



White Paper

Integration Overview

Importing Data and Controlling BarTender
from Within Other Programs

Contents	2
Introduction.....	3
Selecting the Desired Label Data.....	3
Why you Usually Need to Query your Database	3
Understanding Internal vs. External Query Methods	4
BarTender Query of External Data.....	4
External Query with Data Export	4
Direct Connect to an External Query	5
Querying Inside of vs. Outside of BarTender	5
Data Import Methods.....	5
Importing Delimited Text.....	6
Importing Using OLE DB and ODBC	6
Importing Transactional Data from ERP Systems	6
Importing Using the .NET SDKs or ActiveX.....	7
Controlling BarTender	7
.NET SDKs or ActiveX Automation (COM).....	7
Command-Line Interface Control	8
Controlling BarTender with the Help of Commander™	9
How Commander Works	9
Handling Multiple, Overlapping Triggers.....	10
Commander Script	10
BarTender XML Script	10
Conclusion	11

Introduction

Label printing is usually part of a larger software process. For example, ERP, manufacturing, inventory, shipping, accounting, and various supply-chain applications typically depend on label printing to facilitate critical tracking and identification functions. Accordingly, BarTender's powerful label design and printing features are not limited to "stand-alone" operation. In fact, some of BarTender's most powerful capabilities are dedicated to integration with other software.

BarTender can integrate with other software in a number of different ways. This can be as simple as having BarTender read label data from an external database and as advanced as using our .NET SDKs to control BarTender from within other programs. You can even launch print jobs using files, emails, or data sent over a TCP/IP socket.

Experience has taught us that BarTender integration projects are most easily begun by selecting the best way to read your desired label data. After our discussion of data import issues, we consider the methods available for controlling BarTender from other software.

Selecting the Desired Label Data

When integrating BarTender with other software, the most fundamental goal is almost always to select data records from an external database and flow the data into BarTender for printing on labels. The two most fundamental issues are:

- How to choose which database records to print.
- How to get that label data into BarTender.

The process of choosing database records is called "querying," which we discuss here. In [*Data Import Methods*](#) below, we examine how to import label data.

Why you Usually Need to Query your Database

You will usually only want to import a subset of records from your database into BarTender. For example, your company may manufacture or inventory thousands of parts, but you may only need labels for those items that are shipping today or going into inventory today. This is just a very specific example, but it's easy to see that having BarTender read every single record in your database system is only useful if you want to print a label for every item. More typically, you will want to select just some of these records for printing labels.

Understanding Internal vs. External Query Methods

There are two general approaches to selecting which data records to print:

- BarTender Query of External Data
- External Query (with and without Data Export)

Let's compare these two methods.

BarTender Query of External Data

BarTender can connect directly to a wide variety of external databases and spreadsheets. BarTender even supports “joins” of multiple tables from multiple databases running on multiple operating system platforms. Query methods available in BarTender to select the desired records include:

- Simple search on a matching field value (such as date, part number, product class, etc.).
- Complex “Query by Example” (with multiple search fields “ANDed” and “ORed” together as desired).
- Custom SQL expression.
- Picklist.

With the first three methods, the values to search for in BarTender can be static, entered into a prompt dialog at print time, or supplied by an external program controlling BarTender. The “Picklist” method displays a list of data records and requires you to manually select (or “click” on) each one that you want to print. This last method is not typically used in integrations where other programs are controlling BarTender.

External Query with Data Export

If you don't query your data within BarTender, then you're obviously going to need to query it somewhere else. This is typically done using one of two approaches:

Data Reporting Tools Native to your Database System: The software system associated with your database will often include tools for extracting and exporting data. Your database system may also allow you to write scripts or even custom program modules for extracting data.

Third Party “Data Mining” Tools: Microsoft Access has a large variety of powerful query capabilities and supports a number of easy ways to give BarTender access to the desired label data. Other third party products are available with similar capabilities, but we have found Access to be a very good combination of power and ease of use.

Whichever approach you take to external data querying, you typically have to export or “dump” the query results to an “intermediate file” for later import by BarTender. (As

discussed under [Data Import Methods](#), BarTender can read your label data from a variety of text and database formats.)

Direct Connect to an External Query

Note that it is possible to perform a query outside of BarTender without creating an intermediate file. The most common method we have seen is to design a “select” query within Access that extracts the desired data from your database. Since Access presents the output of a select query as if it were a table, programs like BarTender can directly connect to the output of such a query just as if it were connecting to a table. Another “table-less” method is discussed in the section called [Importing Using the .NET SDKs or ActiveX](#) below.

Querying Inside of vs. Outside of BarTender

Obviously, if you perform your queries from within BarTender, Seagull tech support is in a much better position to help you if you encounter data mining challenges. Otherwise, there is nothing wrong with using external query tools. Because it’s difficult to say in advance which method will be faster, we recommend starting with the method with which you are most comfortable.

One key situation in which your choices narrow is when your database platform is not directly accessible from the Windows computer running BarTender. In this case, you would *have* to export your data to an intermediate format for subsequent use by BarTender. As discussed in [Controlling BarTender with the Help of Commander](#), the Commander utility included in the Enterprise Edition of BarTender can automatically launch BarTender label jobs when it detects the arrival such data.

Data Import Methods

Whether you query your label data from within BarTender or from an external package, data compatibility with BarTender is a major consideration.

Obviously, the less work you have to do to get your label data into a format readable by BarTender, the better. If your software system stores its data in one of the many data formats supported by BarTender, then BarTender can read your label data without any special programming or custom processing. However, sometimes your external database may be stored in a proprietary format (not supported by ODBC) or located somewhere on your network that BarTender cannot “see.” In this case, you *must* perform your query external to BarTender (see [External Query with Data Export](#)) and export your label data in an appropriate format and to a visible network location.

BarTender supports a variety of data sources, from simple text files to multiple databases running on multiple operating platforms. There are four basic data import options:

- Delimited Text
- OLE DB and ODBC (Provides access to Access, Excel, MS SQL Server, Oracle db, My SQL, and many others)
- Transactional Data from ERP Systems (Including SAP, and Oracle WMS and MSCA)
- .NET SDKs and ActiveX Automation (Includes XML)

Importing Delimited Text

BarTender can read a variety of delimited text formats including:

- Comma
- Quote and Comma (with variations)
- Tab
- Fixed Width
- Customized Delimitation

It is not typical to store your central database in such a format. However, when externally querying label data for subsequent import by a program like BarTender, it is very common to export that data to an “intermediate file” as delimited text.

Importing Using OLE DB and ODBC

BarTender can use OLE Database (OLE DB) and Open Database Connectivity (ODBC) to read label data directly from just about every major database platform. If the driver that you need does not already come with either BarTender or Windows, chances are very good that you can get it directly from the provider of your database platform.

Importing Transactional Data from ERP Systems

ERP systems often have a variety of ways to export data in a variety of intermediate formats for integration with other applications. BarTender has built-in functionality to handle many of these formats from Oracle and SAP applications include SAPScript, SAP IDocs, SAP AII XML, and Oracle XML print requests. For additional information, see the “XML Integration with Oracle’s WMA and MSCA” and “SAP Integration Methods” white papers on your BarTender CD or the Seagull Scientific website.

Importing Using the .NET SDKs or ActiveX

As will be discussed in [Controlling BarTender](#), the .NET SDKs and ActiveX Automation provide the ability to write code in your own application that launches and controls BarTender print jobs. In addition, they support commands that will let you assign values to named sub-strings in BarTender, thereby allowing you to populate a label with data for a print job. If multiple records of data are needed, then an entire record set can be submitted using BarTender XML Script. For additional information, see the “BarTender’s .NET SDKs” white paper, the “BarTender’s ActiveX Automation Interface” white paper, and the “Automating BarTender” topic in BarTender’s online help.

Controlling BarTender

Now that we’ve discussed querying databases and getting the data to BarTender, to complete an integration, we also need to select a method of controlling BarTender from within other software.

Depending on your needs and your database platform, you can use one of three methods to control BarTender:

- .NET SDKs or ActiveX Automation
- Command-Line Interface
- Commander™ Integration Utility

.NET SDKs or ActiveX Automation (COM)

The .NET SDKs are libraries of code that facilitate rapid development of applications in the .NET languages (like C# and VB.NET) that can control BarTender. ActiveX Automation (also known as COM) is a Microsoft standard for interaction between Windows programs. Both interfaces are supported by the Enterprise editions of BarTender. They are an ideal way to fully control BarTender from within other programs and are much more powerful than the “command-line interface” method described in the next section.

Programs using these interfaces do so by calling methods (functions) and reading and writing various properties (data values) in BarTender. For example, you can:

- Load BarTender
- Specify the number of copies per label
- Retrieve from BarTender information about:
 - Which label formats are loaded
 - Which databases have been selected
- Specify label format and external text file

- Specify multiple parts of a “joined” data source
- Set the values of Query Prompts
- Launch print jobs
- Close down BarTender

To use the .NET SDKs, you must be using a .NET language (either C# or VB.NET). To access BarTender’s Automation interface, you must use a programming or scripting environment that supports Automation. Most standard Windows development tools have this capability, including:

- Visual Basic, VBA (Visual Basic for Applications)
- VBScript
- Java Script (JScript)
- Visual C++ (and other versions of C for Windows)
- Power Builder
- Access, Word, Excel, or any application that supports VBA
- Delphi
- Windows Scripting Host (WSH)

For additional information, see the “BarTender’s .NET SDKs” white paper, the “BarTender’s ActiveX Automation Interface” white paper, and the “Automating BarTender” topic in BarTender’s online help.

Command-Line Interface Control

BarTender’s command-line interface provides a minimum set of capabilities for controlling BarTender. It is primarily suited for specifying a given label format and external text file for use in a print job, but does not provide much additional control. Here is a summary of differences in command line support within BarTender:

- **Basic Edition:** Not suited for integration.
- **Professional Edition:** Select and change the label format, specify the number of copies, and print.
- **Enterprise Editions:** In addition to everything the Professional Edition can do, Enterprise editions can also change the data source, printer, and print file name (if printing to a file instead of the printer).

To run BarTender using command lines, your application must provide a “run program” command function or menu option. Common names terms for this capability include Run, Runprogram, Execute, Shell, Command and Open. A common variation to this approach is to create a “Batch” file containing the desired BarTender command line and then have your

program run that batch file. An example of a BarTender command line you might execute from within a batch file is:

```
bartend.exe /AF=Address.btw /D=Customers.dat /P
```

For complete documentation of BarTender's command-line interface, see the "Automating BarTender, Automation with the Command Line Interface" topic in BarTender's help. The help file is installed with all editions of BarTender, including the Trial Edition (downloadable from www.seagullscientific.com).

Controlling BarTender with the Help of Commander™

The Commander utility that comes with the Enterpriser Edition of BarTender is a "background" application that can run as a service. Commander is commonly used in conjunction with large, non-Windows enterprise systems where directly controlling a Windows program (such as BarTender) might otherwise be difficult or impossible. In essence, Commander uses ActiveX Automation to control BarTender *for you*.

Commander can be particularly useful when:

- You don't know how to issue Command Lines or ActiveX Automation commands from your controlling program or environment (or it's not even possible).
- You don't have access to your other program's source code.
- You're working with a non-Windows platform such as Linux, UNIX, AIX or AS/400 and no means exists for directly transmitting the necessary command(s) to the Windows system running BarTender.
- Your controlling program is not on the same network as BarTender.

Real world examples include:

- Your controlling application is located in another country and transmits label data and print job requests over the internet by e-mail.
- You are using a mainframe or Linux application that simply doesn't have ActiveX command capabilities.

How Commander Works

Commander works by waiting for "triggers" from your other software applications. These can be "empty" files or messages, and therefore function as nothing more than a "wake up call." In this case, the label data to be printed would reside in a separate data file. Alternatively, the trigger file or message can contain the actual label data. Either way, when Commander detects a trigger event, it "wakes up" and performs a predefined action – usually launching a BarTender print job.

Commander has a menu-driven interface for predefining one or more “tasks.” Each task scans for a specific trigger source and then performs actions such as loading BarTender, specifying a label format and selecting a data source. A typical Commander trigger event processing sequence might be:

- An application needing to print labels creates a “trigger” text file in a location of your choosing on the network. (If the application did not include the label data in the trigger file, that data gets written to a separate file.)
- Commander senses the creation of the trigger file.
- Commander deletes or renames the trigger file.
- Commander launches a predefined BarTender print job, possibly choosing from multiple print job parameters depending on which one of multiple triggers was detected.
- BarTender executes the requested print job.

Handling Multiple, Overlapping Triggers

Because Commander deletes or renames the trigger before BarTender is done printing, Commander has features to prevent file conflicts when you have programs that generate multiple “overlapping” print jobs before BarTender is done with the previous job. The easiest method is to “serialize” the trigger file. For example, your trigger files could have names like Trigger001, Trigger002, Trigger003, etc. Commander fully supports “wild card” file name characters and expressions (for example, “*” and “?”), which makes scanning for a range of trigger file names about as easy as scanning for a single trigger file. (See Commander’s help system for complete documentation on the use and features of Commander.)

Commander Script

A Commander script is a set of written instructions that Commander can read and execute. Applications can include different Commander script commands inside of different triggers, thereby issuing different instructions to Commander depending on the actions desired. Commander Scripts are capable of controlling BarTender behavior, as well as running other applications using command line parameters.

BarTender XML Script

BarTender XML Script is an XML format that can be used to control BarTender. Applications can include BarTender XML Script in triggers to get BarTender to perform the desired actions. In addition, the print job status can be returned to the calling application.

For more information, see the “Commander” white paper, the “Commander Examples” white paper, and Commander’s online help system.

Conclusion

There is often more than one way to integrate BarTender with your existing software. The best way will depend not just on the capabilities of your software, but on the integration methods you prefer to use. Fortunately, BarTender's versatile data import capabilities and powerful support for control by external programs provide you with all the tools you need to ensure a successful, painless integration.

Available Seagull White Papers

General White Papers

- The Advantage of Drivers by Seagull
- Choosing the Right BarTender Edition
- Label System Security

Companion Applications

- Printer Maestro, Part 1: Enterprise Print Management
- BarTender Security Center
- BarTender Web Print Server

Recent Upgrades

- What's New in the Latest BarTender

Integration White Papers

- Integration Overview
- Commander
- Commander Examples
- BarTender's .NET SDKs
- BarTender's ActiveX Automation Interface
- Exporting Printer Code Templates
- Using BarTender with Terminal Services and Citrix MetaFrame
- XML Integration with Oracle's WMS and MSCA

Integration With SAP

- SAP Integration Methods
- Reading SAP IDocs
- SAP Auto Infrastructure Integration with BarTender

Miscellaneous White Papers

- BarTender Enterprise Licensing
- Printing International Characters Using BarTender
- BarTender Software Activation
- Using BarTender's Application Identifier Wizard
- Optimizing Label Printing Performance
- Status Monitor Overview
- Silent Install

For downloadable versions, visit:

www.seagullscientific.com/asp/whitepapers.aspx

