



Exporting Printer Code Templates

Advantages and Challenges of
Using PCTs with BarTender

Supports the following BarTender software versions:
BarTender 2016, BarTender 2019

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Overview

Print Systems

In some manufacturing situations, portable devices or terminals are used to print items. These portable devices and terminals typically merge user input information, such as lot number and expiration date, into the printer code for a template and then send the completed printer code directly to the printer.

Other systems might use software printing applications that merge user information into the printer code for an item. These applications might be running on a non-Windows computer.

Taken collectively, these devices and merge applications are called "print systems."

Printer Code Templates

When you use the Automation and Enterprise editions of BarTender, you can create a document to design your items and then export the document to a printer code template, which is a data file that contains printer commands and placeholders for data on your template. You can then merge and print the printer code template by using your print system.

A printer code template contains mostly native printer code, but it also contains delimited fields that the print system can recognize and use to merge user input information. These delimited fields can indicate positions (such as the start and end of each line) or data field names, which are used as placeholders that are replaced at print time by actual data.

Not every print system uses every possible delimiter, but the template might include a header, footer, start and end line delimiters, start and end print code delimiters, and delimiters at the start and end of data fields.

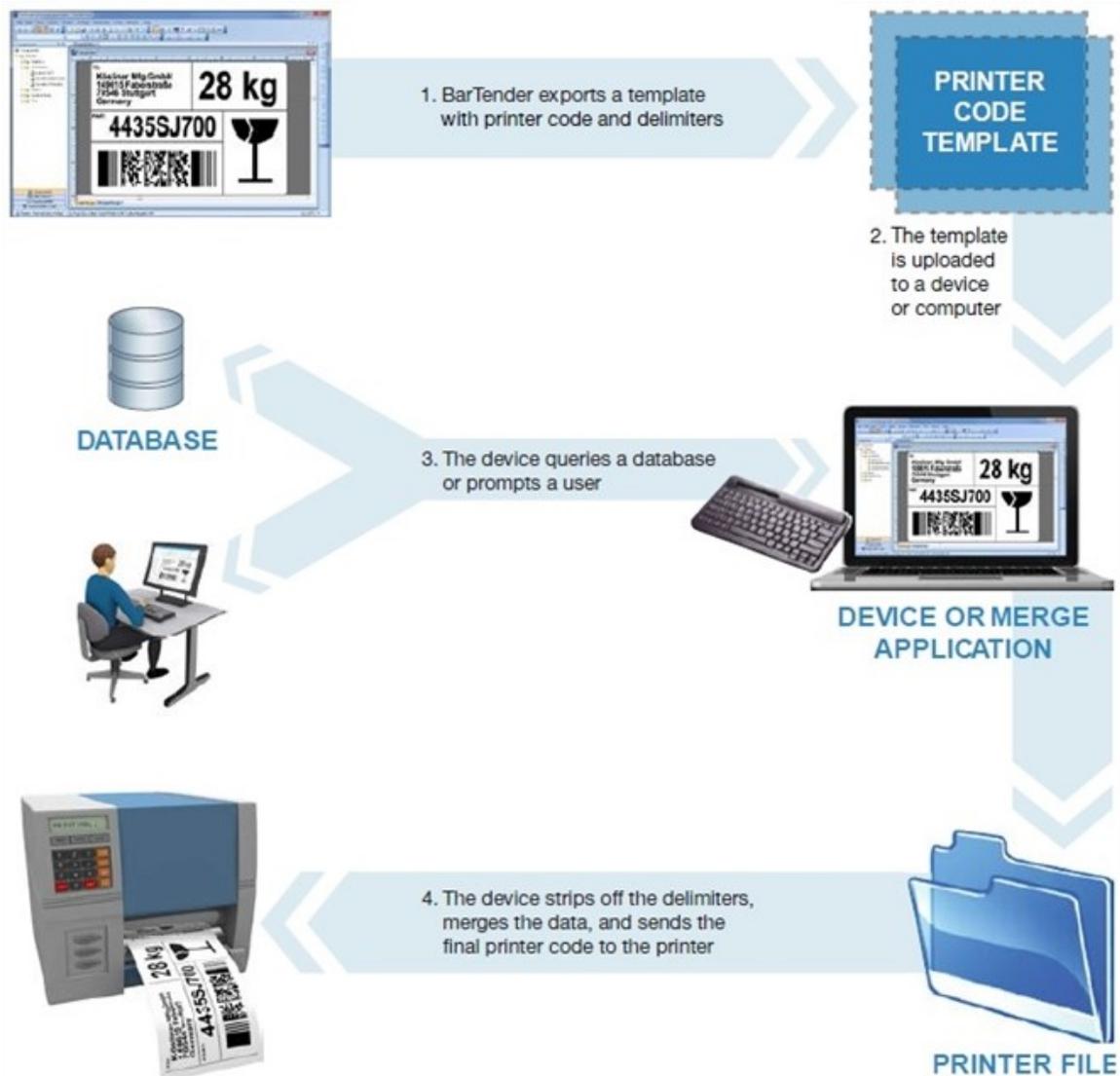
For more information, refer to the [Working With Printer Code Templates](#) topic in the BarTender help system.

Printing with Printer Code Templates

Sometimes, it is not useful to send a printer code template (PCT) directly to a printer, because the delimiters would appear as data on your printed items. Instead, you might want to store a PCT inside a computer program or hardware device that is programmed to replace the placeholders with actual data. The printer code that BarTender produces is not usable until the PCT is "merged" with the data that you want to print.

No matter what environment you eventually use your PCT in, the process for setting it up is the same, as follows:

1. Use BarTender to design your items, and then export your document to a PCT.
2. Upload the PCT to a hardware device or an external application.
3. Manually insert the data into your hardware device or import it from your external application.
4. Send the merged file to the printer.



PCTs are used in a number of different environments, as described in the following sections.

Embedded Printer Code

As most people know, before personal computers were available, software ran on very large mainframe computers. In some of the first software programs that were designed for supply chain management, programmers hand-coded all of the printer code that was required for their jobs and then compiled it as part of the program. Changes to the design, no matter how small, required programmers to manually change these sections of embedded printer code.

Some of these legacy applications are still in use today. A more efficient way to manage the use of embedded printer code is to use BarTender to generate a PCT to a file and then compile that printer code into the program. To change the design still takes time, because you have to run BarTender, make your change, export a new PCT, and then recompile it into the external program. However, working with a good WYSIWYG program such as BarTender results in a much easier and faster way to design items than hand-coding them.

SAPscript-ITF Integrations

SAPscript is a reporting engine that is available in SAP that supports the automated combination of SAP-provided data with an externally-supplied PCT format called an Interchange Text Format (ITF). As is the case with embedded printer code, you have to export a PCT from BarTender when you use this engine, but you use the SAPscript-ITF PCT print system that is installed with BarTender. After you export the PCT, you can “upload” it to the SAP system and then configure the SAP system to run the appropriate SAPscript report and merge the required data whenever an SAP transaction requires one or more printed items.

Although the SAPscript-ITF system makes design template changes easier than physically embedding and compiling new printer code into the SAP application, you still might encounter technical challenges. For more information, refer to the [Technical Challenges of Printer Code Templates](#) section of this white paper.

Portable Keypad Devices

Portable keypad devices include a portable keyboard, a small screen display, and a printer port. These devices generally lack the intelligence of portable “data terminals” and typically do not have connectivity to the main company network. Most commonly, they are connected to a printer that is wheeled around a warehouse on a cart or forklift.

A portable keypad device that is not running Windows and is not connected to the main network cannot run software such as BarTender. However, many such devices can download and store PCTs. They can then prompt a print operator for data, merge it with the PCT, and output the printer code to the attached printer.

XML-enabled Printers

Most thermal printers provide a full and robust printer language, but some of them also have an option to accept PCTs. As is the case with the embedded printer code and portable keypad devices, you first must design an item and then export a PCT in BarTender for subsequent download to the printer. After you do this, you can choose to send data only (without printer code) to the XML-enabled printer.

Non-Windows Environments

Even if a controlling software program is not running on Windows, you can use Integration Builder to integrate your system with BarTender. If your controlling application does not have access to Windows computers on the network, you can embed PCTs to take advantage of Windows-based label and barcode design (although not Windows-based printing).

Technical Challenges of Printer Code Templates

To generate PCTs, you must be running the Automation or Enterprise edition of BarTender. However, BarTender does not serve as the print engine for the print jobs, unlike the more conventional scenario in which you print items by using BarTender directly. When you use PCTs, BarTender cannot provide the variety of advanced barcode design and printing features that we have developed over many years.

The technical and security-related challenges of using PCTs include the following.

Required Coding Knowledge

When you use BarTender as your print engine, you don't have to worry about the technical details of how to communicate with your printer. By contrast, to embed code into your other software, you must know how to code in the language in which that software was written and be able to read, manipulate and embed large sections of printer code.

Extensive Design Changes

When you use BarTender as your print engine, you can modify your template design and automatically be ready to print again. By contrast, when you use a PCT, you must do the following, no matter how small a design change you make:

- Use BarTender to modify your design.
- Export your design to a PCT.
- Re-embed the PCT into your application and then recompile it or re-download it to your hardware device.

Complicated Printer Maintenance

When you use BarTender as your print engine, if a printer fails and needs to be replaced, you can print to the new printer right away. Also, if you change printer brands, you need only specify a different printer driver.

By contrast, when you store PCTs in a printer that later fails, you usually have to call for technical support to get your production restarted with a replacement printer, even if you continue to use the same printer model. Typically, only technical support personnel know how to run whatever custom process your company uses for deploying PCTs. Also, if you change printer brands, custom programming is usually required.

No Print Job Status Monitoring

When you print by using Drivers by Seagull™, you have access to important printer and print job status information, such as the following:

- Printer online or offline
- Print job running or stalled
- Printer low on paper
- Printer stopped

All of this information is available by using the Printer Maestro companion application.

By contrast, when you print by using PCTs, you typically are printing without any knowledge of your printer's status, unless you coded your own support to provide status monitoring.

No Support for Multiple Printer Models

When you use BarTender as your print engine, you can quickly select a different printer. Also, if a print job fails due to a stopped or unavailable printer, you can use the Printer Maestro interface to drag the print job to a different printer brand or model.

By contrast, because PCTs are, by definition, code for a specific printer, you cannot “move” a failed print job to a different brand of printer. In fact, the different printer models that most manufacturers produce have enough differences among them that you typically need different PCTs for each model. (We have even seen cases in which printer models that otherwise were identical had different firmware versions that required slightly different PCTs.)

No Support for Changing Graphics

PCTs cannot support the reading and printing of different graphics objects for different printed items. For example, if you wanted to print a different picture from a database next to each barcode on your inventory labels, you could not use a PCT.

No Paragraph Formatting

BarTender offers a wide variety of paragraph formatting features, including word wrapping, indentation, justification, bullets, numbering and line spacing. PCTs do not allow for this kind of paragraph formatting.

No Variable Font Sizes

When you use BarTender as your print engine, you can use the **Auto Fit** property page for a text object to automatically increase or decrease the font size depending on the amount of text that is used on each item.

By contrast, PCTs require that each text object uses the same font size for each item.

Loss of Security and Audit Preparation Features

Many BarTender companion applications have features that you can use to restrict printing access, log errors, or set up a document-sharing environment. History Explorer uses these features for its auditing functions. PCTs bypass these features.

Loss of Advanced Print Management Functions

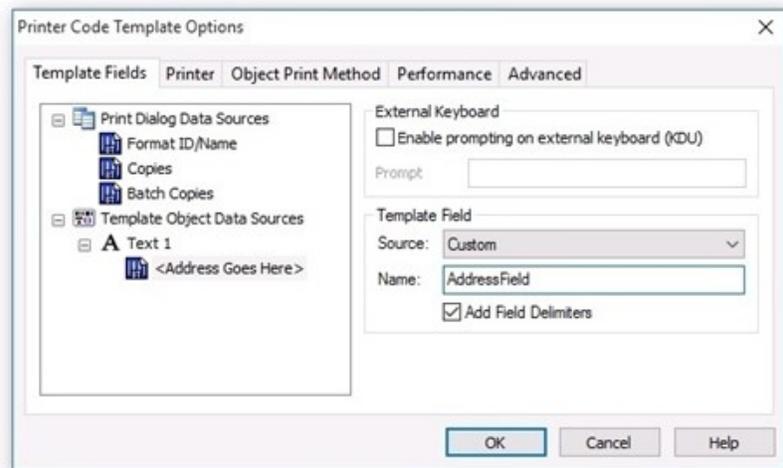
Printer Maestro is a powerful tool that can monitor every printer and print job on a Windows network and display the status information on one screen. PCTs bypass the standard Windows functions that make these management features possible.

Adding Template Field Names

Barcode and text objects into which the print system inserts data must have a template field name so that the print system can find them in the PCT file. Objects that are linked to BarTender data entry controls or database fields are automatically given template field names when you export a BarTender document to a PCT. For example, when you enable data entry for an object, a template field name is automatically generated when the BarTender document is exported to a PCT.

You can also manually specify a custom name for a template field. To do this, follow these steps:

1. On the **File** menu, click **Export Printer Code Template**. The **Export Printer Code Template** dialog opens.
2. Click **More Options**. The **Printer Code Template Options** dialog opens to the **Template Fields** tab.
3. In the left navigation pane, select the data source that you want.
4. In the **Template Field** area, select a source for the new data field in the **Source** list.
5. In the **Name** field, enter a name for the new data field.
6. Optionally, click to select the **Add Field Delimiters** check box.
7. Click **OK** to close the **Printer Code Template Options** dialog.
8. Click **Close** to close the **Export Printer Code Template** dialog.



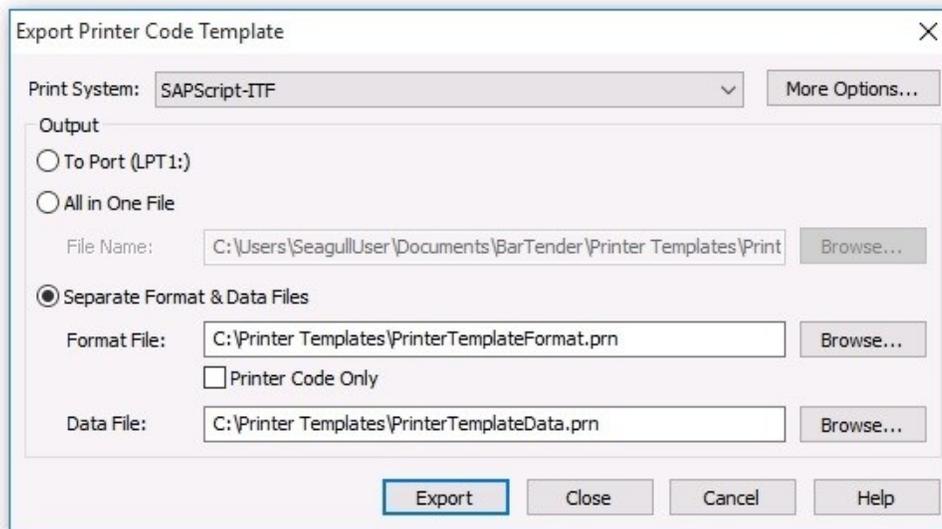
Exporting a Printer Code Template

BarTender is installed with some predefined print systems. To export a PCT for your BarTender document to one of these print systems, follow these steps:

1. On the **File** menu, click **Export Printer Code Template**. The **Export Printer Code Template** dialog opens.
2. In the **Print System** list, select a print system. Custom print systems are also listed here.
3. Click **Export**.
4. Resolve any issues that appear in the **Export Printer Code Template: Verification Messages** dialog. For more information, refer to the [Verification of Printer Code Templates](#) chapter of this white paper.
5. Click **OK** to close the confirmation message.

You can export a printer code template as one file, or you can break it up into format and data printer code. Typically, printers can accept the following types of printer code:

- **Format code:** Defines initialization commands, fonts, the positions of the objects, and any data that does not change from item to item.
- **Data code:** Typically changes from item to item and uses the format printer code commands as a format template for printing items by using the changing data.



Verification of Printer Code Templates

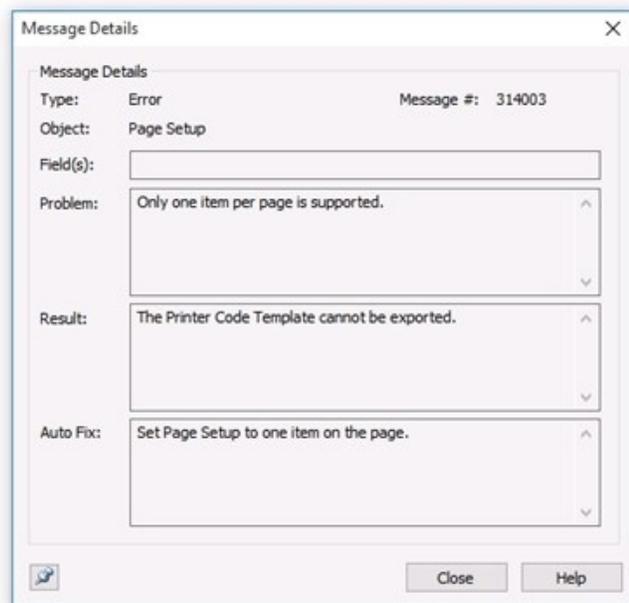
When you use BarTender as the print engine, it controls the entire print job, so it can easily perform advanced printing functions and other functions. For example, BarTender can control how text is centered, set the barcode density, add human readable text, and add check digits where needed.

However, a print system typically does not have this level of control. The print system uses raw printer code and can only merge user input data into itself. The barcode density, for example, cannot be adjusted, because the print system does not change the printer code. Because of this limitation, the design of the template is very important.

When you export a PCT, BarTender reports design issues by using the **Export Printer Code Template: Verification Messages** dialog, which helps you improve printing success when you use the selected print system. You can manually correct or, in some cases, automatically fix the reported problems.



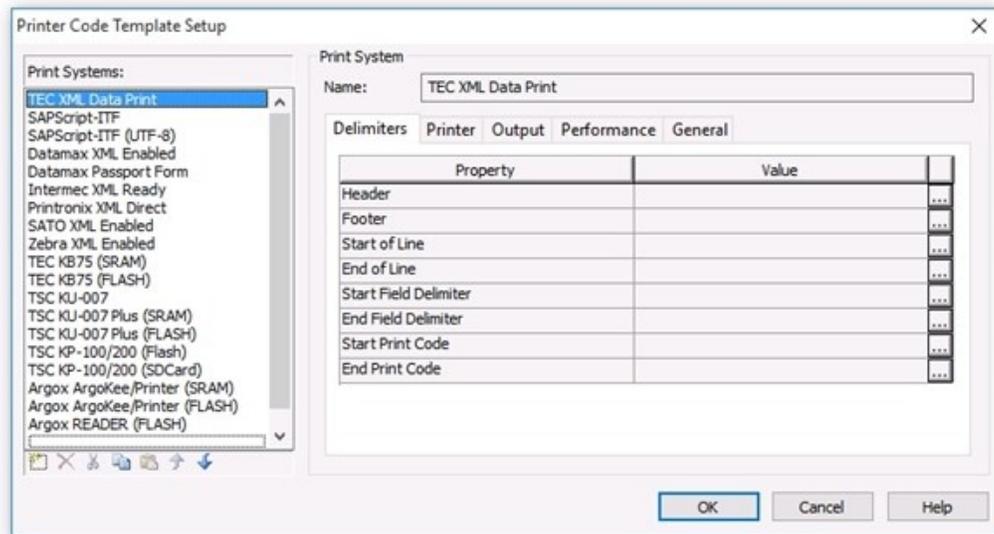
Click **Details** to open the **Message Details** dialog, which displays more information about the issue to help you decide how to resolve the error.



Customizing Print Systems

In addition to the predefined print systems that BarTender provides, you can create your own custom print system by using the **Printer Code Template Setup** dialog. You can configure any number of custom print systems.

To open this dialog, click **Printer Code Template Setup** on the **Administer** menu in BarTender.



The following delimiters are available:

- **Header:** Marks the beginning of the PCT.
- **Footer:** Marks the end of the PCT.
- **Start of Line:** Marks the beginning of each line of printer code.
- **End of Line:** Marks the end of each line of printer code.
- **Start Field Delimiter:** Marks the beginning of each data field (meaning each template field name). For more information, refer to the [Adding Template Field Names](#) section of this white paper.
- **End Field Delimiter:** Marks the end of each data field.
- **Start Print Code:** Marks the point at which the printer code begins.
- **End Print Code:** Marks the points at which the printer code ends.

Many print systems do not use all of these delimiters.

Search and Replace

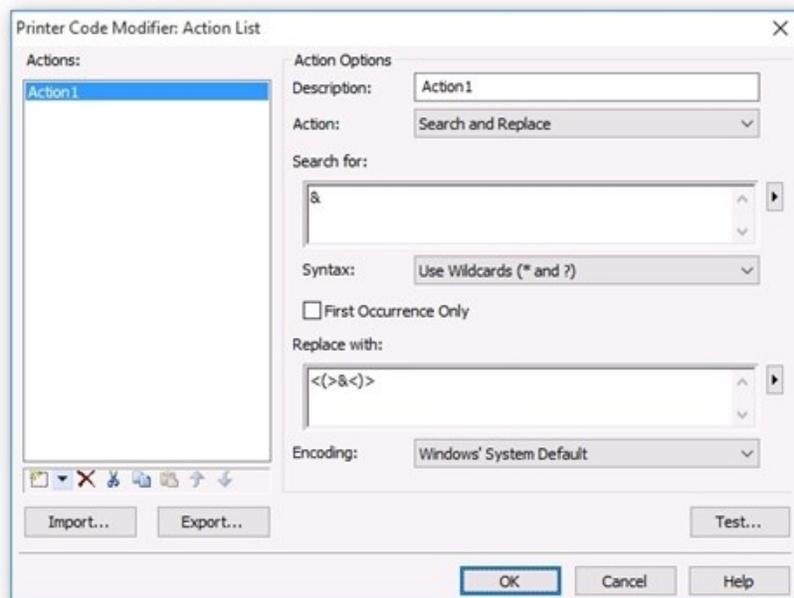
Use the search and replace functionality to resolve potential conflicts between your printer's language and the template field syntax that you are using. For example, if the character that you want to use as the start field delimiter, such as the ampersand (&), is used in your printer's language, you must temporarily replace the character where it appears in the printer's language code. Otherwise, the print system interprets every instance of this character as the start of a template

field. The print system reverses this temporary substitution as the last step before it produces a printer file that is written entirely in the printer's language.

To use the search and replace functionality, follow these steps:

1. On the **Administer** menu in BarTender, click **Printer Code Template Setup**. The **Printer Code Template Setup** dialog opens.
2. Click the **General** tab.
3. Click **Action List**. The **Search and Replace (Printer Code Modifier)** dialog opens.
4. In the **Action Options** area, enter your search and replace terms in the **Search for** and **Replace with** fields.
5. Optionally, click **Test** to test the search and replace action.
6. Click **OK** to close the **Printer Code Modifier: Action List** dialog.
7. Click **OK** to close the **Printer Code Template Setup** dialog.

For more information, refer to the [Search and Replace Dialog \(Printer Code Modifier\)](#) topic in the BarTender help system.



Example of How to Use a Printer Code Template

Suppose Ajax Swizzle Sticks, Inc., wants its SAP/R3 system to print the following simple address labels.



The return address remains the same on all labels, but each line of the recipient's address is variable. On the warehouse floor, a non-Windows computer that is running a SAP/R3 print system prompts the print operator to enter the recipient's name and address. The SAP/R3 print system inserts this information into a PCT that was created in BarTender, and the resulting printer file is sent to a printer.

To create a PCT that has variable data fields:

1. In BarTender, start a new BarTender document, or open an existing document that you want to modify.
2. On the **File** menu, click **Print**. The **Print** dialog opens.
3. In the **Name** list, select the printer that you want to use to print the labels. Make sure that the printer driver supports the exporting of PCTs and that that feature is selected in the driver's **Properties** dialog.
4. Click **Close** to close the **Print** dialog.
5. For the return address, create a normal wrapped (multi-line) text object, and then place it in the upper left corner of your template.
6. Click the text object to enter Edit mode, and then enter the return address.
7. Create another text object, and then place it where you want the recipient's name to appear.
8. Double-click the border of the new object. The **Text Properties** dialog opens.
9. In the left navigation pane, click **Font**.
10. In the **Typeface** list, select a printer-based font.
11. In the left navigation pane, click the data source that you want under **Data Sources**.
12. On the **Data Source** tab, enter **Recipient's Name** in the **Embedded Data** field.

13. Click **Close** to close the **Text Properties** dialog.



You do not have to enable data entry for the object, because the prompting is done by the SAPscript, not by BarTender.

14. Repeat steps 7 through 13 to create, place, and configure text objects for "Street Address," "City," "State," and "Zip".
15. On the BarTender **File** menu, click **Export Printer Code Template**. The **Export Printer Code Template** dialog opens.
16. Next to **Print System**, click **More Options**. The **Printer Code Template Options** dialog opens to the **Template Fields** tab.
17. In the left pane, click the "Recipient's Name" data source.
18. In the **Source** list in the **Template Field** area, select **Custom**.
19. For **Name**, enter **Recipient's Name**.
20. Click to select the **Add Field Delimiters** check box.
21. Repeat steps 18-21 for the "Street Address," "City," "State," and "Zip" data sources.
22. Click **OK** to close the **Printer Code Template Options** dialog.
23. In the **Export Printer Code Template** dialog, select **SAPscript-ITF** in the **Print System** list.
24. In the **Output** area, click to select **All in One File**.
25. Click **Export**. A template file that resembles the following is produced. The contents of the file vary depending on the printer that you selected in step 3. (In this example, a Datamax printer was used.) Note that the fields that you created are enclosed in ampersands (&), which is the SAPscript-ITF field delimiter.

```
/.n  
/.M1500  
/.KW0405  
/.V0  
/.L  
/D11  
/R0000  
/A2  
/1X1100001390083L187001  
/sCfmt0  
/X  
/.L  
/D11  
/R0000  
/rfmt0  
/ySW1  
/A2  
/191150103580134P012P012&Recipient's Name&  
/191150103390134P012P012&Street Address&  
/191150103200134P012P012&City&  
/191150103010134P012P012&State&  
/191150103010223P012P012&Zip&  
/Q0001  
/E  
/.xCLfmt0  
/.zC  
/
```

26. Upload a copy of this file to a computer on the warehouse floor.
27. Configure SAP/R3 to perform the following actions:
 - a. Open the SAPScript-ITF file.
 - b. Prompt the print operator for address data (the recipient's name, street address, and so on).
 - c. Insert the data in place of the data source fields (&Recipient's Name&, &Street Address&, and so on) in the template.
 - d. Send the resulting file to the printer.

Related Documentation

White Papers

- *BarTender Integration Methods*
- *Drivers by Seagull™*
- *Optimizing Print Performance*
- *Status Monitoring*

To view and download white papers, visit:

<https://www.bartendersoftware.com/resources/white-papers/>

Manuals

- *Getting Started with BarTender*
<https://support.seagullscientific.com/hc/categories/200267887>

BarTender Help System

- [Working With Printer Code Templates](#)
- [Search and Replace Dialog \(Printer Code Modifier\)](#)

Other Resources

Please visit the BarTender website at <https://www.bartendersoftware.com>.

