



White Paper

# Integration Overview

Importing Data and Controlling BarTender  
from Within Other Programs



# Integration Overview

## Topics:

### 1.0) Introduction

### 2.0) Selecting the Desired Label Data

- 2.1) *Why you Usually Need To Query your Database*
- 2.2) *Understanding Internal vs. External Query Methods*
- 2.3) *BarTender Query of External Data*
- 2.4) *External Query with Data Export*
  - 2.4.1) *Direct Connect to an External Query*
- 2.5) *Querying Inside of vs. Outside of BarTender*

### 3.0) Data Import Methods

- 3.1) *Importing Delimited Text*
- 3.2) *Importing Using ODBC*
- 3.3) *Importing from SAP*
- 3.4) *Importing Using ActiveX Automation (or "COM")*

### 4.0) Controlling BarTender

- 4.1) *ActiveX Automation*
- 4.2) *Command-Line Interface*
- 4.3) *Controlling BarTender with the Help of Commander*
- 4.4) *How Commander Works*
  - 4.4.1) *Handling Multiple, Overlapping Triggers*
  - 4.4.2) *Commander Script*

### 5.0) Conclusion

## 1) 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 controlling BarTender using ActiveX from within other programs. You can even launch and control print jobs from thousands of miles away using e-mail.

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.

## 2) 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:

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

The process of choosing database records is called "querying," which we discuss here. In Chapter 3, we examine how to import label data.

### 2.1) 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.

### 2.2) 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.

### 2.3) 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.

### 2.4) 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 in Chapter 3, BarTender can read your label data from a variety of text and database formats.)

#### 2.4.1) 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 Microsoft ODBC allows Access to present 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 “Data Import using ActiveX Automation” in Chapter 3.

### 2.5) 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 file or e-mail for subsequent migration to a network location visible to BarTender. As discussed in a subsequent chapter, the Commander utility included in the Enterprise Edition of BarTender can automatically launch BarTender label jobs when it detects the arrival such text files and e-mails.

## 3) 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 previous chapter) 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
- ODBC (Open Database Connectivity)
- SAP R/3 IDoc
- ActiveX Automation (COM)

#### 3.1) 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.

### 3.2) Importing Using ODBC

BarTender can use open database connectivity (ODBC) to read label data directly from just about every major database platform. As previously discussed, you can have BarTender join multiple tables and perform a query, or you can query the data externally and create an “intermediate file” to be read by BarTender. That intermediate file may take the form of one of the above-mentioned text files or be in one of many ODBC-compliant database formats.

A partial list of database platforms supported by ODBC drivers is available in the Features list sections of Seagull’s BarTender brochure and a similar section on Seagull’s web page. However, almost all database platforms have ODBC drivers. Accordingly, 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.

### 3.3 Importing from SAP

When integrating BarTender with SAP R/3, or the mySAP Business Suite, you have two options:

**SAPScript:** You can use SAPScript to generate a fixed width text file containing the desired label data.

**SAP IDocs:** We were fortunate to be contacted directly by SAP in support of our constructing a direct data interface to SAP IDoc files. SAP felt strongly that this approach had key advantages over other methods of SAP integration. We agreed and cooperatively developed our IDoc interface with their support. Using Application Link Enabling (ALE) in SAP, you can specify which transactions cause the IDoc files to be generated and what data to transfer using the IDocs.

Integrations with BarTender based on either of these options can be made complete by configuring the Commander utility in the Enterprise Edition of BarTender to be automatically triggered by the creation of SAPScript’s text file or ALE’s IDoc file. Commander can then automatically launch BarTender print jobs. (For more details on Commander, see sections 4.3 – 4.4.)

For a more detailed white paper on importing data from SAP, see “Understanding How BarTender Reads SAP R/3 Intermediate Documents” on your BarTender CD or the Seagull Scientific web site.

### 3.4) Importing Using ActiveX Automation (or “COM”)

As will be discussed in Chapter 4, ActiveX Automation is an integration command language ideally suited for launching and controlling BarTender print jobs. In addition, BarTender supports some ActiveX commands that allow you to actually *modify* certain characteristics of BarTender label formats. This capability can be used to directly write label data into existing BarTender label formats.

BarTender allows for label objects to have “Screen Data” values associated with them. These “fixed” (or “static”) data fields can serve as default label data for on-screen display during label design, as well as your actual label data if you don’t have BarTender set up to read from a database. Furthermore, BarTender allows you to name these Screen Data fields so you can reference them from within a program. Specifically, by executing ActiveX Automation commands from an external program, you can write new data values into the “Named Sub-Strings” in a BarTender label design. (See BarTender’s help system for more details.)

Although this data integration method is somewhat less frequently used with BarTender than the previously discussed methods, we note that it allows for data import without creation of an intermediate file or the execution of a query within BarTender. With data integration based on Named Sub-strings, the controlling program writes data directly into BarTender one label image at a time, most likely initiating a separate “mini” print job for each label. Despite the somewhat increased technical challenge, some developers prefer this more directly-connected approach to the import of data from their programs into BarTender.

## 4) 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:

- ActiveX Automation
- Command-Line Interface
- Commander™ Integration Utility

### 4.1) ActiveX Automation (COM)

ActiveX Automation (also known as COM) is a Microsoft standard for interaction between Windows programs. Supported by the Enterprise edition of BarTender, ActiveX is an ideal way to fully control BarTender from within other programs. Among the many ways in which ActiveX provides better control than the “command-line interface” method described in the next section, ActiveX allows programs to read some details about the BarTender label format that is in use and then make certain changes to that format.

Programs using ActiveX to interface with BarTender do so by calling methods (functions) and reading and writing various properties (data values) in BarTender. Using ActiveX Automation to control BarTender, 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 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 more details, see “Automating BarTender, ActiveX Automation” in BarTender’s help.*

#### 4.2) 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 and data source.
- **Enterprise Edition:** Select and change the label format, data source, printer and print file name (if printing to a file instead of the printer).

The Professional and Enterprise editions both allow:

- Loading and closing down BarTender
- Specifying the number of copies per label
- Specifying the label format and external text file

- Launching print jobs

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, Command-Line Parameters” topic in BarTender’s help. The help file is installed with all editions of BarTender, including the Trial Edition (downloadable from [www.seagullscientific.com](http://www.seagullscientific.com)).

#### 4.3) Controlling BarTender with the Help of Commander™

The Commander utility that comes with the Enterpriser Edition of BarTender is a “background” application that supports all versions of Windows. On the more advanced versions of Windows (NT, 2000, and XP), it can also 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. Commander can also accept label data by e-mail and launch BarTender print jobs in response. 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.

#### 4.4) How Commander Works

Commander works by waiting for data file or e-mail “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.

#### 4.4.1) *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 scanning for a single trigger file. (See Commander’s help system for complete documentation on the use and features of Commander.)

#### 4.4.2) *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.

For a more detailed white paper on Controlling BarTender, see “Automated BarTender Control from Other Applications” on your BarTender CD or the Seagull Scientific web site.

For a more detailed white paper on Commander, see “Commander - Enterprise Integration Utility” on your BarTender CD or the Seagull Scientific web site.

## 5) *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 Topics

- The Advantage of Drivers by Seagull
- Choosing the Right BarTender Edition
- What's New in the Latest BarTender

### Integration

- Integration Overview
- Getting Started with ActiveX Automation Using C#
- Getting Started with ActiveX Automation Using VB.NET
- Getting Started with ActiveX Automation Using VB6
- Commander
- Commander Examples
- Exporting Printer Code Templates
- Using BarTender with Terminal Services and Citrix MetaFrame

### Integration with SAP

- SAP Integration Methods
- Reading SAP IDocs

### Miscellaneous Topics

- BarTender Enterprise Licensing
- Printing Foreign Text Using BarTender
- Encoding RFID Tags
- BarTender Software Activation
- Using BarTender's Application Identifier Wizard
- Optimizing Label Printing Performance

For downloadable versions, visit:

[www.seagullscientific.com/asp/whitepapers.aspx](http://www.seagullscientific.com/asp/whitepapers.aspx)