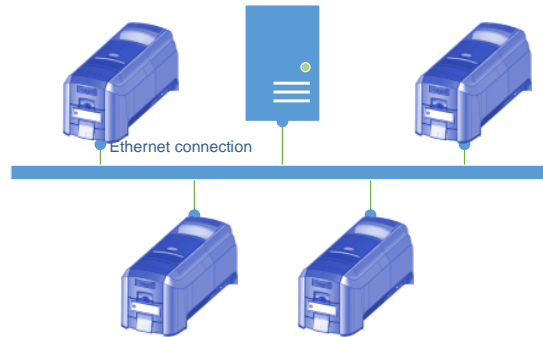


## Smart Card Functional Overview

This document explains the different types of smart card solutions and their functional applications. The focus of information presented is on the differences between single-wire and loosely coupled smart card solutions.

### Single-Wire Solution

With the single-wire solution, the printer has only one physical connection point, using Ethernet (or USB), through which it sends all printer and reader/chip commands to the smart card module.



Single-wire smart card solutions require that the personalization application be modified using the XPS Card Printer Driver SDK interface. This interface uses commands that are similar to PC/SC but the interface is not a replacement for an existing PC/SC solution.



The XPS Card Printer driver does not scale to a large number of drivers sharing the same PC server. It was also not designed to support hardware systems that are long distances away (several miles) or communicate over slow communication lines with the PC server. Datacard® CardWizard® Issuance Software is the preferred solution for these types of uses.

#### Single-Wire Smart Card Encoding Benefits

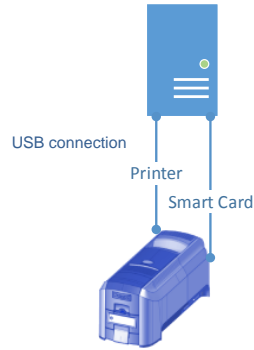
- Uses one connection for printing and encoding
- Eliminates the need for a second USB connection, freeing up a USB port
- Allows for the smart card application to be networked; the printer location is not constrained by USB cable length
- Uses one interface for all card personalization (magnetic stripe, print, smart card)
- Uses multiple printers on one PC to print and encode smart cards in parallel

#### Single-Wire Smart Card Encoding Details

- All card personalization, including smart card, uses the XPS Card Printer Driver SDK
- Smart card personalization commands are based on a simplified version of PC/SC. Applications written for PC/SC readers require minor modifications.
- Data and status are exchanged using XML structures.
- The XPS Card Printer Driver SDK uses a built-in Microsoft Windows API to exchange commands and data between driver and the application.
- Smart card personalization commands are “tunneled” through the driver and printer to the coupler inside the printer.

## Loosely Coupled Solution

A loosely coupled smart card solution allows you to connect your system directly to your PC server through one or more USB cables. This solution works best when the system is near the PC server.



The smart card reader has its own USB connection and communicates directly to the personalization application, usually through a PC/SC interface.

With loosely coupled there must be a PC alongside the printer to which the reader is connected. The reader displays in the PC operating system's a list of PC/SC readers. The personalization application uses the computer's PC/SC interface to discover and communicate with the reader/chip. In the case of Windows PCs, this is the Win32 SCard API function.

The printer has two physical connection points. A second "printer" connection point is for processing commands for card movement, magnetic stripe operation, and printing. The "reader" connection point handles smart card reader/chip commands exclusively. These connections can be either USB (serial) or Ethernet.

This solution is termed "loosely coupled" because the printer and reader connections operate independently. For example, the card can be parked at the smart card reader through printer driver commands from the printer connection, but chip communication then happens across the reader connection, independent of the printer driver.



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