Mobile Label Printing with Pocket Label Gallery

White Paper

Bar code and RFID smart labeling software for Windows® CE Mobile Devices

Table of Contents

Executive Summary

Mobile label printing has become an integral part of inventory management and order tracking in almost any kind of industry. With the rise of sophisticated inventory management systems and the requirement of customers to better track their orders, companies increasingly deploy mobile label printing applications to monitor their flow of goods. In addition, deploying mobile label printing applications provides opportunities to improve service, reduce costs, and make business processes such as product warehousing, shipping, identification, and tracking more efficient.

Pocket Label Gallery is a software package for Windows CE Mobile Devices that offers mobile label printing for SATO printers. Pocket Label Gallery is a module of the Label Gallery TruePro edition, which is a powerful labelling software for desktop and enterprise-wide labeling applications.

The new version 3 of Pocket Label Gallery is a complete .NET rewrite and features many improvements from previous Pocket Label Gallery versions. Pocket Label Gallery version 3 supports Microsoft Compact Framework 2.0, has a smaller deployment footprint than in previous versions, consists of one Pocket Label Gallery application that can now print form files (no longer separate Pocket GalleryForm application is installed), and comes with an enhanced synchronization utility that replaces the old Synchronization Manager.

Pocket Label Gallery does not require any programming skills to design labels for your Mobile Device. You can use Pocket Label Gallery to print labels in a mobile environment in the following three ways:

- Direct label printing to printers.

- Distributed (print server) label printing to any printer on your network.

- Print engine label printing using Pocket Label Gallery Engine to control label printing functions in a separate application on a Windows CE device.

To learn more about Pocket Label Gallery see also the Pocket Label Gallery Quick Start Guide and Pocket PC Programming Guide available for download from the SATO Web site at http://www.satoworldwide.com/labelgallery/LG3/dl_promo.htm

Mobile Label Printing Challenge

Companies use mobile data collection and printing solutions to keep track of products and inventory. However, many times they struggle to find a label design and printing solution that combines ease-of-use and flexibility in a mobile printing environment. Companies want to streamline their label printing and look for solutions that enable both label printing from a desktop/ server computer and Windows CE Mobile Devices without going through the hassle of programming new applications for different application environments.

If you are looking for mobile label printing solutions, you might face the following questions:

- Can I create one label that can print from both a desktop/ server computer and Windows CE device? Or, do I have to develop different labels for each environment?

- How easy is it to create labels for and print labels from a Windows CE Mobile Device? Do I need programming skills to do so?

- How complicated is it to collect and enter data into the label template and print the label with a Mobile Device? Operators in the field need an easy-to-use data entry interface with as least error potential as possible.

Label design and printing from a Windows desktop and server computer has become a relatively easy task to accomplish. However, Windows mobile operating systems are not the same as Windows desktop operating systems. There are no Windows printer drivers. Printing labels from Windows Mobile Devices is not as easy as printing labels from a desktop environment. Many applications on the market require programming skills to develop user interface and port communication for mobile label printing through COM, Bluetooth or TCP/IP ports. All this adds complexity, inflexibility and cost to your needs of mobile label printing. Label design and use should be easy and not require additional cost or sophisticated programming skills. In addition, you want to print the labels to different printers either directly or through your network without creating a separate label for each printer model you have.

If you are an application developer, you want to embed label printing in your application that can print to more than one specific printer type. However, you do not want to spend the additional time and money to learn the native printer language of all the different thermal printers that your application should support. You look for an easy bolt-in solution to enable your application to print to any SATO printer.

Mobile Label Printing Applications

Pocket Label Gallery offers three (3) types of label printing methods: direct, distributed (print server) and print engine printing method.
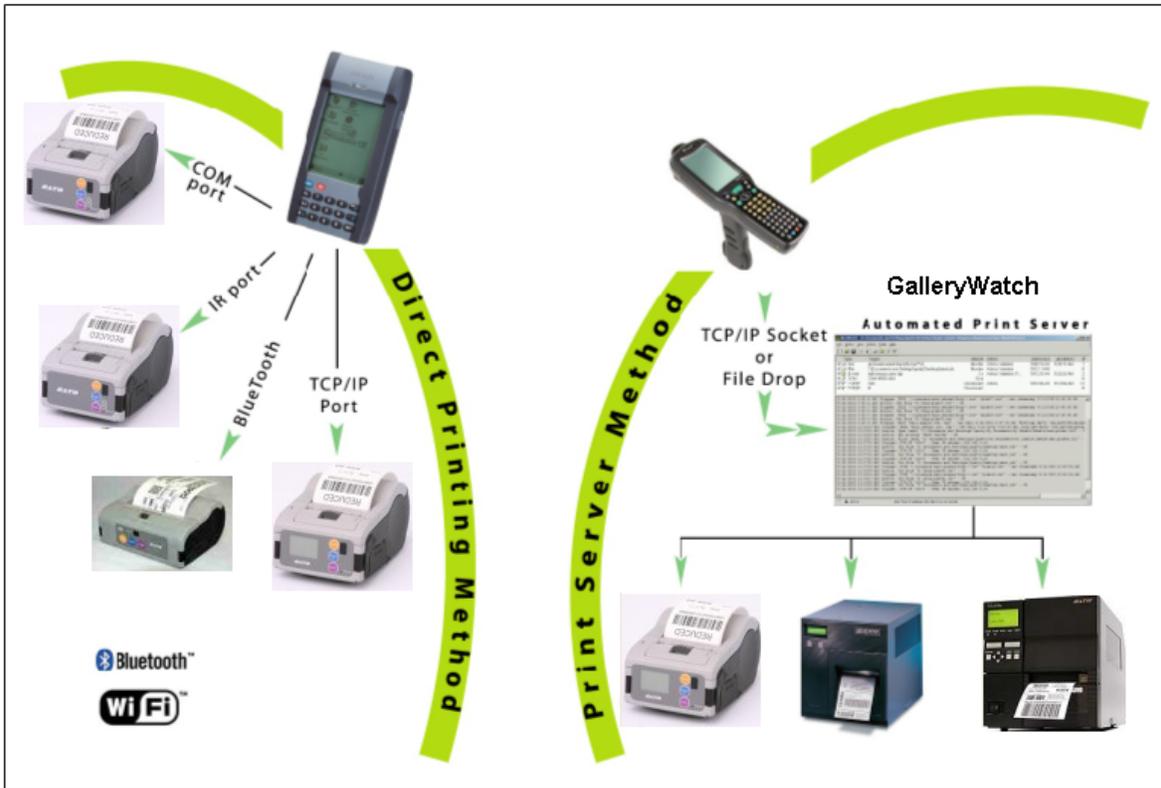
Direct Printing Method

With the Direct Printing Method you print labels directly from the Mobile Device that is connected to the printer. On your Mobile Device, you must select the port that connects the printer with your Mobile Device. You have three (3) port options for the direct printing method:

- COM port
- TCP/IP port
- Bluetooth

Using the direct printing method requires you to select the printer type at the time of label design and imposes some label design limitations. See the section **Label Design versus Label Printing**.

The figures below show examples of open label (.PNL) and form (.PFF) files that you can print with Pocket Label Gallery.

Exported label (.PNL) file to Mobile Device: **Exported form (.PFF) file to Mobile Device:**
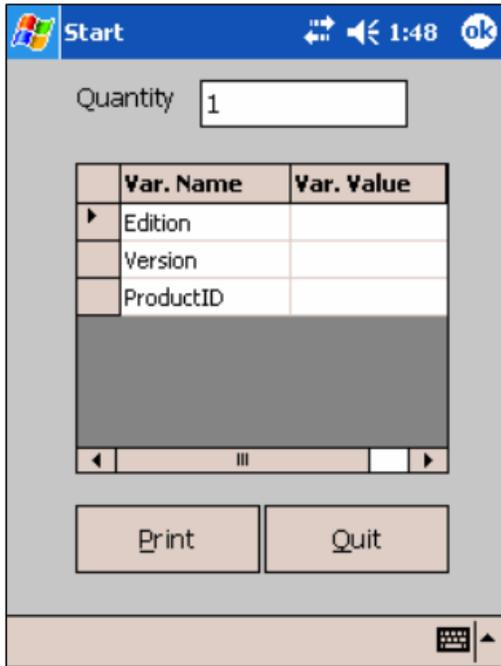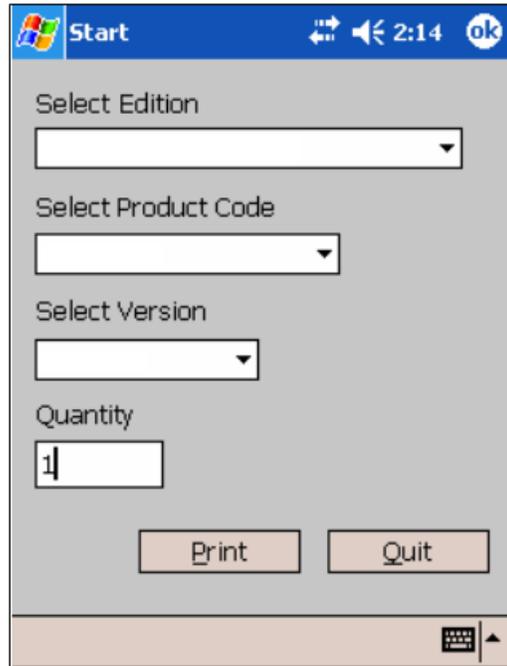
Print Label File with Pocket Label Gallery   Print Form File with Pocket Label Gallery

Printing labels with Pocket Label Gallery, you can scan data into the variable fields (your Mobile Device must have a separate scanning software) and enter the data to the variable fields manually by tabbing the keyboard of your Mobile Device.

Printing form files with Pocket Label Gallery is even easier than printing label files with Pocket Label Gallery. You can link databases to the form (.PFF) file and use Combo Boxes (drop-down menus) to select the data you want to print. Printing form files with Pocket Label Gallery simplifies data input, reduces data entry errors and accelerates label printing.

Distributed (Print Server) Printing Method

With the Distributed (Print Server) Printing Method you print labels from the Mobile Device to GalleryWatch, which handles printing and enables selection of different printer drivers. Pocket Label Gallery becomes a client to GalleryWatch, which is the automated label-printing server running on a PC or a server.

Pocket Label Gallery will output a print request that describes the label layout and the printing process, encode this information to a .JOB file using GalleryCommands and send the .JOB file to a file trigger or a TCP/IP socket in GalleryWatch. GalleryWatch processes the .JOB file and prints the label to any available network printer.

Using the distributed (print server) printing method allows you to select the printer type and format at the time of printing versus at the time of label design. Because Label Gallery Plus is running on the print server at the same time as the labels are printed, there are no design limitations. You can use all the Label Gallery Plus functionalities, such as true type font for both fixed text objects and objects using variables.

If you want to use the distributed (print server) printing method, you can use either label files (.PNL) or form files (.PFF) with Pocket Label Gallery to select the data in the field you want to print from a printer on your network. However, using form files (.PFF) with Pocket Label Gallery is the recommended application because of its ease-of-use for the operator in the field.

To set up the distributed (print server) printing method, you need to do the following steps:

- Select the communication port of your Mobile Device and Print Server.
- Setup GalleryWatch on your server or computer where the Label Gallery software is installed.
- Select the correct form (.PFF) file properties.

Selecting Communication Port for Distributed (Print Server) Printing Method

On your Mobile Device you have two (2) port options for the distributed (print server) printing method:

JOB file: A .JOB file specifies all the information required to print a label (label, data and printer). When you select the data with your Mobile Device and send the print job by tabbing the print button, GalleryWatch detects the dropped file in a specified folder, processes the data and prints the label(s) from the GalleryWatch printing server.

JOB TCP/IP: A TCP/IP trigger works similar to a JOB file trigger. The Mobile Device sends the job file to GalleryWatch through TCP/IP. GalleryWatch accepts the incoming file on a pre-defined TCP/IP port and processes the label printing on the GalleryWatch printing server.
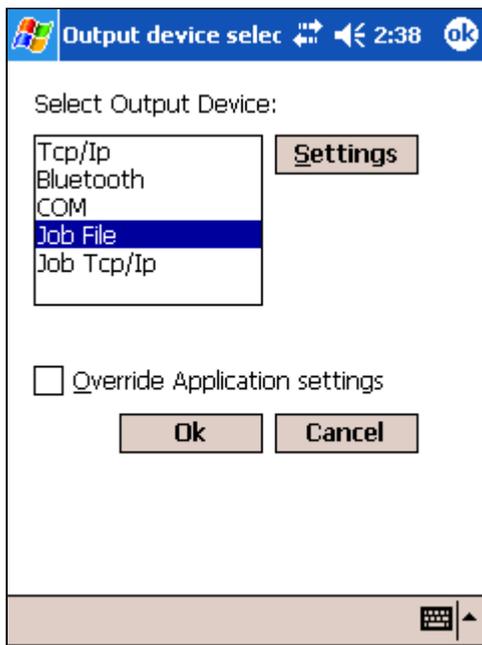
Distributed Printing: JOB File
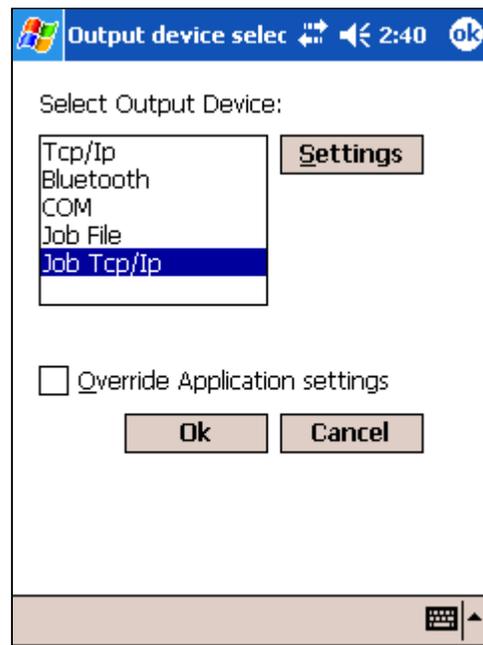
Distributed Printing: JOB TCP/IP

Setting up GalleryWatch Print Server

GalleryWatch is a module of the Label Gallery TruePro edition that monitors events and automatically starts label production when specific (trigger) events occur. Trigger events can occur through a trigger file, an email, TCP/IP socket connection or COM port activity. GalleryWatch can watch unlimited number of events each with their own specified action. GalleryWatch executes a pre-defined activity, such as label printing through a network printer, if one or more of such trigger events occur. You can use GalleryWatch and start automatic label production from your network or your computer where the Label Gallery software is installed. If you want to print labels on a remote print server using your Mobile Device, you can set up GalleryWatch with JOB file or TCP/IP triggers.

For a detailed discussion about GalleryWatch, please see the GalleryWatch User Guide available for download on the SATO Web site at
http://www.satoworldwide.com/labelgallery/LG3/dl_promo.htm

Selecting Form File Properties

If you use a form to initiate label printing through the GalleryWatch print server, you must setup the form properties with GalleryForm on your desktop computer. Make sure that the information entered in the window form properties are the same as the provided information when you set up the communication ports between the Mobile Device and GalleryWatch print server.

For a detailed discussion about selecting form file properties, please see the Pocket Label Gallery Quick Start Guide available for download on the SATO Web site at http://www.satoworldwide.com/labelgallery/LG3/dl_promo.htm

Print Engine Printing Method

The Pocket Label Gallery Engine (PNE), short Print Engine, is a .NET Assembly that allows other applications on the Mobile Device to control label printing functions. Pocket Label Gallery offers a .DLL file that can be embedded into your application. You do not need to learn the native printer language (unique printer code) of the thermal printer you want to use for your application. You do not need to write an embedded printer code or communicate with the operating system's I/O. The Windows Mobile Device can print labels using Pocket Label Gallery as the print engine that will process opening of .LVR, .PNL and .PFF files and printing of labels to printers on TCP/IP, Bluetooth and COM (serial) ports. Pocket Label Gallery Engine, which is embedded in Pocket Label Gallery, functions as an integrated print engine for any data collection application on your Mobile Device. Pocket Label Gallery's .NET Assembly enables you to learn and deploy one interface for your mobile label printing application, giving your application the flexibility to print to various models of SATO printer.

The Pocket Label Gallery Engine (PNE) with Pocket Label Gallery also supports the distributed (print server) printing method. The print engine creates a .JOB file with specific label printing commands (GalleryCommands) that is saved on the computer or server where GalleryWatch is running. The GalleryWatch print server executes the GalleryCommands from the .JOB file and enables label printing to any printer on your network.

For more information about Pocket Label Gallery Engine and .NET programming, see the Pocket Label Gallery Programming Guide available for download from the SATO Web site at **http://www.satoworldwide.com/labelgallery/LG3/dl_promo.htm**

Label Design versus Label Printing

The primary purpose of Pocket Label Gallery is reliable and fast mobile label printing. However, industrial label printing is in fact a two step process: First, you design a label and set up the print server configuration (if necessary). Second, you select data and print the label during production or in the warehouse. Before you start designing a label for your Mobile Device you must consider the following:

1. Printing method: Do you want to print the label to a thermal printer directly with the Mobile Device connected through a COM, Bluetooth or TCP/ IP port (direct printing method)? Or do you want to print the label through the GalleryWatch print server (distributed printing method)?

2. Printing application: Do you want to print labels with Pocket Label Gallery using label (.PNL) files or form (.PFF) files. Pocket GalleryForm is part of Pocket Label Gallery and is a user friendly data entry application to print labels.

3. Designing a label or data entry application form on your desktop computer: You design label files with Label Gallery Plus and form files with GalleryForm on your desktop computer. If you use the direct printing method and design label files with Label Gallery Plus, you have to consider certain requirements in order to print the labels in the field.

Those requirements do not apply if you use the distributed printing method with GalleryWatch as the print server.

Designing a Label Template with Label Gallery Plus

You design a label with Label Gallery Plus on your desktop computer. For example, the following label uses text objects with fixed text and keyboard input variables, bar code object with keyboard input variable, text object with new date field and fixed picture object. You can export this file to your Mobile Device and print labels in the field.
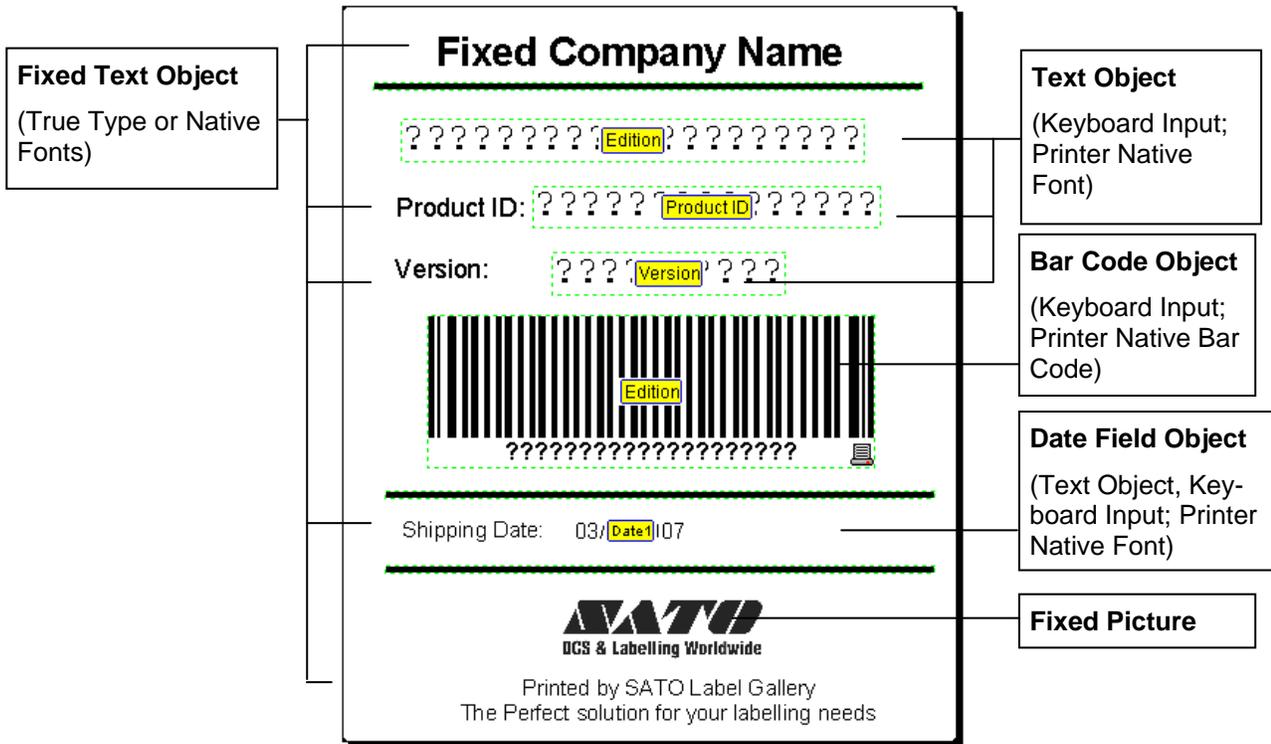
If you want to print the label with your Mobile Device directly (**direct printing method**) using Pocket Label Gallery, consider the following label design requirements:

- Link only text and bar code objects to variables.

- Use only native (printer resident) fonts for all the variables on the label. Exporting to Pocket Label Gallery does not support variables in true type font unless you use GalleryMemMaster to download true type fonts and graphics to your printer's internal memory to enhance printing performance for thermal printers. See Online Help of the GalleryMemMaster module for more information.

- Use only printer internal counters on the label. Exporting to Pocket Label Gallery does not support Label Gallery variable counters.

- Select the printer you will print the labels with in the field at the time you design the label. The generated .PNL file only works with the selected printer because native language compliance is required at the time of label design.

Pocket Label Gallery supports the following functions:

- Concatenation
- Date Addition
- Internal Printer Counters
- Internal Printer Clock (Date/ Time)
- EAN.UCC 128
- Linear
- Subset

Designing a Form with GalleryForm

You can also create a form (.XFF) file from the label above, export th
and print the converted .PFF form file using Pocket Label Gallery.

For example, GalleryForm offers you to connect your form to a datab
menus (combo boxes) to make data entry as easy as possible.

Pocket Label Gallery supports the following features and functions w

- Text, Button, Edit Field, Memo Field
- Combo Box and List Box
- Table, Database Navigator and Database Search
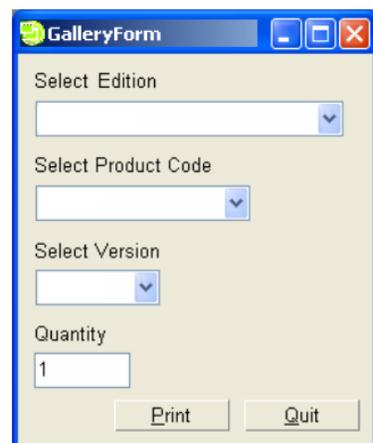
GalleryForm File Running Desktop
Computer

Transferring Files to a Mobile Device

When you have designed your label or from, you need to synchronize the label/ form files with your
Mobile Device. To transfer files from your desktop computer to your Mobile Device, you must have
Microsoft ActiveSync installed on your computer. ActiveSync allows for USB, serial, IR and TCP/IP
wireless synchronization on a scheduled interval. You must understand how synchronizing files
between your desktop computer and your Mobile Device works. See the documentation of your
Mobile Device for further references.

## Exporting a Label (.LBL) File with Label Gallery Plus

You export a label (.LBL) file with Label Gallery Plus using the **Export to Pocket PC** command under the **File/ Export** menu. The export function checks if the settings and formatting of the label (.LBL) file is compatible with Pocket Label Gallery. If not, an error message will appear explaining why exporting the file is not possible. You have to change your file accordingly and export it again. The export command saves the label in a format that Pocket Label Gallery can read on your Windows CE Mobile Device.

Two files will be created when you export your label (.LBL) file:

- .LVX file containing information about the variable fields on the label.
- .PNL file containing the exported label layout with all the objects in the printer specific code.

Both files will be saved to the same folder where the original label file is stored. You have to manually transfer the .LVX and .PNL files to the synchronization folder of your Mobile Device. ActiveSynch will transfer the files once your Mobile Device is connected to your desktop computer.

For more detailed information about label export to your Mobile Device, please see the Pocket Label Gallery Quick Start Guide available for download on the SATO Web site at http://www.satoworldwide.com/labelgallery/LG3/dl_promo.htm
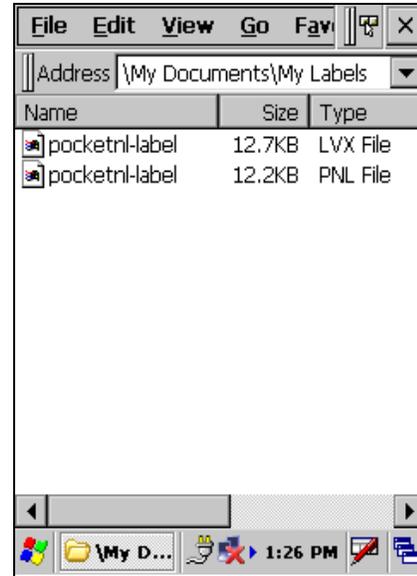
Exported Pocket Label Gallery Files

Exporting Form (.XFF) Files with GalleryForm

After you have designed your label and form files on the desktop computer you have to transfer your form (.XFF) files from your desktop computer to your Mobile Device. GalleryForm offers a synchronization wizard that uses the ActiveSync technology for your label and form transfers to the Mobile Device.

The export function checks if the settings and formatting of the label (.LBL) and form (.XFF) files on your desktop computer are compatible with Pocket Label Gallery. The export command saves the label in a format that Pocket Label Gallery can read on your Windows CE Mobile Device.

If you link the form with a database, the exported database files will be stored in an .SDF file format on the Mobile Device. The actual database will not be transferred to the Mobile Device. If you want to change the database, you have to do the changes on your desktop computer and synchronize the form (.XFF) file from the desktop to your Mobile Device again.

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Mobile Label Printing Solution

Pocket Label Gallery is a software package for Windows CE and Pocket PC terminals that enables you to print bar code labels in a mobile environment directly to a thermal printer or through any printer on your network. Pocket Label Gallery is part of Label Gallery TruePro.

Label Gallery TruePro

Label Gallery TruePro is the premier label printing solution for both desktop and mobile label printing. Label Gallery TruePro enables you to create mobile printing applications that print directly from the Mobile Device to the printer or through a server when used with the GalleryWatch print server. The Label Gallery TruePro software offers the following modules (among others) that you can use to create your mobile label printing solution:

- **Label Gallery Plus**: Full-featured label design and printing software that you use to create and print label (.LBL) files with your desktop computer.

- **GalleryForm**: A front-end labeling application generator for desktop and mobile label printing environments. GalleryForm provides operators a simple and pre-defined label printing interface that simplifies data input and reduces errors in data processing and label printing. Pocket GalleryForm is the front-end label application for mobile label printing and included in Pocket Label Gallery.

- **GalleryWatch**: A centralized print server to automate label printing operations. GalleryWatch accepts a print request from any mobile, desktop, ERP or WMS application to automate label printing without user intervention.

- **GalleryMemMaster**: Utility to download true type fonts and graphics to a printer's internal memory to enhance printing performance for thermal printers.

- **GalleryData**: A powerful database manager to create and edit database tables and import data from text files to database tables.

- **GalleryPrintQueue**: A print job management module that provides overview of print jobs, data used on the label and quantity of printed labels. All data is stored for easy re-prints of past print jobs.

- **Pocket Label Gallery:** A mobile client that executes the label and form designs that were created on a desktop PC.

The Label Gallery software family offers non-programmers the ability to develop a solution for any mobile printing environment. Using Label Gallery Plus or GalleryForm, you have an interface similar to Windows Office that makes label and form design easy for your mobile printing application.

Comparison Table: Pocket Label Gallery Printing Methods

Pocket Label Gallery offers three (3) types of label printing methods: direct, distributed (print server) and print engine printing method.

	Direct Printing	Distributed Printing	Print Engine Printing
Label design limitations	x		x
Pocket Label Gallery: Mobile label printing	x	x	
Pocket Label Gallery: Mobile form printing	x	x	
Thermal printer support	x	x	x
Laser printer support		x	
GalleryWatch (print server) required		x	
Custom programming required			x

System Specifications

If you use Pocket Label Gallery for a mobile label printing application, you will design the label template for your Mobile Device on a desktop computer and export the labels and data stored in a database to your Mobile Device. Pocket Label Gallery is a print only application and you cannot design labels with your Mobile Device. You must perform any label design or database changes on your desktop computer and export the modified files to your Mobile Device again.

Desktop Computer

- Pentium II computer with 256 MB of free RAM.
- One of the 32-bit Windows operating systems: Microsoft Windows 2000, XP, 2003 or Vista. Label Gallery also supports 64-bit Windows operating system.
- Hard disk with 50 to 250 MB of free disk space (depending on installation options).
- CD-ROM drive.
- Support for OLE DB database drivers. Recent Windows operating systems have included OLE DB database drivers. If your operation system does not have the database support, the installation wizard will prompt you to install it.
- Administrator rights to the local computer during installation.

Mobile Device

Pocket Label Gallery is the mobile client for the Label Gallery mobile printing products and for many different Windows mobile operating systems and hardware processors. Pocket Label Gallery is a single device license and each mobile device that is using Pocket Label Gallery requires a Client Access License (CAL). Client Access Licenses are available for 5, 10, 20 and 50 devices as well as a 1-year site license.

Operating Systems:	Windows Mobile 2003 and 5.0, Windows CE.NET 4.0 and above. All devices with Microsoft .NET Compact Framework 2.0.
Processors:	MIPS, SH3, SH4, StrongARM, XScale, X86.
Programmer Interface:	.NET Compact Framework. 2.0 Pocket Engine .NET Assembly Interface.
File Synchronization:	ActiveSync Version 3.5. or higher.

GalleryDrivers

GalleryDrivers support more than 1300 thermal transfer printers and enable the Label Gallery software to use a direct communication mode to gain complete control over all printer settings and guarantee high-speed printing. You can download and install GalleryDrivers for your thermal transfer printer for free from the Label Gallery Web site at http://www.satoworldwide.com/labelgallery/LG3/drivers_lg3.htm .

GalleryDrivers are required for the Direct Printing Method and not required, but recommended, for the Distributed (Print Server) Printing Method.

Conclusion

Pocket Label Gallery provides simple label printing solutions on Pocket PC Windows CE and Windows CE.NET Mobile Devices. Pocket Label Gallery does not require any programming skills to design labels for your Mobile Device and offers the flexibility to print labels directly to various SATO mobile printers or to any SATO printer on your network using the GalleryWatch print server.

The Pocket Label Gallery engine enables software developers to add label printing to any Windows based mobile application without writing a single line of embedded printer code. Pocket Label Gallery's .NET Assembly gives any application the flexibility to print to SATO printers.

To learn more about Label Gallery products, please visit our website.

http://www.satoworldwide.com/labelgallery/index.htm

Appendix

Label Gallery Plusduct Overview

Label Gallery is the most advanced professional labeling software for desktop and enterprise users. Label Gallery offers an easy-to-use interface and meets any label design and printing requirement for efficient label printing solutions to users in retail, logistics, healthcare, chemical, automotive and other industries. Label Gallery offers three main product series.

Label Gallery Standard Series

The Standard Series is a line of Label Gallery core products for basic and advanced bar code and RFID smart label design, print and integration. Products are easy to use but offer powerful functions expected from advanced label designers. The Standard Series includes Label Gallery TruePro, Label Gallery Plus, Label Gallery Express and Pocket Label Gallery.

Label Gallery TruePro: The full-featured, modular labeling solution for label design and professional printing requirements. Multiple connectivity options allow users to perform stand-alone printing or integrate label printing into any network environment. GalleryForm is a module in Label Gallery TruePro that allows creating data entry and printing applications to make label production simple and error free. Label Gallery TruePro includes Label Gallery Plus, GalleryWatch, GalleryForm, GalleryPrint, GalleryPrintQueue and Pocket Label Gallery for Windows CE support to create mobile printing applications.

Label Gallery Plus: Full-featured software designed for professional label design and printing, including complete database support and integration options. A wide range of features and options make Label Gallery Plus a perfect and easy-to-use tool for any labeling requirement. Label Gallery Plus includes GalleryData and GalleryMemMaster.

Label Gallery Easy: Wizard-based software that fulfills basic bar code labeling needs. This entry-level software includes many design elements from the Plus edition with the emphasis on simplified user interaction.

Pocket Label Gallery: The label printing software for Windows CE mobile devices. Pocket Label Gallery enables Windows CE compatible computers and terminals to print bar code labels on any type of thermal printer that is supported by Label Gallery printer drivers.

Label Gallery Developer Series:

The Developer Series is a line of Label Gallery products designed for software developers looking for a way to integrate label printing functionality into their own applications. Currently, the Developer Series includes:

- **Label Gallery SDK**: Provides an opportunity to software publishers to reduce their label printing development costs and add additional value to their products.
- **Pocket Label Gallery SDK**: extended SDK capability for Mobile Devices.