



BarTender Integration Methods

Integrating BarTender's Printing and Design Functionality
with Your Custom Application

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Introduction

The term *Integration*, as used in this white paper, refers to BarTender's ability to import data from external systems and give other applications the control to launch and command BarTender for the purpose of printing your BarTender documents. In this type of setup, BarTender is simply the print engine sending documents to the printer.

Enterprise-level printing is usually part of a larger process involving additional software besides just BarTender. Software applications for manufacturing, inventory, shipping, accounting and various other supply-chain management functions typically depend on multiple software applications working together to make essential tracking and identification functions possible. That's why so many systems integrators and consultants integrate Oracle, SAP and a great variety of other Enterprise Resource Planning (ERP) software applications with label, barcode, RFID and card printing applications such as BarTender.

Integrating with External Data

When integrating BarTender with other software, you frequently will be connecting to and importing data from an external system. Depending on your printing environment, BarTender can either connect directly to a database or spreadsheet, or you can import transactional data directly from an external ERP system, such as Oracle, SAP or IBM WebSphere.

Importing Data into BarTender

BarTender supports reading data from a number of popular database platforms. Integration with these platforms requires no additional programming or custom processing. Supported database engines include:

- Delimited text files
- Microsoft Access
- Microsoft Excel
- Microsoft SQL Server
- Oracle
- SAP Intermediate IDocs

Sometimes your external database is stored in a proprietary format (not supported by OLE DB or ODBC) or located somewhere on your network that your BarTender software cannot “see.” In these cases, you can either write a way to read and deal with the data in your custom application, or use Integration Builder's built-in transforms to deal with pre-defined formats, including:

- Oracle XML print requests
- IBM WebSphere Sensor Events print requests
- SAP AII XML
- SAPscript-generated fixed-width text files

Preferred Methods

Seagull refers to the following integration methods as "preferred," meaning that they are developed using the newest technologies to provide our customers with the best integration solution possible. These methods are fully supported by Seagull's technical support and continue to be updated with each new release.

BarTender Integration Builder

BarTender's native integration solution combines two user applications with two Windows services to ensure that your printing operation is running seamlessly at all times. This powerful service lets you perform enterprise-level tasks, including:

- Initiating printing automatically at "trigger" events, such as the arrival of an email, a saved file or a modified database
- Connecting to and communicating with clients via TCP/IP, UDP or HTTP
- Performing basic file operations, such as move, rename, delete or copy
- Integrating directly with ERP systems with direct support for SAP, Oracle or IBM WebSphere connectivity

Integration Builder

BarTender Integration Builder makes it easy to create integration files from scratch. An integration file is simply a proprietary XML document that defines one or more integrations, with each integration consisting of a trigger event and one or more actions.

Integration Builder also allows you to edit and test the integration files, and deploy them to the Integration Service. Once the integration file is deployed, the Integration Service begins to monitor for the trigger events defined by each of the integrations defined in the integration file.

Administration Console

The **Integrations** section of Administration Console lets you deploy and monitor integrations running on a server. At any point in time, you can monitor the integration's logged messages as the Integration Service detects the trigger event and executes its actions.

The **Windows Services** section of Administration Console allows you to start and stop both the BarTender Integration Service and the BarTender Print Scheduler Service (described below).

BarTender Integration Service

The BarTender Integration Service is a Windows Service that monitors for integration triggers. When it detects a trigger, it then executes actions in response to that trigger, such as transforming data and printing a BarTender document with that data. In the case of a file trigger, the data to be processed might be gathered from the file itself, or in the case of a TCP/IP request or a serial port trigger, the data might be gathered from what is sent over that connection.

The simplest action the Integration Service might process is to simply send a print command for a BarTender document to the BarTender Print Scheduler Service, but as noted in the next chapter many additional (and more complex) actions are supported.

The Integration Service can host any number of integration files. You can deploy a new or updated integration file without affecting other integrations already running.

BarTender Print Scheduler Service

The BarTender Print Scheduler Service is a Windows Service that manages BarTender print engines and intelligently assigns jobs to them while maximizing performance and maintaining print order. It uses a single pool of print engines so that resources are used efficiently. The Print Scheduler service ensures that:

- Jobs printing to a specific printer will always come out of that printer in the order the requests were received
- When documents contain embedded data that can change, such as serialized counters, they will be bound to a single print engine to ensure data integrity.

BarTender .NET SDK

The BarTender .NET SDK (software development kit) include libraries of pre-written and debugged source code designed to control BarTender, including the loading of BarTender documents and launching of print jobs. Using either C# or VB.NET, you can seamlessly integrate BarTender functionality into your applications without having to write the most commonly-needed routines for automated printing from scratch.

NOTE: If you are using a .NET programming language, such as C# or VB.NET, it is recommended that you use the BarTender .NET SDK instead of directly accessing the ActiveX Automation interface. The BarTender .NET SDK can be faster and easier for .NET programmers to use, as they include pre-written source code and extensive documentation that greatly simplify the task of writing code to control BarTender.

The BarTender .NET SDK includes the following APIs:

Print Engine API

The Print Engine API lets you manage BarTender's print engines and automate printing. With this API, a developer can quickly modify and print labels using any .NET language. The Print Engine API utilizes managed .NET code to automate unmanaged BarTender functionality, allowing for superior resource management and extensibility over BarTender's ActiveX (COM) API. This provides a powerful solution for your label printing needs, letting you:

- Open and close BarTender documents
- Modify text or barcode objects
- Connect to external databases
- Export templates to images
- Print
- Monitor print jobs

To use the Print Engine API, you must have BarTender Automation edition or better installed.

Print Server API

The Print Server API lets you manage large, complex print jobs easily, providing flexibility, scalability, and task-based management for label printing. For example, printing a large number of labels requires managing multiple BarTender print engines. The Print Server API allows you to do this easily, adding more engines as print demand increases. You simply submit print tasks to a task queue for processing.

The Print Server API is available in both the Automation and Enterprise Automation editions of BarTender. Using the Print Server API, you can start an unlimited number of print engines.

Librarian API

The Librarian API lets users access the functionality of Librarian, a revision control system installed with the BarTender Suite. With this API, you can:

- Check BarTender documents in or out of the repository
- Roll back to previous revisions
- Get file information
- Define workflow states

To use the Librarian API, you must have BarTender Enterprise Automation edition installed.

System Database API

The System Database API provides access to information stored in BarTender's central system database. With this API, you can:

- Connect to a BarTender System Database
- Search and retrieve application messages, print job information and security checks
- Filter data in the BarTender System Database
- Reprint documents

To use the System Database API, you must have BarTender Automation edition or better installed.

BarTender XML (BTXML)

BarTender XML (BTXML) is an XML schema already written and installed with BarTender that lets you control BarTender and print jobs. You can send BTXML to your outside software applications to run BarTender and print jobs.

An XML response is created after running the script. An example of this is when you use BTXML Script to print. An XML response will provide you with valuable information about the print job, the printer used to complete the job, BarTender's settings during the print job, and complete details about the items printed. This response can be integrated with a custom application.

Most ERP software packages already have standard functions built into them for generating XML. This is one reason why XML is such a convenient way for controlling applications to send commands

to BarTender. One potential challenge, however, is that the default XML generated by your software may not be compatible with the BXML format understood by BarTender. As an alternative to generating custom XML from your ERP application, you can generate your XML in its default format and convert it to BXML using Integration Builder.

Once you have written BXML, you can execute it using any of the other Integration methods talked about in this white paper.

Example

The following example opens the document Document1.btw, and sends a print job containing 100 serialized items to Tray 1 of the HP LaserJet printer.

```
<?xml version="1.0" encoding="utf-8"?>
<XMLScript version="2.0">
  <Command>
    <Print JobName="Job1">
      <Format>c:\BarTender\Document1.btw</Format>
      <PrintSetup>
        <NumberSerializedLabels>100</NumberSerializedLabels>
        <Printer>HP LaserJet</Printer>
        <PaperTray>Tray 1</PaperTray>
      </PrintSetup>
    </Print>
  </Command>
</XMLScript>
```

Legacy Import Methods

The integration methods discussed in this section are no longer actively supported by Seagull and have been replaced with newer technologies. These methods should be used for backwards compatibility only.

ActiveX Automation

ActiveX Automation, also known as COM (Common Object Model), is a Microsoft standard for interaction between Windows programs. BarTender's support for ActiveX Automation allows developers to enhance their Windows applications with code that instructs BarTender to automatically perform most of the data retrieval, data entry, and printing tasks available when using BarTender "stand-alone."

BarTender's ActiveX Automation interface lets you control BarTender (the server application) from your own custom program. Programs that use ActiveX Automation do so by calling methods (functions) and reading and writing various properties (data values) in BarTender. You can use these functions and data values to:

- Open and close BarTender
- Open BarTender documents
- Modify the objects in a BarTender document
- Supply data to be printed
- Launch print jobs

Support for ActiveX Automation is provided with the Automaton and Enterprise Automation editions of BarTender.

NOTE: If you are using a .NET programming language, such as C# or VB.NET, we recommend that you use one of the BarTender .NET SDK instead of directly accessing the ActiveX Automation interface. The SDK provide you with pre-written procedures that access and control the ActiveX Automation functions for you. Although your programs will still be controlling BarTender using ActiveX at a low level, use of the SDK significantly reduces the amount of programming and debugging required. (See the [BarTender .NET SDK](#) section of this white paper for more details.)

When to Use ActiveX Automation

ActiveX Automation can be useful when you want to use a programming or scripting environment, such as:

- Visual Basic, VBA (Visual Basic for Applications) and VBScript (Visual Basic Script)
- Visual C, Visual C++ and other versions of C for Windows
- Java, Visual J++, Visual J#, JavaScript and JScript
- Any language for which there is an ActiveX scripting engine that runs in the Windows Scripting Host, including PERL, Python and REXX

Although VB.NET and C# both support ActiveX Automation, it is much easier to use the BarTender .NET SDK when using these languages.

Command Line Interface

BarTender's command line interface is a means of interacting with a computer program in which you issue commands to the program in the form of successive lines of text (command lines). It provides a minimum set of capabilities for controlling your BarTender software, so that you can run BarTender from within other programs or change BarTender's start-up behavior.

The command line interface is primarily suited for specifying which BarTender document and external text file to use for a print job. However, it provides little additional control. The command line interface works with both the Automation and Enterprise Automation editions of BarTender.

When to Use the Command Line Interface

The command line interface can be useful in any of these situations:

- You simply need to specify a text file for a print job, and you don't need to control other aspects of BarTender.
- You need to create a shortcut on your computer to open BarTender with specific settings.

Using Printer Code Templates

A printer code template (PCT) is a file written mainly in the language of a printer, but it is not a pure printer language file. Certain delimiters are inserted in significant places in the file, such as the start and end of each line, and placeholders are added that will be replaced at print-time by actual data. Example delimiters include headers, footers, start and end line delimiters, start and end print code delimiters, and delimiters at the start and end of data fields.

How Printer Code Templates Work

Although implementing and using Printer Code Templates requires specialized technical knowledge, explaining the basic process is fairly straight-forward:

1. Use BarTender to 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.

When to Use Printer Code Templates

Printer Code Templates can be useful in the following situations:

- **SAPscript-ITF Integrations:** You can "upload" a PCT to an SAP system, then 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.
- **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. Many such 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:** Some thermal printers have an option to accept PCTs. Once you download a PCT to the printer, you have the option of sending data only (without printer code) to the XML-enabled printer.
- **Non-Windows Environments:** In situations where a controlling application may not have access to Windows computers on the network, the embedding of a PCT allows you to 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 requires use of either of the Automation editions of BarTender. However, unlike in a conventional print job, BarTender does not serve as the print engine for the print jobs. BarTender therefore cannot provide a variety of advanced printing features that Seagull has developed over many years. Some of the technical and security challenges of Printer Code Templates include:

- Need for advanced printer coding knowledge
- Inability to support multiple printer models

- No support for changing graphics
- No paragraph formatting
- No variable font sizing options

Related Documentation

White Papers and Manuals

- Integrating with BarTender Integration Builder
- Transitioning from Commander to Integration Builder
- Exporting Printer Code Templates
- Administration Console

For downloadable versions, visit:

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

BarTender Help System

- [Automating with BarTender](#)
- [Reading Data from Databases](#)
- [Integration Builder](#)
- [Automation with BarTender XML Script](#)
- [Automation with ActiveX](#)

