

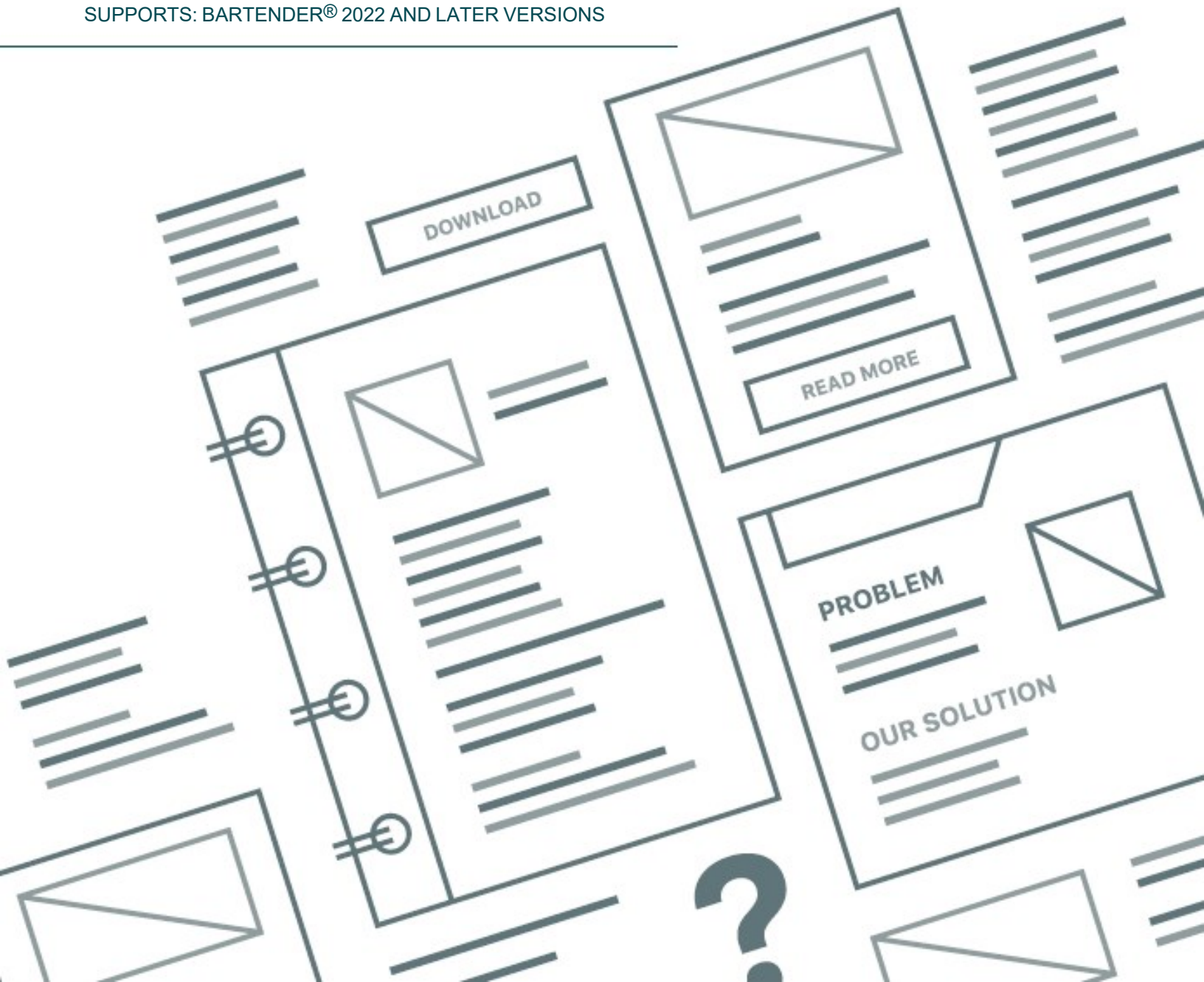
# BarTender Integration Methods

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INTEGRATING THE BARTENDER<sup>®</sup> PRINTING AND DESIGN  
FUNCTIONALITY WITH YOUR CUSTOM APPLICATION

SUPPORTS: BARTENDER<sup>®</sup> 2022 AND LATER VERSIONS

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## Overview

Enterprise-level printing is usually part of a larger process that involves additional software besides BarTender. Typically, software applications for manufacturing, inventory, shipping, accounting and various other supply-chain management functions depend on multiple applications to work together to make essential tracking and identification functions possible. For this reason, many systems integrators and consultants integrate Oracle, SAP and other enterprise resource planning (ERP) applications with label, barcode, RFID and card printing applications such as BarTender.

You can use the BarTender integration functionality to import data from external systems and allow other applications to use BarTender to print your BarTender documents. In this kind of scenario, BarTender functions as the print engine that sends documents to the printer.

## Integrating with External Data

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

### Importing Data into BarTender

BarTender can read data from many popular database platforms. Integration with these platforms requires no additional programming or custom processing. Supported database engines include the following:

- Embedded data tables
- Delimited text files
- XML files
- BarTender Data Builder databases
- Microsoft Excel
- Excel Online
- Microsoft Access
- Microsoft SQL Server
- Oracle
- JSON
- Firebird
- IBM DB2
- IBM Informix
- Google Sheets
- Microsoft Azure SQL
- MySQL
- MariaDB
- PostGRE SQL
- QuickBooks Online
- SAP IDocs
- OLE DB Connection
- ODBC Connection

For more information about supported database types, refer to [Supported Database Types](#) in the BarTender help system.

Sometimes your external database is stored in a proprietary format (that is not supported by OLE DB or ODBC) or is located somewhere on your network that BarTender cannot detect. In these cases, you can either write a way to read and use the data in your custom application or use the built-in transforms that Integration Builder provides to use predefined formats, including the following:

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

## Preferred Integration Methods

We recommend that you use the following integration methods. They were developed by using the newest technologies to provide our customers with the best possible integration solutions. These methods are fully supported by Seagull Scientific technical support and continue to be updated with each new release.

### BarTender REST API



Automation of BarTender by using the BarTender REST API should be performed by programmers who are familiar with REST APIs.

The BarTender REST API provides REST endpoints that you can use to automate your system on a non-Windows platform or across the network by using the YAML or JSON file format or an existing legacy BTXML script. By using the BarTender REST API, you can use most types of programming languages, including C#, Java, Perl, or Python, and most integrated development environments (IDEs) to create your automation scripts.

BarTender provides complete documentation for the API endpoints together with examples of scripts in YAML, JSON, and BTXML formats. You can view this documentation after you install BarTender by using ReDoc, which is included in the BarTender installation file. The BarTender REST API uses the POST, GET, and PATCH commands.

For more information, refer to [Using the BarTender REST API](#) in the BarTender help system.

### BarTender Integration Builder

BarTender Integration Builder provides a native integration solution that combines two user applications (Integration Builder and Administration Console) with two Windows-based services (BarTender Integration Service and BarTender Print Scheduler Service) to ensure that your printing operation runs smoothly at all times. By using these components, you can perform enterprise-level tasks, including the following:

- Start a print job automatically when trigger events occur, such as when an email message arrives, a file is saved or a database is modified.
- Connect to and communicate with clients via TCP/IP, UDP or HTTP.
- Perform basic file operations, such as move, rename, delete or copy.
- Integrate directly with ERP systems by using the support for SAP, Oracle or IBM WebSphere connectivity that BarTender provides.

#### Integration Builder

Integration Builder makes it easy to create your own integration files. An *integration file* is a proprietary XML document that defines one or more integrations. Each integration consists of a trigger event and one or more actions. (To monitor for more than one trigger event, you create a separate integration for each event.)

You can also use Integration Builder to edit and test the integration files and deploy them to the Integration Service. After you deploy the integration file, the Integration Service begins to monitor for the trigger events that you specified.

### **Administration Console**

You can use the **Integrations** section of Administration Console to deploy and monitor integrations that are running on a server. At any time, you can monitor the integration's logged messages as the Integration Service detects the trigger event and runs its actions.

Use the **Windows Services** section of Administration Console to start and stop the BarTender Integration Service and the BarTender Print Scheduler Service.

### **BarTender Integration Service**

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

The action that the Integration Service might process can be as simple as sending a print command for a BarTender document to the Print Scheduler Service. However, many more (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 that are already running.

### **BarTender Print Scheduler Service**

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

- Jobs that are printed to a specific printer 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 are bound to a single print engine to ensure that they are printed in the correct order.

### **BarTender .NET SDK**

The BarTender .NET software development kit (SDK) include libraries of pre-written and debugged source code that controls BarTender behavior, such as loading BarTender documents and starting print jobs. You can use either C# or VB.NET to seamlessly integrate BarTender functionality into your applications without having to write from scratch the most commonly-needed routines for automated printing.



If you are using a .NET programming language, such as C# or VB.NET, we recommend that you use the BarTender .NET SDK instead of the ActiveX Automation interface. The BarTender .NET SDK can be faster and easier for .NET programmers to use, because it includes 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 application programming interfaces (APIs).

### **Librarian API**

Use the Librarian API to access the functionality of Librarian, which is a revision control system that is installed with the BarTender Suite. By using this API, you can do the following:

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

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

### **Print Scheduler API**

Use the Print Scheduler API to interact with the Print Scheduler Service and the BarTender automation system. The client contains the actions that print, export, and query documents and send BTXML scripts to be processed by BarTender. By using the client, you no longer need to create and run a task manager to submit automated tasks to BarTender. As long as the service is running, you can easily create actions and then run them by using their .NET code together with the standard "run and result" methodology.

To use the Print Scheduler API, you must have the Automation or Enterprise edition of BarTender installed.

### **System Database API**

The System Database API provides access to information that is stored in the BarTender System Database. By using this API, you can do the following:

- Connect to the 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 the Automation or Enterprise edition of BarTender installed.

## Print Engine API



This API has been superseded by newer technologies and should be used only for testing and backward compatibility.

This API provides a managed interoperability wrapper for the BarTender print engine. To use the Print Engine API, you must have the Automation or Enterprise edition of BarTender installed.

## Print Server API



This API has been superseded by newer technologies and should be used only for testing and backward compatibility.

This API provides scalable, task-based management of large or complex print jobs. To use the Print Server API, you must have the Automation or Enterprise edition of BarTender installed.

## BarTender XML (BTXML) Script

BarTender XML (BTXML) script is a pre-written XML schema that is installed with BarTender. You can use BTXML script to control BarTender and print jobs, and you can send BTXML script to your external software applications to run BarTender and print jobs.

An XML response is created after the script is run. For example, when you use BTXML script to print a document, you receive an XML response that gives you valuable information about the print job, the items that were printed, the printer that was used to complete the job, and the BarTender settings that were used during the print job. You can integrate this response with a custom application.

Most ERP software packages already have built-in standard functions for generating XML. This is one reason why using XML is so convenient for instructing applications to send commands to BarTender. One potential challenge, however, is that the default XML that is generated by this software may not be compatible with the BTXML format that BarTender uses. As an alternative to generating custom XML from your ERP application, you can generate your XML in its default format and then convert it to BTXML by using Integration Builder.

After you write your BTXML script, you can run it by using any of the other integration methods that this technical document describes.

### Example

The following sample code opens the Document1.btw document and then sends a print job that contains 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 Integration Methods

The integration methods that are described in this section are superseded by newer technologies. We recommend that you use these methods for backwards compatibility only.

### *Print Engine API*

Developers can use the Print Engine API to manage the BarTender print engines, automate printing, and quickly modify and print labels by using any .NET language. The Print Engine API uses managed .NET code to automate unmanaged BarTender functionality, which allows for superior resource management and extensibility over the BarTender ActiveX (COM) API. By using this API, you can do the following:

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

### *Print Server API*

Use the Print Server API to manage large or complex print jobs. This API provides scalability and task-based management for label printing. For example, to print a large number of labels requires you to manage multiple BarTender print engines. By using the Print Server API, you can start as many print engines as you need and add more engines as print demand increases. All that you need to do is submit print tasks to a task queue for processing.

### *Command-Line Interface*

Use the BarTender command-line interface to interact with a computer program by issuing commands to the program in the form of successive lines of command text. The interface provides a minimum set of capabilities for controlling BarTender so that you can run BarTender from within other programs or change the BarTender 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. It provides little additional control.

To use the command-line interface, you must have the Automation or Enterprise edition of BarTender installed.

#### **When to Use the Command-Line Interface**

The command-line interface can be useful in the following situations:

- You need to specify a text file for a print job, and you do not need to control other aspects of BarTender.
- You need to create a shortcut on your computer to open an instance of BarTender that has specific settings.

## ActiveX Automation

ActiveX Automation, also known as Common Object Model (COM), is a Microsoft standard for interaction among Windows programs. The support that BarTender provides for ActiveX Automation makes it possible for developers to enhance their Windows applications with code that instructs BarTender to automatically perform most of the data retrieval, data entry, and printing tasks that are available when BarTender is used as a stand-alone application.

Use the BarTender ActiveX Automation interface to control the BarTender server application by using 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 do the following:

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

To use ActiveX Automation, you must have the Automation or Enterprise edition of BarTender installed.



If you are using a .NET programming language, such as C# or VB.NET, we recommend that you use the BarTender .NET SDK instead of the ActiveX Automation interface. The SDK gives you pre-written procedures that access and control the ActiveX Automation functions for you. When you use the SDK, your programs still control BarTender by using ActiveX at a low level, but you significantly reduce the amount of programming and debugging that are required.

For more information, refer to the [BarTender .NET SDK](#) section of this technical document.

### When to Use ActiveX Automation

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

- Visual Basic, Visual Basic for Applications (VBA) and Visual Basic Script (VBScript)
- 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 Script 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 you use these languages.

## Using Printer Code Templates

A printer code template is a file that is 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 at the start and end of each line, and placeholders are added that are replaced at print time by actual data. 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

Implementing and using printer code templates requires specialized technical knowledge, but the basic process is straightforward, as follows:

1. Use BarTender to export your document to a printer code template.
2. Upload the printer code template 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.

### When to Use Printer Code Templates

Printer code templates can be useful in the following situations:

- **SAPscript-ITF Integrations:** You can "upload" a printer code template to an SAP system and 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:** Portable keypad devices include a portable keyboard, a small screen display, and a printer port. You can use such devices to download and store printer code templates. The devices can then prompt you for the data, merge it with the printer code template, and then output the printer code to the attached printer.
- **XML-enabled Printers:** Some thermal printers have an option to accept printer code templates. After you download a printer code template to the printer, you can send 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, you can embed a printer code template to take advantage of the convenience of Windows-based label and barcode design (although not Windows-based printing).

### Technical Challenges of Printer Code Templates

To create printer code templates, the Automation or Enterprise edition of BarTender must be installed. However, unlike in a conventional print job, when a printer code template is used, BarTender does not serve as the print engine for the print jobs. Therefore, BarTender cannot provide the variety of advanced printing features that Seagull Scientific has developed over many years.

Some of the technical and security challenges of printer code templates include the following:

- The user must have advanced printer coding knowledge.
- Multiple printer models are not supported.

- Changing graphics is not supported.
- Paragraph formatting is not supported.
- Variable font sizing options are not supported.

## Related Documentation

### Technical Documents

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

To view and download technical documents, visit:

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

### User Guides

- *Getting Started with BarTender*  
<https://support.seagullscientific.com/hc/en-us/articles/9926265797143-Getting-Started-with-BarTender-Software>

### BarTender Help System

- [Automating BarTender](#)
- [Using the BarTender REST API](#)
- [Integration Builder](#)
- [Using BarTender XML Script](#)
- [Using ActiveX](#)
- [Reading Data from Databases](#)
- [Supported Database Types](#)

### Other Resources

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

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