



Exporting Printer Code Templates

The Advantages and Disadvantages of
using PCTs with BarTender

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Overview of Printer Code Templates

Print Systems

In some manufacturing situations, portable devices or terminals are used to print items. These portable devices and/or terminals typically take printer code created by a design program, merge user input information like lot numbers and expiration dates into the printer code, and send the completed printer code directly to the printer. For example, the Datamax Passport is a hand-held device that can easily connect to a printer for printing pre-defined items. The Passport takes uploaded Datamax printer code, inserts user input information, and then prints the item.

There are also situations in which printing is performed by a merge application, possibly running on a non-Windows computer. For example, SAP/R3 systems use SAPscript-ITF files as part of a process that prompts users for input information, and then prints. A SAPscript-ITF file is composed mostly of printer code, but has extra field information for data substitution. The SAP/R3 system software merges user data in place of the field information in the SAPscript-ITF file, and sends the resulting file to the printer.

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

Printer Code Templates

You can use BarTender (Automation editions) to design your items, then export it to a data file containing printer commands and placeholders for data on your template. This data file, called a "printer code template", can then be merged and printed by one of these print systems.

A printer code template is written mainly in the language of a printer, but it is not a pure printer language file. It additionally contains certain delimited fields, which can indicate placements (such as the start and end of each line) or data field names, which are used as placeholders that will be replaced at print-time by actual data. Although not every print system uses every possible delimiter, the template may 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.

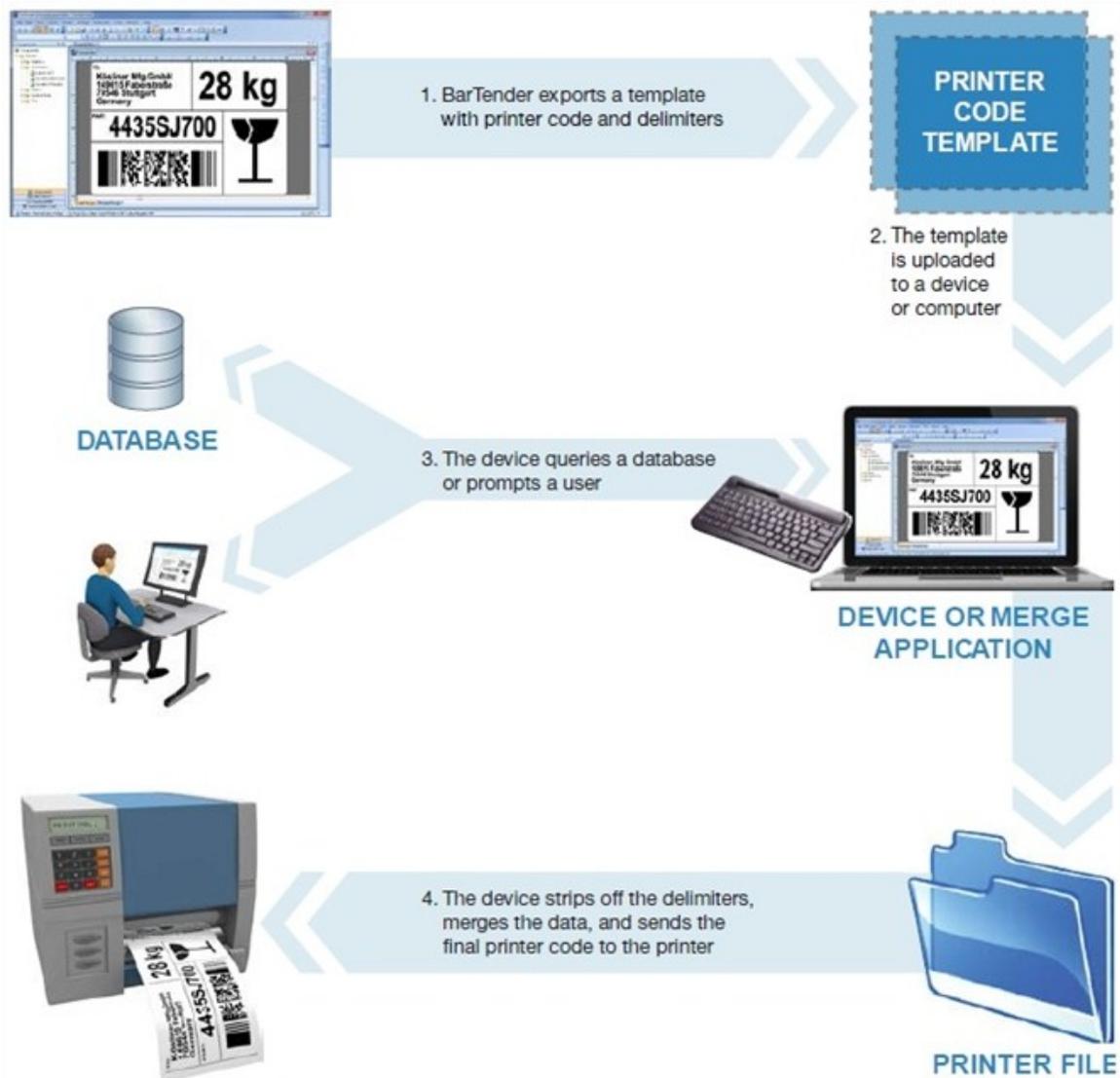
For more information, refer to the [Understanding Printer Code Templates](#) topic in the BarTender help system.

Printing with Printer Code Templates

Sometimes, it is not useful to send a Printer Code Template (PCT) directly to a printer, because the delimiters will appear as data on your printed items. Instead, you may need to store a PCT inside a computer program or hardware device that is programmed to replace the placeholders with actual data. The printer code produced by BarTender is not usable until the PCT is "merged" with the data you wish to print.

No matter what environment you'll eventually use your PCT in, the process for setting up a printer code template is the same.

1. Use BarTender to design your items, and export your document to a printer code template.
2. Either upload the PCT to a hardware device or 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, described below.

Embedded Printer Code

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

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

SAPscript-ITF Integrations

SAPscript is a reporting engine available in SAP that supports the automated combining of SAP-provided data with an externally-supplied Printer Code Template format called an ITF (Interchange Text Format). Just as you do when creating embedded printer code, you have to export a PCT from BarTender. However, in this case, you will need to use the SAPscript-ITF PCT print system installed with BarTender. After exporting the PCT, you can “upload” it to the SAP system, and configure the SAP system to run the appropriate SAPscript report and merge in the required data whenever an SAP transaction requires one or more labels.

Although the SAPscript-ITF system makes design template changes easier than physically embedding and compiling new printer code into the SAP application, it still must face the [Technical Challenges of Printer Code Templates](#) described in that section.

Portable Keypad Devices

A number of portable keypad devices are available that are little more than a portable keyboard, a small screen display, and a printer port. These devices generally lack the intelligence of portable “data terminals” and typically don’t have any kind of connectivity to the main company network. The most common use is connected to a printer that is being wheeled around through a warehouse on a wheeled cart or forklift.

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

XML-Enabled Printers

Although most thermal printers provide a full and robust printer language, some of them have an option to accept PCTs. As with the embedded printer code and keypad devices (discussed above), you first have to design an item and export a PCT in BarTender for subsequent download to the printer. Thereafter, you have the option of sending data only (without printer code) to the XML-enabled printer.

Non-Windows Environments

Even if a controlling software program is not running on Windows, the Commander application, available in the BarTender Suite, offers a number of options for integration with BarTender. However, if your controlling application is set up in a manner in which it simply does not have access to Windows computers on the network, the embedding of Printer Code Templates offers a method by which you can still take advantage of the convenience of Windows-based label and barcode design (although not Windows-based printing).

Technical Challenges of Printer Code Templates

Generating Printer Code Templates (PCTs) requires the use of either Automation edition of BarTender. However, unlike printing directly from BarTender in a conventional print job, BarTender does not serve as the print engine for the jobs. If you use PCTs, BarTender cannot provide a variety of advanced barcode design and printing features that we have developed over many years. Among the technical and security challenges regarding the use PCTs include:

Required Coding Knowledge

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

Extensive Design Changes

When using BarTender as your print engine, you just simply modify your template design and you are ready to print again. In contrast, no matter how small a change you make, when using a PCT, you need to:

- Run BarTender and modify your design.
- Export your design to a PCT.
- Either, re-embed the PCT into your application and recompile it or redownload it to your hardware device.

Complicated Printer Maintenance

If you have stored PCTs in a printer that fails, you usually have to call somebody from I.T. to get your production restarted in a replacement printer – even if you continue to use the exact same printer model. In all likelihood, only someone in I.T. will know how to execute whatever custom process your company uses for deploying PCTs. In contrast, when you use BarTender as your print engine, you can always print to the new printer right away. And changing printer brands just means specifying a different printer driver. In contrast, changing printer brands when using PCTs usually requires custom programming!

No Print Job Status Monitoring

When printing with Drivers by Seagull™, you have access to important printer information such as:

- Is my printer on-line?
- Is my print job running or stalled?
- Is my printer low on paper?
- Why did my printer stop?

All of this information is available through Printer Maestro, an application available in the BarTender Suite.

In contrast, when printing using PCTs, unless you have coded your own support to handle this type of status monitoring, you will normally be printing “blind,” without any knowledge of your printer’s status.

Inability to Support Multiple Printer Models

When printing from BarTender, you can select a different printer in seconds. What’s more, when using the Printer Maestro application, if a print job ever fails due to a “stuck” or unavailable printer, you can move the print job to a different printer brand or model with a quick drag of your mouse. In contrast, because PCTs are (by their very 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 from most manufacturers have enough differences between them that you typically need different PCTs for each model. (We have even seen instances where “identical” printer models with different firmware versions required slightly different PCTs.)

No Support for Changing Graphics

For the same reasons just described, PCTs cannot support the reading and printing of different graphics objects for different labels. For example, if you wanted to read a different picture from a database to print next to each barcode on your inventory labels, you could not print using PCTs.

No Paragraph Formatting

BarTender offers an extensive variety of paragraph formatting features, including word wrapping, indentation, justification, bullets, numbering and line spacing. Use of PCTs does not allow for this kind of paragraph formatting.

No Variable Font Sizes

The **Font** dialog in BarTender has an **Auto Size** option that allows BarTender to automatically increase or decrease the font size for a text object depending on the amount of text supplied for it on each item. In contrast, use of PCTs requires that each text object always print out with the same font size on each item.

Loss of Security and Audit Preparation Features

Multiple companion applications within the BarTender Suite let you restrict printing access, log errors, or setup a document-sharing environment. The use of PCTs completely bypasses these powerful features that make History Explorer’s auditing functions possible.

Loss of Advanced Print Management Functions

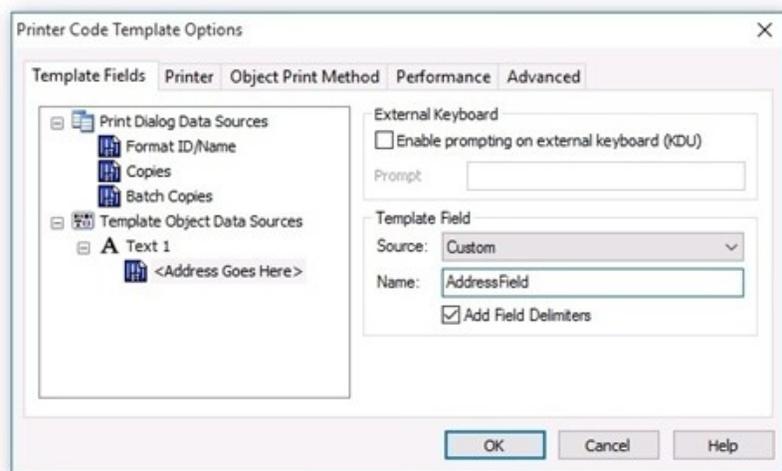
Printer Maestro is a powerful tool that can monitor every printer and print job on a Windows network and display the status information in a single screen. Printer Maestro even lets you move failed print jobs from one printer to another printer (even a different brand) with a single, quick mouse movement. In contrast, use of PCTs bypasses the standard Windows functions that make these management features possible.

Adding Template Field Names

Any barcode or text object for which the print system is going to insert data must have a template field name, so that the print system can find it in the template file. Objects linked to BarTender data entry controls or database fields are automatically given template field names when a BarTender document is exported to a template. For example, enabling data entry for an object will automatically generate a template field name when the BarTender document is exported to a printer code template.

You can also manually specify a custom name for a template field. To do so:

1. From the **File** menu, select **Export Printer Code Template**. The **Export Printer Code Template** dialog opens.
2. Click **More Options** (to the right of **Print System**). The **Printer Code Template Options** dialog opens on the **Template Fields** tab.
3. Select the data source you want from the tree view in the left pane.
4. Under the **Template Field** section, select a source for the new data field from the **Source** dropdown list.
5. In the **Name** field, enter a name for the new data field.
6. Check **Add Field Delimiters** if desired.
7. Click **OK** to close the **Printer Code Template Options** dialog.
8. Click **Close** to close the **Export Printer Code Template** dialog.



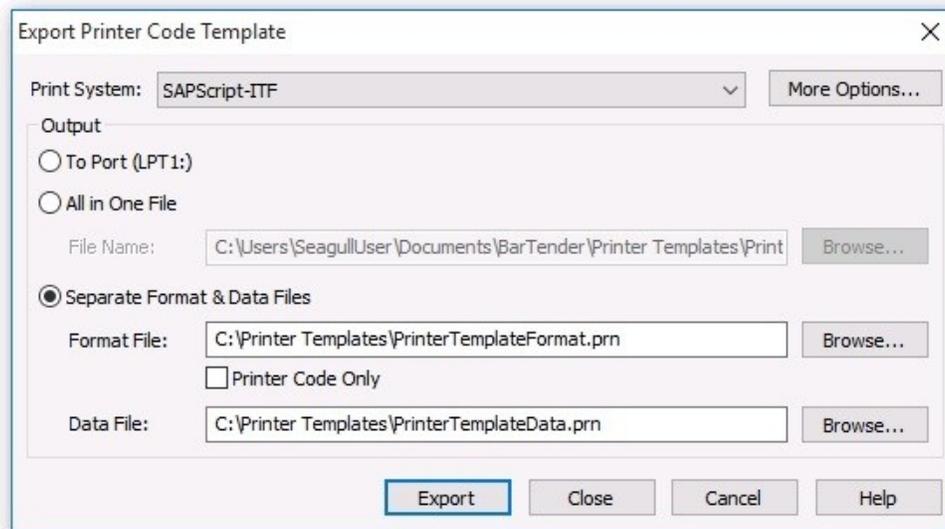
Exporting a Printer Code Template

BarTender comes with some predefined print systems (such as Datamax Passport and SAPscript-ITF). To export a printer code template for your BarTender document:

1. From the **File** menu, select **Export Printer Code Template**. The **Export Printer Code Template** dialog opens.
2. From the **Print System** dropdown list, select a print system. Custom print systems are also listed here.
3. Click **Export**. (Address any issues that may appear in the Validation window. See the [Validation](#) chapter for more information.)
4. A confirmation message appears. Click **OK** to close it.

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 printer code of two different types:

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



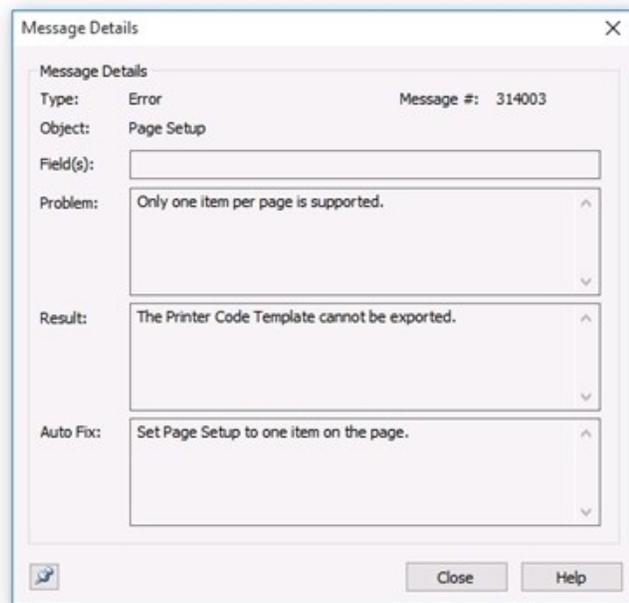
Validation of Printer Code Templates

Because BarTender controls the entire print job, BarTender can easily perform advanced printing functions, and do things such as control the centering of text, 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. Centering of text, for example, cannot be adjusted, because the print system does not change the printer code. Because of this, the design of the template becomes very important.

When a printer code template is exported, BarTender opens a dialog to report on design issues, which helps improve printing success using the selected print system. This process is called validation. Each problem reported can be manually corrected or automatically fixed.



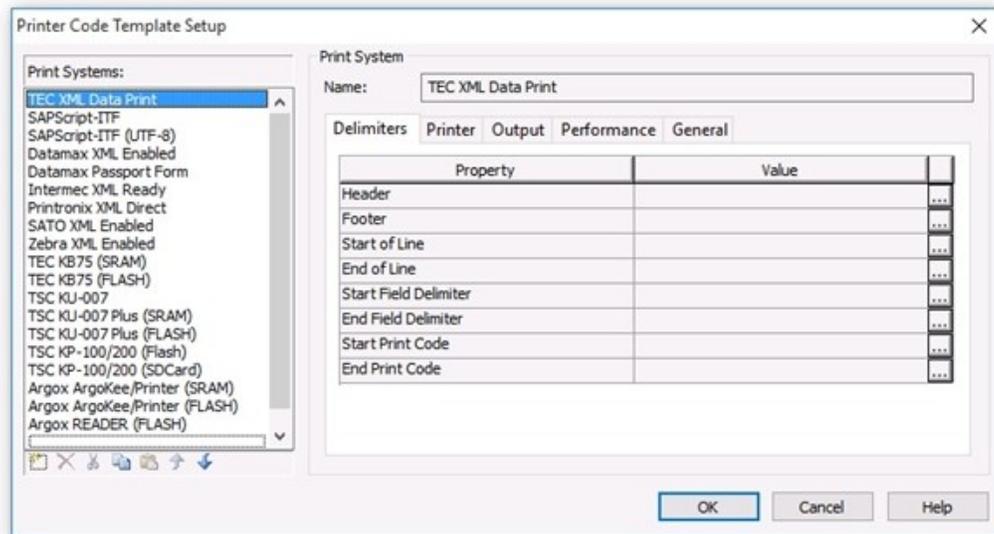
Click the **Details** button to open a window containing more information about the issue to help you decide how to resolve the error.



Customizing Print Systems

In addition to BarTender's predefined print systems, you can create your own custom print system using the **Printer Code Template Setup** dialog. Any number of print systems can be defined and configured to support virtually any print system.

The **Printer Code Template Setup** dialog can be opened from the **Administer** menu.



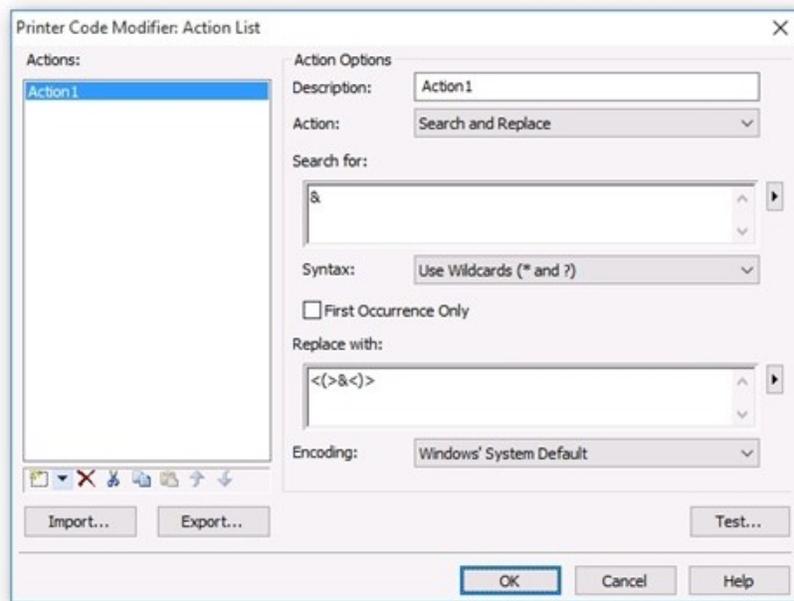
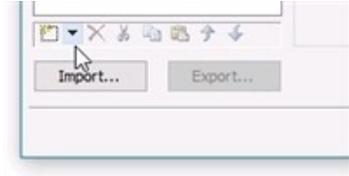
The following delimiters are available. Many print systems do not use them all.

- The **Header** and **Footer** delimiters mark the very beginning and end, respectively, of the printer code template.
- The **Start of Line** and **End of Line** delimiters mark the beginning and end, respectively, of each line of printer code.
- The **Start Field Delimiter** and **End Field Delimiter** mark the beginning and end, respectively, of each data field; that is, each template field name. See the [Adding Template Field Names](#) chapter for more information.
- The **Start Print Code** and **End Print Code** delimiters mark the points at which the printer code begins and ends.

The Printer Code Modifier Action List: Search and Replace

Search and Replace is used to resolve potential conflicts between your printer's language and the template field syntax you are using. For example, if the character you need to use as the Start Field Delimiter, such as "&", is used in your printer's language, then you would need to temporarily replace the character where it appears in the printer's language code. Otherwise, the print system would interpret every instance of this character as the start of a template field. The temporary substitution is reversed by the print system as the last step before it produces a printer file that is entirely written in the printer's language.

1. From the **Administer** menu, select **Printer Code Template Setup**. The **Printer Code Template Setup** dialog opens.
2. Click the **General** tab.
3. Click the **Action List** button. The **Printer Code Modifier: Action List** dialog opens.
4. From the **New** dropdown list, select **Search and Replace**.
5. Enter your Search and Replace terms.
6. Click **OK** to close the **Printer Code Modifier: Action List** dialog.
7. Click **OK** to close the **Printer Code Template Setup** dialog.



Example of Using a Printer Code Template

Suppose Ajax Swizzle Sticks, Inc., wants its SAP/R3 system to print simple address labels such as the one shown here:



The return address stays the same on all labels, but each line of the recipient's address is variable. On the warehouse floor is a non-Windows computer running a SAP/R3 print system that will prompt the user for the recipient's name and address. This information will be inserted by the SAP/R3 print system into a BarTender-created printer code template and the resulting printer file will then be sent to a printer.

To create a printer code template with variable data fields:

1. Open BarTender.
2. Open a new BarTender document, or an existing document you wish to modify.
3. From the **File** menu, select **Print**. The **Print** dialog opens.
4. From the **Name** dropdown list, select the printer you will be using to print. (The printer driver must support exporting of printer code templates, and that feature must be enabled in the driver's **Properties** dialog.)
5. Click **Close** to close the **Print** dialog.
6. For the return address, create a multi-line text object and place it in the upper left corner of your template.
7. Click the text object to enter edit mode, and enter the return address.
8. Create another text object and place it where the recipient's name should appear.
9. Double-click the border of the new object. The **Text Properties** dialog opens.
10. In the Navigation Pane on the left side of the dialog, click **Font**.
11. Select a printer-based font.
12. In the Navigation Pane under **Data Sources**, click the desired data source.
13. Click the **Data Source** tab if it's not already open.
14. In the **Embedded Data** field, enter "Recipient's Name" (without the quotation marks).

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

NOTE: There is no need to enable data entry for the object, because the prompting will be done by the SAPscript, not BarTender.

16. Repeat steps 8 through 15 to create, place, and configure text objects for "Street Address," "City," "State," and "Zip".
17. From the BarTender **File** menu, select **Export Printer Code Template**. The **Export Printer Code Template** dialog opens.
18. Next to **Print System**, click **More Options**. The **Printer Code Template Options** dialog opens on the **Template Fields** tab.
19. In the left pane, locate and click on the data source titled "Recipient's Name".
20. Under **Template Field**, change the **Source** to **Custom**.
21. For **Name**, enter "Recipient's Name" (without the quotation marks)
22. Check the **Add Field Delimiters** box.
23. Repeat steps 19-22 for the data sources titled "Street Address," "City," "State," and "Zip".
24. Click **OK** to close the **Printer Code Template Options** dialog.
25. From the **Print System** dropdown list, select **SAPscript-ITF**.
26. Under **Output**, select **All in One File**.
27. Click **Export**. This will produce a template file somewhat like the one pictured here. The exact appearance will vary depending on the printer you selected in step 4. (In this example, a Datamax printer was used.) Note the presence of the fields you created with their names encased in the SAPscript-ITF field delimiter, the "&" symbol.

```
// -n
// -M1500
// -Kw0405
// -V0
// -L
// D11
// R0000
// A2
// 1X1100001390083L187001
// sCfmt0
// X
// -L
// D11
// R0000
// rfmt0
// ySW1
// A2
// 1911S0103580134P012P012&Recipient's Name&
// 1911S0103390134P012P012&Street Address&
// 1911S0103200134P012P012&City&
// 1911S0103010134P012P012&State&
// 1911S0103010223P012P012&Zip&
// Q0001
// E
// -xCLfmt0
// -zC
//
```

28. Upload a copy of this file to a computer on the warehouse floor.
29. Configure SAP/R3 to open the SAPscript-ITF file and prompt the user for a recipient's name and insert it in place of the "&Recipient's Name&" in the template. Similarly, it should prompt for, and insert, the address, city, state, and Zip code. Finally, the SAP/R3 system should send the resulting file to the printer.

Related Documentation

White Papers and Manuals

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

For downloadable versions, visit:

<http://www.seagullscientific.com/support/white-papers>

BarTender Help System

- [Understanding Printer Code Templates](#)

