDensity values as the datacard:barDensity attribute sets the narrow bar width.

datacard:barDensity Attribute

This attribute effectively sets the narrow bar width for bar codes CODE39, CODE128 and Interleaved 2 of 5 only and has no effect on the generation of bar codes UPCA, EAN8 and EAN13.

Bar code symbology	Density value	Narrow bar width
CODE39	datacard:barDensity="4.6"	4
	datacard:barDensity="5.76"	4
	datacard:barDensity="6.25"	3
	datacard:barDensity="7.69"	3
CODE128	datacard:barDensity="narrow"	3
	datacard:barDensity="wide"	4
Interleaved 2 of 5	datacard:barDensity="narrow"	2
	datacard:barDensity="medium"	3
	datacard:barDensity="wide"	4
	datacard:barDensity="extrawide"	5

datacard:barHumanReadable Attribute

Valid values are “true” and “false”. The default is “false” if the attribute is not defined.

If “true”, the bar code is printed with human readable characters if the bar code symbology supports human readable characters. Interleaved 2 of 5 and Code128 do not support human readable characters.

datacard:barChecksum Attribute

Valid values are “true” and “false”. The default is “false” if the attribute is not defined.

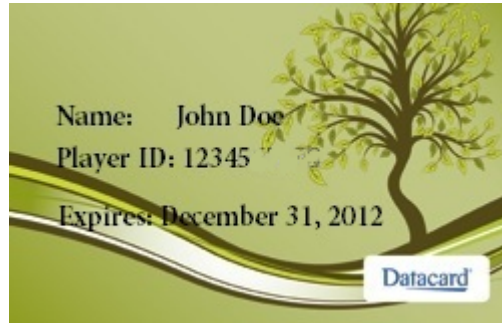
If “true”, Datacard software generates a checksum using a checksum generation algorithm associated with the selected bar code symbology according to this table:

Bar code symbology	Check digit algorithm
CODE39	Modulo 43
CODE128	Modulo 103
Interleaved 2 of 5	Modulo 10
UPCA	Modulo 10
EAN8	Modulo 10
EAN13	Modulo 10

Defining Image Element Layers

Images are supported as static only. This means that data stream items may not be used in conjunction with images.

Images are printed bottom-to-top in the order that they appear in the card format. For example, if the full card tree graphic is followed by the Datacard logo, the tree graphic prints on the bottom with the Datacard logo printed on top.



There is no limit to the number of images that can be rendered to a personalization operation. However, card production throughput may be adversely affected by use of increasing quantities of images, as it takes time to read and process images in the printer.

Defining Image ID Names

For image IDs, choose any name that is useful to the card format, other than the OpenCard data naming pattern "LINE n ", which is reserved for dynamic text data.

datacard:positionReference Attribute

Valid values are:

- topLeft (SVG standard compatible option and default)
- bottomLeft

If "topLeft" is specified, then the image y attribute will be a measure from the top edge of a card to the top edge of the image.

If "bottomLeft" is specified, then the image 'y' attribute will be a measure from the bottom edge of a card to the bottom edge of the image.

x Attribute

The x attribute defines the distance from the left edge of a card to the left edge of the image. Default units are in pixels (px).

y Attribute

Refer to “[datacard:positionReference Attribute](#)” on page 41.

Default units are in pixels (px).

Height Attribute

The height attribute defines the height that the image is scaled to when printed on the card. Units default to pixels (“px”). If no height is defined, then the image is rendered vertically pixel-for-pixel at 300 dpi. If a height is defined, then the image is scaled to the height specified, no matter how many pixels are defined in the image.

Width Attribute

The width attribute describes the width that the image should be scaled to when printed on the card. Units default to pixels (px). If no width is defined, then the image is rendered horizontally pixel-for-pixel at 300 dpi. If a width is defined, then the image is scaled to the width specified, no matter how many pixels are defined in the image.

Transform Attribute (Rotating Images)

The transform attribute is an SVG method of performing operations on the entire image element. SVG allows rotation to any degree.

transform Attribute Example

```
x="100" y="200" transform="rotate(90 100, 200)"
```

Defining the Image Name with xlink:href

Use the xlink:href element to define the case-sensitive name of an image. Load images referenced in a card format onto the printer using Printer Manager prior to printing a card with that card format. Image file path information is not required, and is disregarded at production time.

Image Element Example

The following example places the image “TreeDebit.jpg” at the upper left corner of the card (x=0 and y=0), and scales it to the full height and width of a card at 300 dpi (height=638 and width=1013).

```
<g><image id="Background" datacard:staticElement="true" y="0" x="0"height="638px" width="1013px" xlink:href="TreeDebit.jpg" /></g>
```



Chapter 4: OpenCard Commands

4

This chapter provides information on using OpenCard commands.

A data stream sent from a host computer might contain some or all of the commands listed in the following table. You normally do not make any changes to OpenCard commands in the data stream. However, it is helpful to know the results of using these commands. This chapter describes how the printer responds to the following OpenCard commands.

Command Description	Control Codes
Start of Card Data	<
End of Card Data	>
Graphics Template (change active card layout)	@Gx
Card Stock	@Cxxxx
Magnetic Stripe Encoding	“
New Line	CR or CR-LF or LF-CR or LF



When the printer has an active card layout with one or more fields defined, it ignores all OpenCard commands except the following: Start of Card Data, End of Card Data, and Graphics Template

Start of Card Data Command

The Start of Card Data command is a required command that signals the beginning of printable data to the printer.

Control Code

< or STX

Example

This data stream shows the Start of Card Data and End of Card Data commands:

```
<  
123456  
>
```

Comments

The hex codes for the Start of Card Data command are 3C or 02.

End of Card Data Command

The End of Data command is a required command that tells the printer that the card data is complete.

Control Code

> or ETX

Example

This data stream shows the Start of Card Data and End of Card Data commands:

```
<  
123456  
>
```

Comments

If you send a data stream that does not include the End of Card Data command, the printer waits 20 seconds and then clears the job.

The hex codes for the End of Data command are 3E or 03.

Graphics Template Command

The Graphics Template command specifies which card layout to use for data streams sent to the printer.

Control Code

@Gx

where:

@G Control code

x The file name of the card layout to use

Example

In this example, the command instructs the printer to use CardLayoutFile.svg for the first card. Then, for the second card, the command instructs the printer to use CardLayoutFile2.svg for the second card.

```
<1222
Preston E. Olson
"%PRESTON OLSON;?1234567890?_;1222?
@GCardLayoutFile.svg>
<3444
Christopher L. Carlson
"%CHRISTOPHER CARLSON;?0987654321?_;3444?
@GCardLayoutFile2.svg
>
```

Notes

The @G command stays in effect until the next @G command, or until the printer is powered off.

The printer displays an error if the card layout filename specified in the command does not exist.

With OpenCardLegacyMode enabled, the printer requires card layout file names of 0, 1, 2, or 3 only. The number corresponds to the allowed legacy layout numbers (0-3). The printer treats the text on the same line after the number as line data. If you send this command with a card layout number outside the allowed range (for example, G6), the printer LCD panel displays error message, 100: Request not supported. Refer to the printer's User's Guide for more information.

If an @G command appears in the data stream following magnetic stripe data, subsequent data in the data stream is extracted and printed. This provides support for data streams for legacy printers which embossed, encoded magnetic stripe data, and then printed on the card. It also allows you to add, using the Card Layout menus, one or more logos or fixed text fields.

Card Stock Command

The @C command in the OpenCard data stream defines which card stock to use. A card stock definition is required when setting up the LCD panel to prompt the user to insert a card in the exception slot of the input hopper. Prompts from the LCD panel are shown only with manual card insertion.

Control Code

@Cxxx

Where:

@C = Control code

xxx = The name of the card stock as specified in Printer Manager.

Example

```
<1222
Preston E. Olson
"%PRESTON OLSON;?1234567890?_;1222?
@GCardLayoutFile.svg
@CCardStock1>
<3444
Christopher L. Carlson
"%CHRISTOPHER CARLSON;?0987654321?_;3444?
@GCardLayoutFile2.svg
@CCardStock2
>
```

Notes

- If an @C command is in the data stream, then the printer uses the card stock requested.
- If the card stock is not defined in the data stream, then the printer uses the card stock defined in Printer Manager as **Default**. If **Default** doesn't exist, the card is rejected and the request does not print.

Magnetic Stripe Encoding Data Command

For printers with a 3-track magnetic stripe module, this command tells the printer to encode the data following the control code on the card's magnetic stripe.

Control Code

"

Notes

Magnetic stripe data can be included within the data delimited by the Start of Card Data and End of Card Data commands (< and >).

The data is encoded according the track formats set in the printer. The printer is shipped with the default track formats, depending on the magnetic stripe module. The following table summarizes requirements for each default track.

Track	Default Encoding Format	Start Sentinel	End Sentinel	Data Allowed	Maximum Characters
1	IATA—International Air Transportation Association	% (25 hex)	? (3F hex)	Capital letters, numbers, a space, and ! # \$ % ' () * + , - . / ; : < @ > = ^ \ [" & _	76
2	ABA—American Bankers Association	; (3B hex)	? (3F hex)	Numbers and ; : < > =	37
3	TTS—Thrift Third Shift	_ (5F hex) or _ ; (5F3B hex)	? (3F hex)	Numbers and ; : < > +	104

The data must contain the start and end sentinels for each track and cannot include carriage returns or line feeds. The start and end sentinels mark the beginning and end of each track. The host computer must send data that meets the requirements for each track.

Refer to your printer's *Installation and Administrator's Guide* for more information about magnetic stripe encoding.

Example

In this example, the text on lines 1, 3, 6, and 8 will be printed on the front of the card. The employee number (123-456-789) will be encoded on track 2 of the magnetic stripe and the access code (4321) will be encoded on track 3 of the magnetic stripe. All of the information is applied to the card as part of one print job.

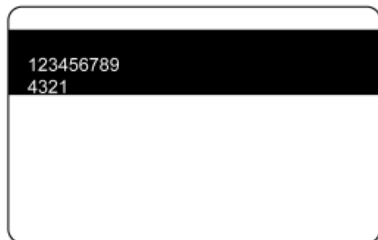
```
<Datacard Group_LF
LF
Zachary Hamilton_LF
LF
LF
123-456-789_LF
LF
Accounts Receivable_LF
LF
";123456789?_;4321?_LF
>
```

The following shows the card produced by sending the example data stream to the printer:

Front of Card



Back of Card—Encoded on Magnetic Stripe



Track 1—no data
Track 2—Employee Number
Track 3—Access Code

Note: Data encoded on the magnetic stripe is not visible.

Comments

The hex code for the Magnetic Stripe Encoding Data command is 22.

New Line Command

The New Line command tells the printer to start a new line of printed data.

Control Code

CR | CR-LF | LF-CR | LF

Description

When a print line is sent to the printer, the computer system normally inserts one of the four New Line commands (line feed or carriage return) at the end of each line. These codes trigger the printer to start a new line on the card according to the default line locations. If a data stream contains blank lines, the printer skips those lines and moves down the card.

Example

In this example, the data stream causes lines of X characters to be printed on the card, and skips the blank line between lines 6 and 7. This is how the example data stream appears in a text file:

```
<123456789012345678901234567890
2XXXXXXXXXXXXXXXXXXXXXXXXXXXXX2
3XXXXXXXXXXXXXXXXXXXXXXXXXXXXX3
4XXXXXXXXXXXXXXXXXXXXXXXXXXXXX4
5XXXXXXXXXXXXXXXXXXXXXXXXXXXXX5
6XXXXXXXXXXXXXXXXXXXXXXXXXXXXX6

7XXXXXXXXXXXXXXXXXXXXXXXXXXXXX7
8XXXXXXXXXXXXXXXXXXXXXXXXXXXXX8
9XXXXXXXXXXXXXXXXXXXXXXXXXXXXX9
10XXXXXXXXXXXXXXXXXXXXXXXXXXXXX10
>
```

This is how the printer reads the same data stream. The line feed characters are represented below as LF.

```
<123456789012345678901234567890_LF
2XXXXXXXXXXXXXXXXXXXXXXXXXXXXX2_LF
3XXXXXXXXXXXXXXXXXXXXXXXXXXXXX3_LF
4XXXXXXXXXXXXXXXXXXXXXXXXXXXXX4_LF
5XXXXXXXXXXXXXXXXXXXXXXXXXXXXX5_LF
6XXXXXXXXXXXXXXXXXXXXXXXXXXXXX6_LF
LF
7XXXXXXXXXXXXXXXXXXXXXXXXXXXXX7_LF
8XXXXXXXXXXXXXXXXXXXXXXXXXXXXX8_LF
9XXXXXXXXXXXXXXXXXXXXXXXXXXXXX9_LF
10XXXXXXXXXXXXXXXXXXXXXXXXXXXXX10_LF
>
```

The following shows the card produced by sending the example data stream to the printer:

```
123456789012345678901234567890
2XXXXXXXXXXXXXXXXXXXXXXXXXXXXX2
3XXXXXXXXXXXXXXXXXXXXXXXXXXXXX3
4XXXXXXXXXXXXXXXXXXXXXXXXXXXXX4
5XXXXXXXXXXXXXXXXXXXXXXXXXXXXX5
6XXXXXXXXXXXXXXXXXXXXXXXXXXXXX6

7XXXXXXXXXXXXXXXXXXXXXXXXXXXXX7
8XXXXXXXXXXXXXXXXXXXXXXXXXXXXX8
9XXXXXXXXXXXXXXXXXXXXXXXXXXXXX9
10XXXXXXXXXXXXXXXXXXXXXXXXXXXXX10
```

Comments

Hex codes for the New Line commands are as follows:

CR = 0D

LF = 0A

CR-LF = 0D and 0A

LF-CR = 0A and 0D



Chapter 5: Exporting Legacy Card Layouts, Graphics, and Fonts

5

This chapter provides information about using existing Legacy card layouts from SP/CP Series printers to print on SD/CD Series printers with OpenCard. This includes how to export Legacy card layouts, how to use Legacy graphics/logos, and how to use Legacy fonts.

Exporting Card Layouts from Legacy Series Printers with Telnet

A card layout refers to Legacy card layout files originally created for the SP/CP Series card printers. You can export these card layouts, save the exported definition to a file, and then import the card layout files for use with OpenCard on SD/CD Series printers.

For more information about setting up Legacy SP/CP Series card layouts, refer to the Legacy *SP/CP Series Data Formatting Guide*.

1. Make sure that the PC is connected to the network using TCP/IP.
2. Establish a Telnet connection to the printer.
3. Enter the following at the command prompt or command line:

```
telnet ipaddress
```

Where *ipaddress* is the IP address displayed on the LCD panel of the printer (**Printer Ready>Main Menu>Status>Status Menu>Network>Address Mode>DHCP (or Static)>Data Format>Open Card>IP Address>IP address of printer**).

The Card Layout Definition menu displays.

```
Card Layout Definition 0

Print Orientation: no rotation

Card Layout:

1. Add a new field
2. Change a field
3. Delete a field
4. Delete all fields
5. Change active card layout
6. Print a test card
7. Card properties
8. Tools
0. Exit Telnet
```

4. Make sure that the desired active card layout is displayed. Only the current active card layout and any currently defined character translations is exported.
5. From the Card Layout Definition menu, enter **8** to select **Tools**. The Tools menu displays.

```
Tools:

1. Add a character translation
2. Delete a character translation
3. Configure XON/XOFF protocol
4. Service tools
5. Delete a logo
6. Change password
7. Export card layout
8. Clear errors
9. Enable/disable Code 39 check digit
0. Return to main menu
```

6. From the Tools menu, enter **7** to select **Export card layout**.

The printer displays the card layout, followed by the Tools menu. The beginning and end of the card layout are marked with the words “begin” and “end.” The card layout is encoded.

```

-----Copy below this line-----
begin 444 opencard.txt
M`P#<S<S^`%0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`
M@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!
M`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`
M@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!
M`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`
J@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`@0"!`($`
end

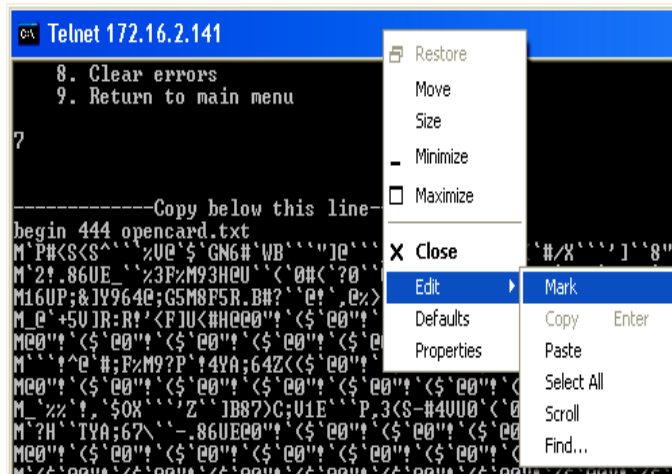
-----Copy above this line-----


```

7. Use the tools available in your Telnet interface to copy the exported card layouts, and then save the layouts in a text file.

For example, if you are using Telnet with the Windows command prompt, do the following:

- a. Right-click the title bar to display a pop up menu. Select **Edit > Mark** from the menu.



- f. Save the file using the following naming conventions:
- If you want this card layout to be the default SP/CP Series card format, then save to the file named Default.
-  The file name Default is case sensitive. Make sure to save the file as Default with no extension.
- If you use the @G command to indicate the name of the card layout in the data stream, you must save the file using one of the following names:
 - ◆ 0
 - ◆ 1
 - ◆ 2
 - ◆ 3
 - Where 0, 1, 2, or 3 corresponds to the specified @G0, @G1, @G2 or @G3 name of the card layout in the data stream. Make sure to save the file with no extension.
8. Continue to [“Importing a Card Format or Card Layout File”](#) on [page 61](#) to import the card layout to the printer.

Using Legacy Graphic/Logo Files

Legacy graphic/logo files are not exported automatically with the card layout. Instead, you must import legacy graphics separately using Printer Manager. For more information about importing Legacy files using Printer Manager, refer to [“Importing a Graphic/Logo File”](#) on [page 63](#).

When importing legacy logos originally created for SP/CP Series printers card layouts, you must use the original monochrome logos in TIFF format and name them one of the following:

- OpencardLogo1
- OpencardLogo2
- OpencardLogo3
- OpencardLogo4

Where 1, 2, 3, and 4 correspond to the original graphic/logo name in the data stream.

Using Legacy Fonts

To print to the SD/CD Series printers, Legacy fonts are bundled with the printer. OpenCard maps Legacy SP/CP Series printer fonts to their TrueType equivalents resident on the SD/CD Series printers, as shown below.

SP/CP Series Card Printers Equivalent	SD/CD Series Printers with OpenCard
Serif	ufonts.com_charter-bt-roman.ttf
Serif Bold	ufonts.com_charter-bt-black.ttf
Courier	ufonts.com_courier-10-pitch-bt.ttf
Courier Bold	ufonts.com_courier-10-pitch-bold-bt.ttf
Sans	ufonts.com_bitstream-vera-sans.ttf
Sans Bold	ufonts.com_bitstream-vera-sans-bold.ttf
	Used for bar code human-readable characters: DCP OCR-B.ttf



Some legacy printers use custom fonts designed specifically for that system. You must manually load any custom fonts onto the printer.



Chapter 6: Working with Printer Manager

6

Printer Manager is a menu-based browser interface used for viewing and working with images, fonts, card stocks, and card formats. This chapter describes how to import card formats, images, and fonts, how to define card stocks, and how to view the Print Request Log and the OpenCard data stream.

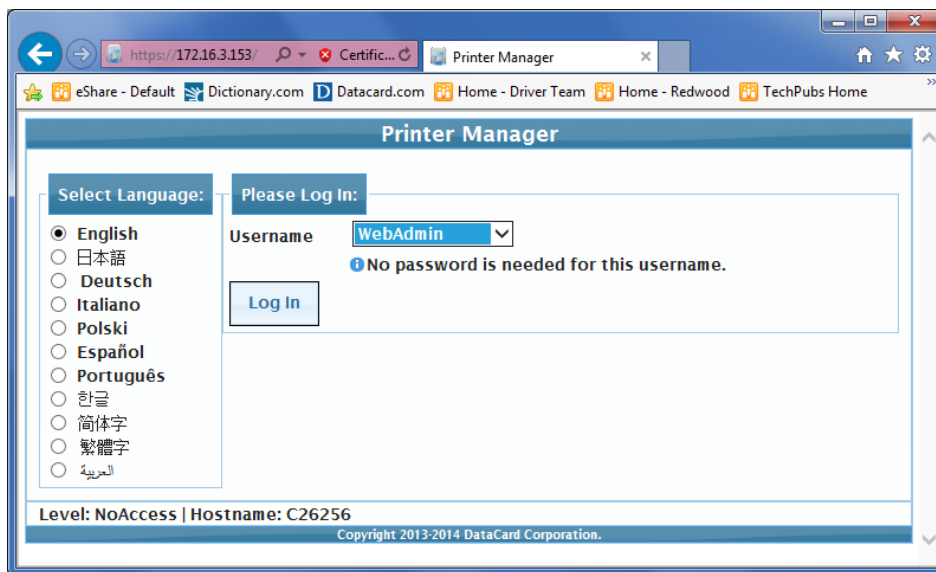
Opening Printer Manager

1. Use the printer's LCD menu to get the printer IP address. Refer to the printer's User's Guide for information.
2. Open the Web browser on the PC.
3. In the Address field, enter the following:

https://printer IP address

For example: https://123.1.23.123 where 123.1.23.123 is replaced by your actual printer IP address.

Because this is a secure connection, the browser issues a certificate warning. Click **Continue to this website (not recommended)**. The Log In page displays.



4. In the Please Log In: area, select a Username.
 - To gain access to OpenCard options, you must log in with **WebAdmin** or **WebService access**.
 - Your printer may require a password.
5. Click **Log In**. The Welcome to Printer Manager page displays.

The screenshot displays the 'Printer Manager' web interface. At the top, there is a navigation bar with the title 'Printer Manager' and several menu items: 'Status', 'Printer Setting', 'TroubleShooting', 'Personalization Tools', 'Maintenance', and 'Log Out'. Below the navigation bar, a yellow banner indicates 'User successfully logged in.' The main content area features a 'Welcome' message and a table with the following data:

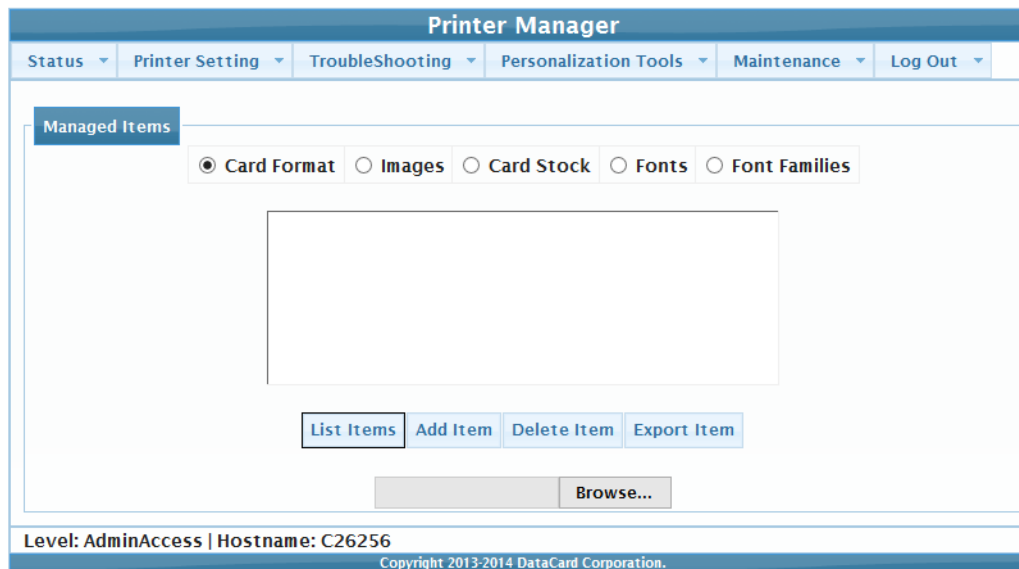
1) Web Status	Enabled
2) Soap Interface	DPCL

At the bottom of the main content area, it shows 'Level: AdminAccess | Hostname: C26256'. The footer of the page contains the copyright information: 'Copyright 2013-2014 DataCard Corporation.'

Importing a Card Format or Card Layout File

Use this procedure to transfer card formats or card layouts to Printer Manager for printing on the SD/CD Series printers.

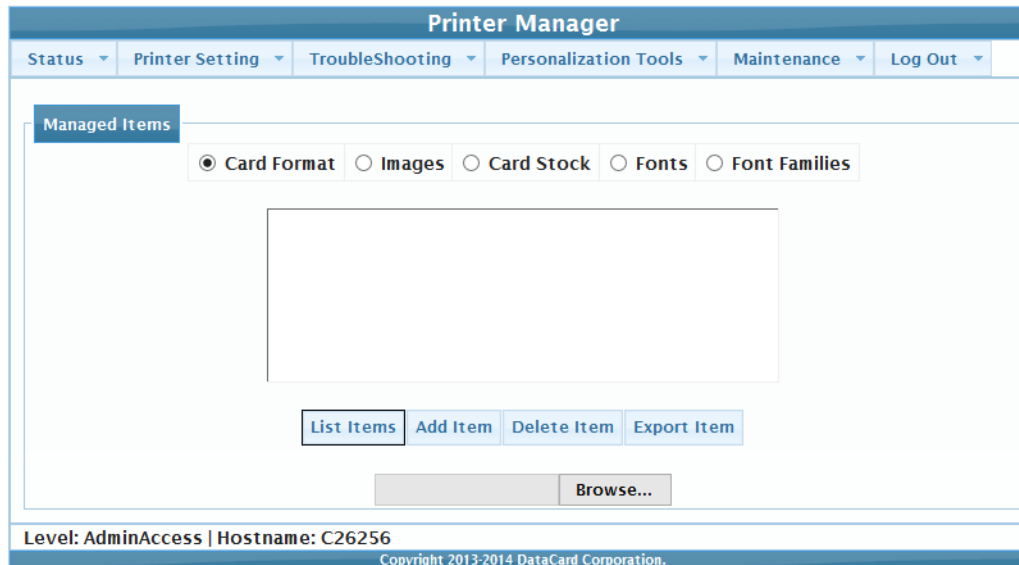
1. Make sure that the SD/CD Series printer is connected to the computer with a TCP/IP interface.
2. Open Printer Manager.
3. Select **Personalization Tools > Managed Items**. The Managed Items screen displays.



4. Select **Card Format**.
5. Click **Browse** to find the card layout file that was exported from the Legacy SP/CP Series printer.
6. Select the card format to import, and then click **Add Item**. The imported file name displays in the list.

Exporting a Card Format or Card Layout File

1. Make sure that the SD/CD Series printer is connected to the computer with a TCP/IP interface.
2. Open Printer Manager.
3. Select **Personalization Tools > Managed Items**. The Managed Items screen displays.



4. Select **Card Format**.
5. Click **List Items** to view card formats on the printer. A list of card formats on the printer displays.
6. Make sure that the card format file to export is highlighted, and then click **Export Item**.
7. Choose the location to export the file to and then click **Save**.
8. When the Download Complete dialog displays, click **Close**.

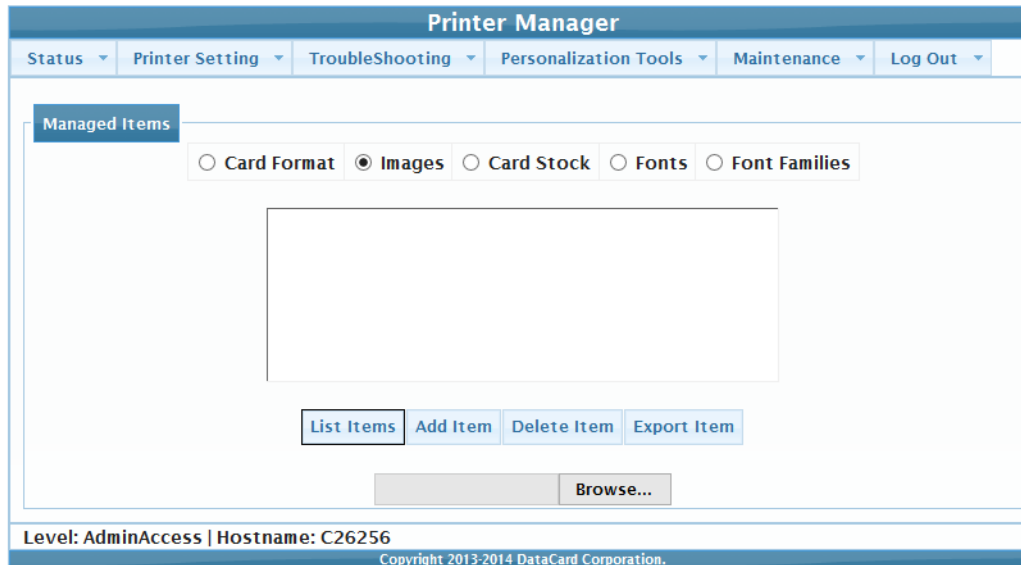
Importing a Graphic/Logo File



For the Legacy Option only: When importing legacy logos originally created for SP/CP Series printers card layouts, use the original monochrome logos in TIFF format and name them one of the following:

- OpencardLogo1
- OpencardLogo2
- OpencardLogo3
- OpencardLogo4

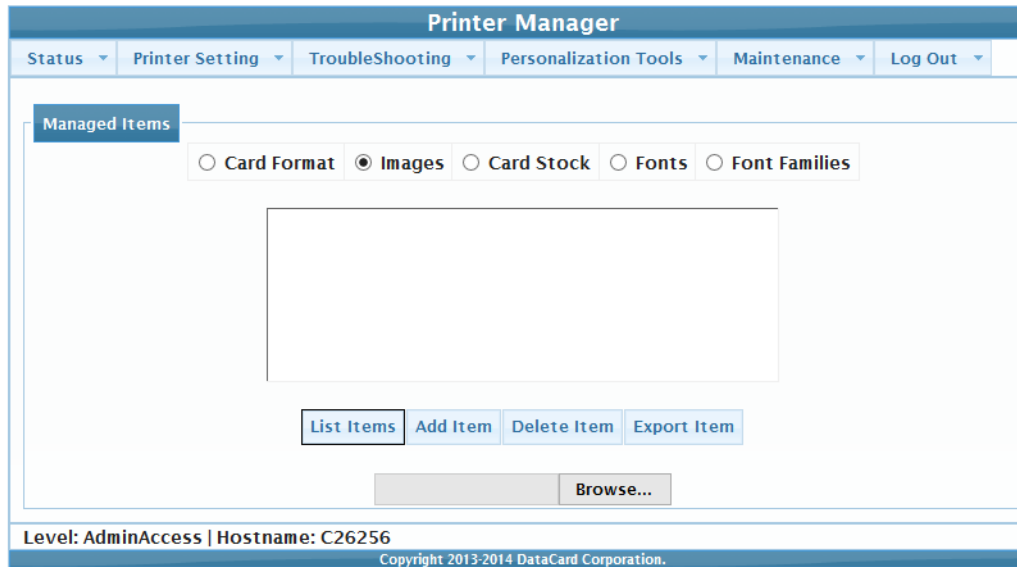
1. Make sure that the printer is connected to the computer with a TCP/IP interface.
2. Open Printer Manager.
3. Select **Personalization Tools > Managed Items**. The Managed Items screen displays



4. Select **Images**.
5. Click **Browse** to find the desired OpencardLogox graphic file.
6. Select the file, and then click **Add Item**. The imported file displays in the list on the Printer Manager Images screen.

Exporting a Graphic/Logo File

1. Make sure that the SD/CD Series printer is connected to the computer with a TCP/IP interface.
2. Open Printer Manager.
3. Select **Personalization Tools > Managed Items**. The Managed Items screen displays.

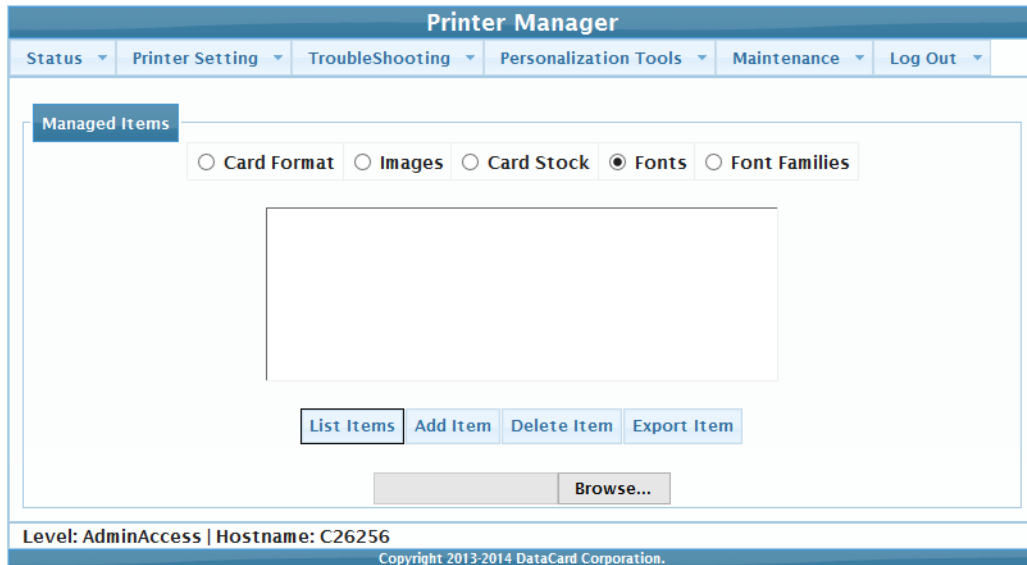


4. Select **Images**.
5. Click **List Items** to view images on the printer. A list of images on the printer displays.
6. Make sure that the image file to export is highlighted, and then click **Export Item**.
7. Choose the location to export the file to, and then click **Save**
8. When the Download Complete dialog displays, click **Close**.

Importing Fonts

Use Printer Manager to import the required font files as follows.

1. Make sure that the printer is connected to the computer with a TCP/IP interface.
2. Open Printer Manager.
3. Select **Personalization Tools > Managed Items**. The Managed Items screen displays.



4. Select **Fonts**.
5. Click **Browse** to find the desired fonts file.



For the Legacy Option only: When importing legacy fonts, use the following table:

SP/CP Series Card Printers Equivalent	SD/CD Series Printers with OpenCard
Serif	ufonts.com_charter-bt-roman.ttf
Serif Bold	ufonts.com_charter-bt-black.ttf
Courier	ufonts.com_courier-10-pitch-bt.ttf
Courier Bold	ufonts.com_courier-10-pitch-bold-bt.ttf
Sans	ufonts.com_bitstream-vera-sans.ttf

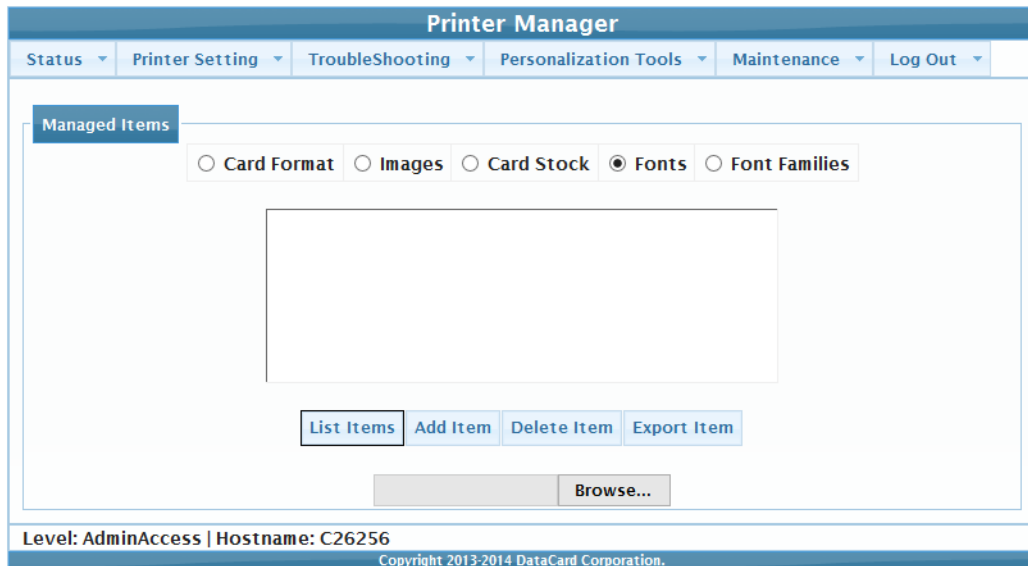
SP/CP Series Card Printers Equivalent	SD/CD Series Printers with OpenCard
Sans Bold	ufonts.com_bitstream-vera-sans-bold.ttf
	Used for bar code human-readable characters: DCP OCR-B.ttf

6. Select the file, and then click **Add Item**. The imported file displays in the list on the Printer Manager Fonts screen.

Exporting Fonts

Use Printer Manager to export font files as follows.

1. Make sure that the printer is connected to the computer with a TCP/IP interface.
2. Open Printer Manager.
3. Select **Personalization Tools > Managed Items**. The Managed Items screen displays.



4. Select **Fonts**.
5. Click **List Items** to view fonts on the printer. A list of fonts on the printer displays.
6. Make sure that the font file to export is highlighted, and then click **Export Item**.
7. Choose the location to export the file to, and then click **Save**
8. When the Download Complete dialog displays, click **Close**.

Adding a Card Stock Definition

Card stock definitions are named in the card format file and found on the printer at production time. In the card stock definition, you specify a card stock name and which images will print on the front and back of the card. A card stock definition is required when setting up the printer LCD panel to prompt the user to insert a card in the exception hopper.

Use Printer Manager to add a card stock definition as follows.

1. Make sure that the printer is connected to the computer with a TCP/IP interface.
2. Open Printer Manager.
3. Select **Personalization Tools > Add Card Stock**. The Add Card Stock screen displays.

The screenshot shows the 'Printer Manager' application window. The 'Add Card Stock' screen is active. The 'Card Stock Name' is 'RiverView'. The 'Input Hopper' is selected with a dropdown set to '1'. The 'Manual' option is unselected. The 'Front Image' and 'Back Image' lists both contain the same set of image files, with 'RiverViewCasino.tif' selected in the 'Front Image' list. An 'Add' button is at the bottom left.

4. Determine the input type.
 - Select **Input Hopper** to designate which input hopper the printer will pick from when this card stock is defined in the card format.
 - Select **Manual** if this card stock is used with a manual card picking process.

5. In the Card Stock Name field, enter a name for this card stock.



For the Legacy Option only: Card stock must be named Default.

6. From the Front Image list, verify that the images this card stock uses are in the list.
7. From the Back Image list, verify that the images this card stock uses are in the list.
8. Click **Add** to save the card stock definition.

Viewing the Print Request Log

View the Print Request log to determine the status of a print request. This page of Printer Manager displays print requests sent to the printer. The Print Request log entry is created on receipt of the OpenCard data stream. It is updated every time the state changes. After a card prints out or encounters an error, the software makes a log entry about it. The software then waits for the next data stream to be posted.

The log pages are displayed with the newest print request on top. The log entries let you know the state of a print request. Printer states, such as “PRINTED” or “FAILED,” display along with more detailed information about each print request describing the displayed state.

1. Make sure that the printer is connected to the computer using TCP/IP.
2. Open Printer Manager.
3. Select **Troubleshooting > Print Request Log**. The Print Request Log screen displays.

The image shows a screenshot of the 'Print Request Log' control panel. It features a title bar with the text 'Print Request Log'. Below the title bar, there are two rows of controls. The first row contains a label 'Number Of Logs:' followed by a dropdown menu showing the number '5', a 'Run' button, a label 'Reset Log:', and another 'Run' button. The second row contains a label 'Opencard Data Stream:' followed by a 'Run' button.

Number Of Logs:	5	Run	Reset Log:	Run
Opencard Data Stream:		Run		

4. Do one of the following.

- To display the most recent print requests:
 - i. From the **Number of Logs** list select the number of requests to view.
 - ii. Click the corresponding **Run** button. Printer Manager displays the print requests.

CardFormat	CardStock	Error	ID	User	State
CR500F.svg	StockA	Printer (DPCL2) communications failure	{f9a7a696-9836-4102-9ae2-43bdcfb8c224}	opencard	FAILED
CR500F.svg	StockA	Printer has a problem.	{c8fd61db-7cd1-41ba-aa25-aa32a730199d}	opencard	FAILED
wrong.svg	StockA	Card format does not exist	{f3d4966e-70c9-4d48-b71b-ebcf4fabaa1d}	opencard	FAILED
wrong.svg	StockA	Card format does not exist	{b6464b01-3558-43e2-b716-3e7542584720}	opencard	FAILED
FinancialGraphics.svg	StockA	0	{2420ec7d-daf0-4596-9681-5c48449d2262}	Financial	PRINTED
FinancialGraphics.svg	StockA	0	{72cc1125-5d6b-490d-873c-d1960fe60551}	Financial	PRINTED
FinancialEmbossed.svg	StockA	0	{868ba14c-05c8-429d-ae00-2d0dc5479252}	Financial	PRINTED
FinancialEmbossed.svg	StockA	0	{13cbfa1c-9aba-4bab-a86c-514383da20e0}	Financial	PRINTED
FinancialGraphics.svg	StockA	0		Financial	PRINTED

- To delete all log entries
 - iii. Locate the **Reset Log** label.
 - iv. Click the corresponding **Run** button.

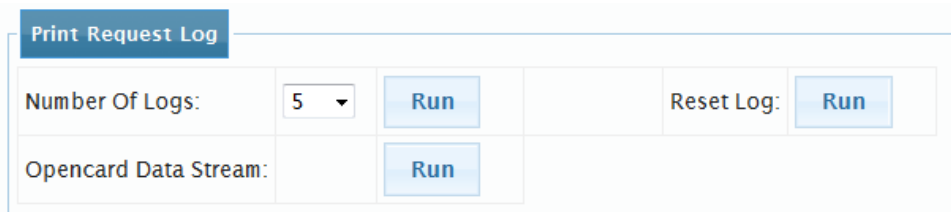


Resetting the Print Request Log cannot be undone.

Viewing the OpenCard Data Stream

View the most recently run OpenCard data stream from the Printer Manager's Print Request Log.

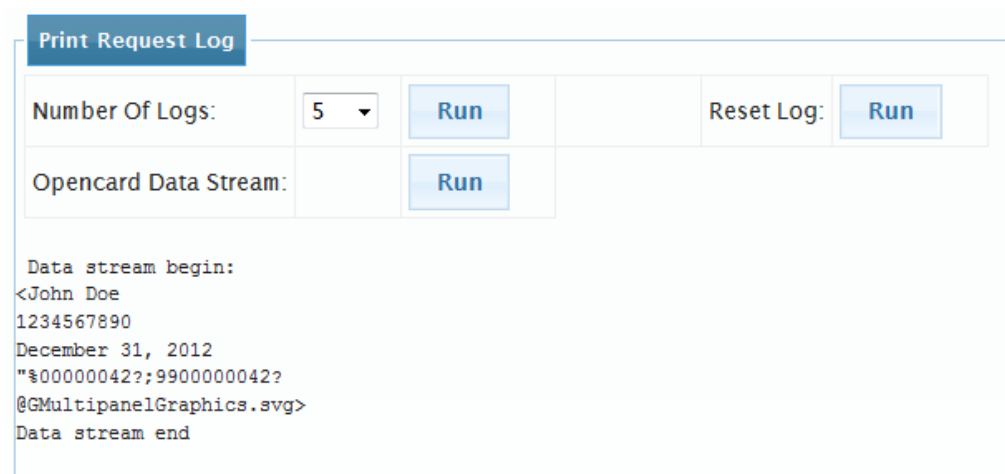
1. Make sure that the printer is connected to the computer using TCP/IP.
2. Open Printer Manager.
3. Select **Troubleshooting > Print Request Log**. The Print Request Log screen displays.



The screenshot shows the 'Print Request Log' window. It contains three rows of controls:

Number Of Logs:	5	Run	Reset Log:	Run
OpenCard Data Stream:		Run		

4. Click the corresponding **Run** button. The most-recently run data stream displays.



The screenshot shows the 'Print Request Log' window with the 'OpenCard Data Stream' section expanded. The output text is as follows:

```
Data stream begin:
<John Doe
1234567890
December 31, 2012
"$00000042?;9900000042?
@GMultipanelGraphics.svg>
Data stream end
```



Chapter 7: Printing Cards



This chapter includes information you need to print cards on SD/CD Series printers using OpenCard.

To print cards on SD/CD Series printers using OpenCard you must:

- Create a card format.
- Import card formats, images, and fonts to the printer, and define card stock using Printer Manager.
- Have a working data stream.
- Create a card stock.

1. Before you start printing, make sure that the printer is at the **Ready** state.

2. Open the Command Prompt (**cmd.exe**) from the Start Menu.

3. Enter `file2prn [filename] ipaddress [portnumber]` where:

`filename` is the name of a card data stream file.

`ipaddress` is the IP address of the printer to which you are printing the data stream.

`portnumber` is the port number at the printer to which you are printing the data stream. If you do not specify a port number, 9100 is assumed.

The following displays, indicating that the file was sent successfully:

```
sending file.....sent
```

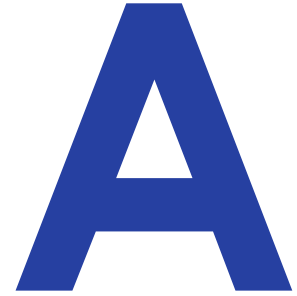
4. Repeat steps 2 and 3 for each data stream to be printed.



If a card does not print, view the Print Request Log to find troubleshooting messages about the printer state.



Appendix A: Sample Card Formats



This appendix provides sample card formats with comments. Use it as a reference for creating OpenCard card formats for the SD/CD Series printers.

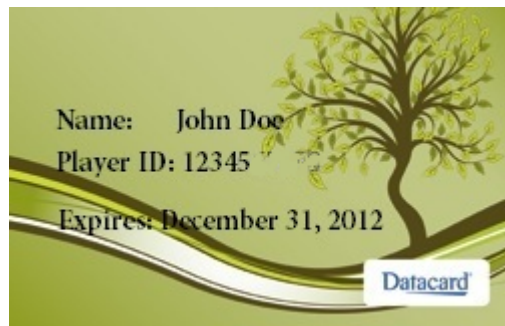
Sample 1—Multipanel Graphics.svg

The card format shown below includes comments that describe how it creates the printed card shown. Note that since the CARD_BACK layer is defined, this card has elements on the back, including color graphics, topcoat, and a magnetic stripe.

Comments describing the sample begin with the <!-- symbols and end with the --> symbols:

This example uses the following data stream:

OpenCard data stream	<pre><John Doe 1234 December 31, 2012 @GSample1.svg "%JOHN DOE^0205?;0205:2200000042?;1234567890?></pre>
-----------------------------	--



```

<?xml version="1.0" encoding="UTF-8"?>
<svg width="1013px" height="638px" xmlns="http://www.w3.org/2000/svg">

  <!-- Front side of card layer. Define color, monochrome and topcoat personalization layers -
  -->

  <g id="CARD_FRONT">

    <!-- Color graphics layer. Scale image "TreeDebit.jpg" to full card size (1013 x 638 pixels)
    -->
    <g id="GRAPHIC_COLOR">
      <g><image id="Background" datacard:staticElement="true" y="0" x="0"
        height="638px" width="1013px" xlink:href="TreeDebit.jpg" /></g>
    </g>

    <!-- Monochrome graphics layer. Two static text items for name and player id headings
    printed in bold. Three data stream driven dynamic text items LINE1, LINE2, LINE3 -->
    <!-- LINE2 uses only the first five characters of any type from the data stream (i.e.
    datacard:format="XXXXX") -->
    <!-- LINE3 will append the data from data stream LINE3 to the string "Expires ". Note that
    this is an alternative to having one static and one dynamic field such as NameHeader + LINE1 -->
    <!-- Note that monochrome always prints "after" (or on top of) YMC color printing regardless
    of ordering of layers in card format -->
    <g id="GRAPHIC_MONOCHROME">
      <g><text id="NameHeader" fill="black" x="75" y="300" font-size="12pt" font-weight="bold"
      font-family="DejaVu Serif" datacard:staticElement="true">Name:</text></g>
      <g><text id="LINE1" fill="black" x="375" y="300" font-size="12pt" font-family="DejaVu
      Serif"/></g>
      <g><text id="PlayerIdHeader" fill="black" x="75" y="400" font-size="12pt" font-
      weight="bold" font-family="DejaVu Serif" datacard:staticElement="true">Player ID:</text></g>
      <g><text id="LINE2" fill="black" x="375" y="400" font-size="12pt" font-family="DejaVu
      Serif" datacard:format="XXXXX"/></g>
      <g><text id="LINE3" fill="black" x="75" y="525" font-size="11pt" font-family="DejaVu
      Serif" datacard:appendData="true">Expires </text></g>
    </g>

    <!-- Topcoat layer. Scale image "Topcoat_Full.png" which is a 100% black image to full card
    size (1013 x 638 pixels) -->
    <!-- Note that topcoat always prints "after" (or on top of) YMC color printing and / or
    monochrome printing regardless of ordering of layers in card format -->
    <g id="TOPCOAT">
      <g><image id="TopcoatImage" datacard:staticElement="true" y="0" x="0" height="638px"
      width="1013px" xlink:href="Topcoat_Full.png" /></g>
    </g>

  </g>

```

```

<!-- Back side of card layer. Define color, topcoat and magnetic stripe personalization
layers on this side -->
<g id="CARD_BACK">

  <!-- Color graphics layer. Scale image "DatacardNoText.png" to 660 x 150 pixels -->
  <!-- Position the left edge 170 pixels from the left edge of the card and the top edge 400
pixels from the top edge of the card -->
  <g id="GRAPHIC_COLOR">
    <g><image id="BackLogo" datacard:staticElement="true" y="400" x="170" height="150"
width="660" xlink:href="DatacardNoText.png" /></g>
  </g>

  <!-- Topcoat layer. Scale image "Topcoat_Full.png" which is a 100% black image to full card
size (1013 x 638 pixels) -->
  <g id="TOPCOAT">
    <g><image id="TopcoatImage" datacard:staticElement="true" y="0" x="0" height="638px"
width="1013px" xlink:href="Topcoat_Full.png" /></g>
  </g>

  <!-- Magnetic stripe layer. -->
  <!-- Use ids of the form "ISOx" to use double-quoted (") magnetic stripe command content
from the data stream or use ids of the form "LINEx" to use text line data from the data stream
-->
  <!-- datacard:trackType must always be one of {"ISO1", "ISO2", "ISO3"} -->
  <g id="MAGSTRIPE">
    <g><text id="ISO1" datacard:trackType="ISO1"/></g>
    <g><text id="ISO2" datacard:trackType="ISO2"/></g>
    <g><text id="ISO3" datacard:trackType="ISO3"/></g>
  </g>

</g>
</svg>

```

Sample 2—RiverViewCasino.svg

The card format document shown below includes comments as to how it creates the card shown. Note that since the CARD_BACK layer is defined, this card has elements on the back, including a bar code and a magnetic stripe.

Comments describing the sample begin with the <!-- symbols and ended with the --> symbols.

This example uses the following data stream:

OpenCard data stream	<John Doe 1234567890 @CDefault @GRiverViewCasino.svg>
-----------------------------	--



```

<?xml version="1.0" encoding="UTF-8"?>
<svg width="1013px" height="638px" xmlns="http://www.w3.org/2000/svg">

  <!-- Front side of card layer. Define color, monochrome and topcoat personalization layers
  -->
  <g id="CARD_FRONT">

    <!-- Color graphics layer. Scale image "RiverViewCasino.tif" to full card size
    (1013 x 638 pixels) -->
    <!-- Print name using LINE1 data item in blue. Print ID# using the first seven digits from
    the LINE2 data item in blue, statically prepending a '#' -->
    <g id="GRAPHIC_COLOR">

      <g><image id="Background" datacard:staticElement="true" y="0" x="0" height="638px"
      width="1013px" xlink:href="RiverViewCasino.tif" /></g>

      <g><text id="LINE1" fill="blue" x="75" y="400" font-size="12pt" font-family="DejaVu
      Serif" font-weight="bold"/></g>

      <g><text id="LINE2" fill="blue" x="75" y="525" font-size="12pt" font-family="DejaVu
      Serif" font-weight="bold" datacard:format="#9999999"/></g>
    </g>

    <!-- Topcoat layer. Scale image "Topcoat_Full.png" which is a 100% black image to full card
    size (1013 x 638 pixels) -->
    <!-- Note that topcoat always prints after (or on top of) YMC color printing and / or
    monochrome printing regardless of ordering of layers in card format -->
    <g id="TOPCOAT">
      <g><image id="TopcoatImage" datacard:staticElement="true" y="0" x="0" height="638px"
      width="1013px" xlink:href="Topcoat_Full.png" /></g>
    </g>

  </g>

  <!-- Back side of card layer. Define color, topcoat and magnetic stripe personalization
  layers on this side -->
  <g id="CARD_BACK">

    <!-- Monochrome graphics layer. Print a Code39 barcode using the first seven digits from data
    item LINE2.-->
    <!-- Density=4.6 and bar ratio of 3:1, with human readable -->
    <!-- Note that monochrome always prints "after" (or on top of) YMC color printing regardless
    of ordering of layers in card format -->
    <g id="GRAPHIC_MONOCHROME">
      <g><text id="LINE2" fill="black" x="225" y="400" font-size="18pt"
      datacard:format="9999999" font-family="Code39" datacard:barcode="true"
      datacard:barHumanReadable="true" datacard:barDensity="4.6" datacard:barRatio="3to1"/></
    g>
  </g>

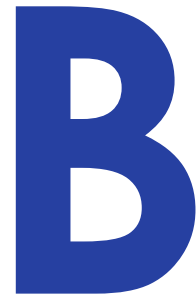
```

```
<!-- Magnetic stripe layer. -->
<!-- Use ids of the form "ISOx" to use double-quoted (") magnetic stripe command content from
the data stream or use ids of the form "LINEx" to use text line data from the data stream -->
  <!-- datacard:trackType must always be one of {"ISO1", "ISO2", "ISO3"} -->
<!-- This example shows how to extract data from LINE2 and use it to encode on ISO1 (Track1).-->
<g id="MAGSTRIPE">
  <g><text id="LINE2" datacard:trackType="ISO1"/></g>
</g>

</g>
</svg>
```



Appendix B: Setting Up OS/400



This appendix provides information about how to prepare to use the IBM OS/400 operating system with OpenCard.

The printer supports the LPD/LPR (line printer daemon/line printer remote) protocol to receive OpenCard data from a host computer.

Configuring the OS/400 Operating System

1. To configure the OS/400 operating system, type the following from a command line exactly as shown. This creates the output queue for the printer.

In this example, the queue name is SPOUTQ. The parameters in italic text are variable.

```
CRTOUTQ OUTQ(QUSRSYS/SPOUTQ) RMTSYS(*INTNETADR)
RMTprtQ(RAW) CNNTYPE(*IP) DESTTYPE(*OTHER)
MFRTYPMDL(*WSCST) WSCST(QSYS/QWPDEFAULT)
INTNETADR('XXX.XXX.XXX.XXX') SEPPAGE(*NO)
TEXT('SP Printer')
```

2. To start the printer and start printing, type the following at a command line:

```
STRRMTWTR (QueueName)
Comments
```

3. To stop all printing to the printer, type the following:

```
ENDWTR (QueueName)
```

4. To monitor the printer, type the following:

```
WRKOUTQ (QueueName)
```

The following shows the result of the WRKOUTQD command:

```
5722SS1 V5R1M0 010525 AS3 03/19/04 11:08:21
Queue: SPOUTQ Library: OLSONP
Status:
Writer active . . . . . : Y
Writer name(s) if active . . . . . : SPOUTQ
Output queue held . . . . . : N
Maximum spooled file size:
Number of pages . . . . . : *NONE
Starting time . . . . . :
Ending time . . . . . :
Writers to autostart . . . . . : 1
Display any file . . . . . : *NO
Job separators . . . . . : 0
Operator controlled . . . . . : *YES
Order of files on queue . . . . . : *FIFO
Data queue . . . . . : *NONE
Library . . . . . :
Authority to check . . . . . : *OWNER
Remote system . . . . . : *INTNETADR
Remote printer queue . . . . . : RAW
Queue for writer messages . . . . . : QSYSOPR
Library . . . . . : *LIBL
Connection type . . . . . : *IP
Internet address . . . . . : 111.111.111.111
Destination type . . . . . : *OTHER
VM/MVS class . . . . . :
FCB . . . . . :
Host print transform . . . . . : *YES
User data transform . . . . . :
Library . . . . . :
Manufacturer type and model . . . . . : *WSCST
Workstation customizing object . . . . . : QWPDEFAULT
Library . . . . . : QSYS
Image configuration . . . . . : *NONE
Destination options . . . . . : *NONE
Print separator page . . . . . : *NO
User defined option . . . . . : *NONE
User defined object:
Object . . . . . : *NONE
Library . . . . . :
Object type . . . . . :
User driver program . . . . . : *NONE
Library . . . . . :
Spooled file ASP . . . . . : *SYSTEM
Text description . . . . . : *BLANK
* * * * * E N D O F L I S T I N G * * * * *
```

