



Integrating with BarTender Integration Builder

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Overview

Using BarTender, you can implement a sophisticated printing system that integrates directly with a wide variety of business systems, including SAP and Oracle.

With BarTender Integration Builder, you can create highly customizable integrations that let you seamlessly connect BarTender's printing capabilities with virtually any enterprise business operation. An *integration* defines an event that can be monitored by the BarTender Integration Service and, when detected, prompts specified actions to be executed by the service.

Using integrations, you can import data from external systems and run tasks automatically without ever needing to open BarTender or any other application.

BarTender's native integration platform consists of two user applications (Administration Console and Integration Builder) that operate alongside two Windows services (BarTender Integration Service and BarTender Print Scheduler Service), ensuring that your printing operation runs smoothly at all times. This flexible and powerful platform lets you perform enterprise-level tasks, such as:

- Initiate printing automatically at "trigger" events, such as the arrival of an email, a saved file or a modified database.
- 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 with direct support for SAP, Oracle or IBM WebSphere connectivity.

For example, suppose your enterprise resource planning (ERP) system routinely drops a data file to a specific network folder location or to a cloud data store. Using Integration Builder, you can create an integration that monitors the location where the file is regularly dropped and, when a new file is dropped there, automatically performs one or more actions that you have specified. Actions may include data transformation, document printing and email generation, as well as many others.

All print jobs resulting from an integration are sent to the printers via the Print Scheduler Service. This Windows service intelligently assigns jobs to print engines to maximize performance while maintaining print order and any required serialization.

Understanding BarTender's Native Integration Platform

There are many ways that you can integrate BarTender with other business systems. The Automation editions of BarTender come installed with two tools that help you create, configure, deploy and manage your integrations:

- [Integration Builder](#)
- [Administration Console](#)

Additionally, behind the scenes, there are two Windows services that execute your integrations and automate your enterprise environment:

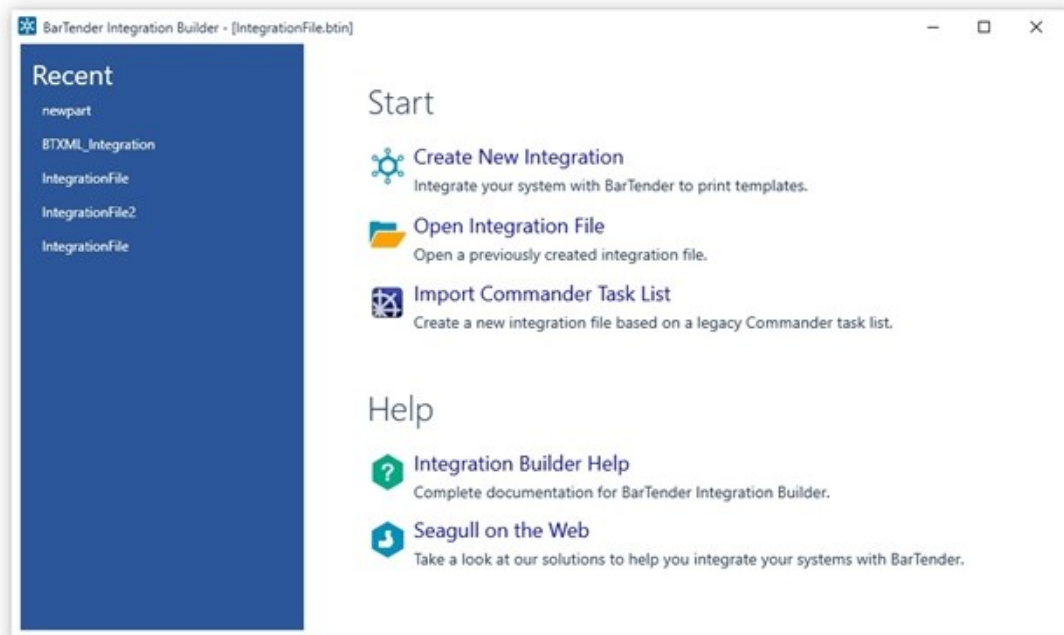
- [BarTender Integration Service](#)
- [BarTender Print Scheduler Service](#)

We describe these services in this white paper so you can better understand how BarTender executes integrations and ensures that your printing operation runs seamlessly at all times; however, you should never have to directly interface with either of these services.

Integration Builder

BarTender Integration Builder makes it easy to create your own integration files. 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.

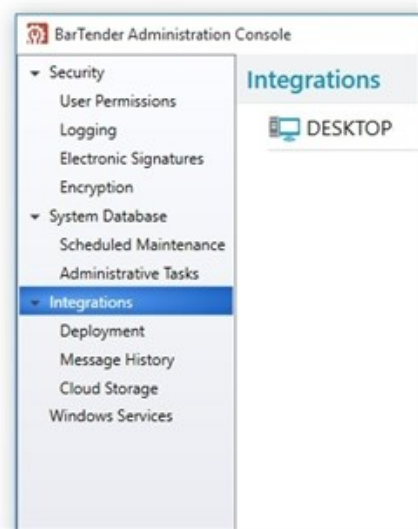
The simplest action the Integration Service might process is to simply send a print command for a BarTender document to the BarTender Print Scheduler Service, but as listed in [Appendix B](#), many additional (and more complex) actions are supported.

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 and any serialization. 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 that they print in the correct order.



Building Integrations

BarTender Integration Builder allows you to create an integration file consisting of one or more highly configurable integrations. Each integration in the integration file consists of:

- An "event" or "trigger" that the Integration Service will detect.
- One or more "actions" that the Integration Service executes when the integration trigger is detected.

A simple integration in an integration file can look like this:

- **Trigger:** A new file is created.
- **Actions:** Print a BarTender document with data contained in the file, then send a "Print Complete" message to the message log.

In this case, each time a new file is saved in a monitored directory, a BarTender document automatically prints and a message is logged on the computer. With a single integration such as this, a company implements a basic auditing mechanism alongside their automatic printing operation.

For more information on how to build an integration file, refer to the [Integration Builder](#) section of the BarTender help system.

Integrations

An *integration* is the event (or trigger) that the Integration Service waits for so that it can respond by running the specified actions. An integration can specify only a single trigger for the Integration Service to monitor.

An integration can be empty, containing no data or information. For example, you can set an empty data file to drop into a specific location, where its presence (not its content) directs the Integration Service to begin executing the specified action(s).

Alternatively, an integration can also contain data that the Integration Service reads and acts on. For example, an integration containing print-time data will not only trigger the printing event, but the data it contains will be sent along with the print command, so it can be read into the document and printed. These integrations can also contain Print Command Script or BarTender XML Script (BTXML) for execution by BarTender, or variables that can specify certain values at the time the action executes.

For a complete list of available integrations, refer to [Appendix A](#).

Actions

While each integration can specify only a single event to be monitored, it can specify multiple actions in response to the monitored event. In addition to actions that print BarTender documents, including printing BarTender batch files and sending BTXML Scripts or Print Command Scripts, Integration Builder offers an array of actions to meet your needs. You may need to transform data, perhaps from XML to XSLT or from SAP All to BTXML, send a message to a message log, or create a While Loop that continues to perform a set of actions until a specified condition is met. Integration Builder actions support these requirements and may more.

For a complete list of available actions, refer to [Appendix B](#).

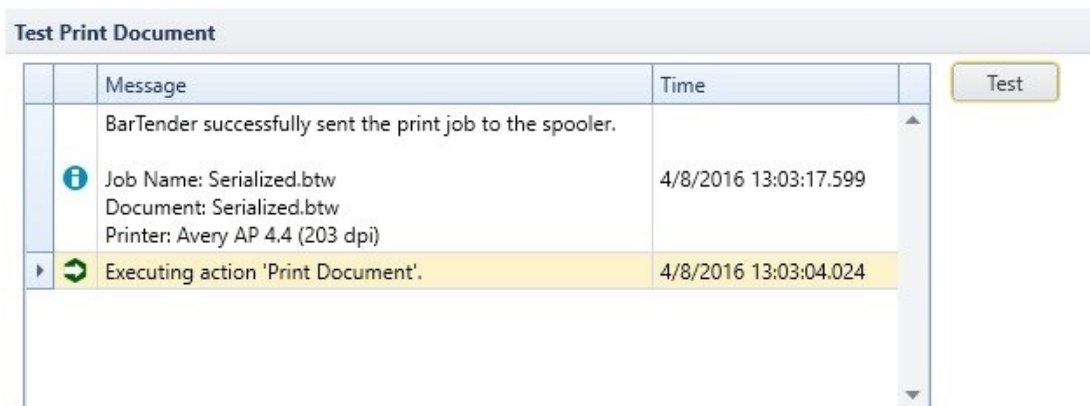
Testing Integrations

Before using your integration in a live environment, you will want make sure that it is working as designed. Integration Builder supports testing each integration method that is part of the integration, and even testing each individual action that is run by each of the integration methods.

Note: The BarTender System Service must be running so you can receive any messages that result from the test.


Testing Actions

After you have configured an action for an integration method, you can test the action directly from its property page in Integration Builder.



Message	Time
BarTender successfully sent the print job to the spooler.	4/8/2016 13:03:17.599
Job Name: Serialized.btw Document: Serialized.btw Printer: Avery AP 4.4 (203 dpi)	4/8/2016 13:03:17.599
Executing action 'Print Document'.	4/8/2016 13:03:04.024

Testing Integration Methods

To test a selected integration method, simply click  **Test Integration** in the Integration Builder toolbar to open the **Test** tab for the integration method. Click the **Start** button to allow the Integration Service to begin monitoring for the integration trigger event. Once you create the trigger event, the **Integration** pane and **Actions** pane display a summary of the test results.

The **Output** pane lists the errors, warnings, and messages related to the integration and its actions. If the integration or any of the actions fail, you can review these messages to determine the cause.

Test

Each Part Start Stop

Status: **Waiting For Events** Run Time: **1.1 Days**
 Event Occurrences: 3 Last Executed Event: **8/4/2016 1:32:40 PM**
 Last Started: **8/4/2016 1:25:09 PM** Number of Failures: **1** ...
 Integration Type: **File Integration**

Actions

Name	Status	Last Error Message
Print Document	●	
Copy File	●	Failed to copy 'C:\IB_WP_Examples\Example1...

.....

Output


Errors Warnings Messages Events
Search Message (Ctrl+F or F3) ...

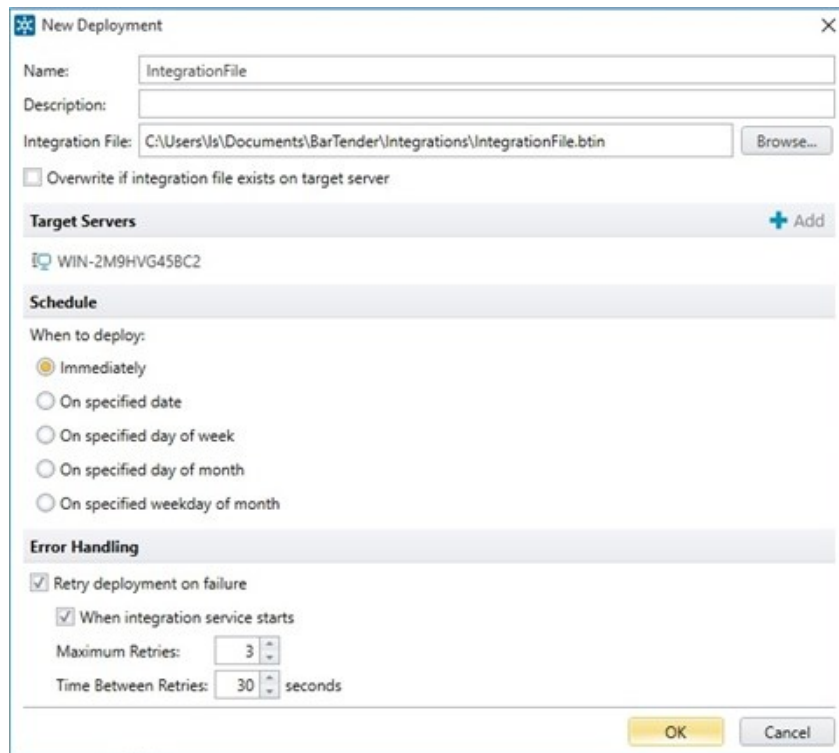
Message
✖ The input data file 'part.txt' was not processed because one or more actions failed to run. Review all integration actio
✖ Failed to copy 'C:\IB_WP_Examples\Example1\part.txt' to 'C:\IB_WP_Examples\Example1\Archive\old_part(5).txt'. Deta
➡ Executing action 'Copy File'.
ℹ BarTender successfully sent the print job to the spooler.
➡ Executing action 'Print Document'.
⚙ Executing integration 'Each Part'.

Once the integration has passed testing, it is ready to be deployed.

Deploying Integrations

Once your integration has been tested, it is ready to be deployed, which simply means that it is saved to a server location where it is available to the BarTender Integration Service.

To deploy your integration file, just click  **Deploy Integration** in the Integration Builder toolbar. This will open the **New Deployment** dialog, where you can specify the deployment options for your integration file.



New Deployment

Name: IntegrationFile

Description:

Integration File: C:\Users\js\Documents\BarTender\Integrations\IntegrationFile.btin Browse...

Overwrite if integration file exists on target server

Target Servers + Add

WIN-2M9HVG45BC2

Schedule

When to deploy:

Immediately

On specified date

On specified day of week

On specified day of month

On specified weekday of month

Error Handling

Retry deployment on failure

When integration service starts

Maximum Retries: 3

Time Between Retries: 30 seconds

OK Cancel

When you fill out the **New Deployment** dialog and click **OK**, your deployment specifications are saved and the integration file is then deployed to the selected server according to the schedule you specified on the dialog.

Appendix A: Available Integrations

The following integration types are available in Integration Builder:

Integration	Description
File	The Integration Service monitors a specified file system or location for a new file to arrive. Locations that can be monitored include local file systems or network shares, Librarian, or supported cloud storage locations.
Web Service	The Integration Service monitors for a REST web request to arrive.
Database	The Integration Service monitors for a database change. The service polls the specified database at timed intervals and when a new record is detected, extracts that data and uses it to print a job.
Email	The Integration Service runs the specified action(s) when an email is received.
Network Socket	The Integration Service monitors for TCP/UDP IP socket data to arrive.
Serial Port	The Integration Service monitors for serial port data to arrive.
Message Queue	The Integration Service monitors for a windows message queue (MSMQ) message to arrive.
Time Schedule	Integrations that run on a specific time schedule, or at an interval (for example, every 5 minutes). Useful for running periodic scripts.

Appendix B: Available Actions

Actions available in Integration Builder include:

Print Actions

Action	Description
Print Document	Allows you to specify a BarTender document that you want to print each time the integration runs.
Print BTXML Script	Allows you to send BarTender XML Script to BarTender for processing the code and completing the tasks that the code defines.
Print Batch	Allows you to send BarTender XML batch script to BarTender for processing the code and completing the tasks that the code defines.
Print Command Script	Parses and runs a Print Command Script, which is a set of written instructions that the Integration Service can read and execute.

Transform Actions

Action	Description
Search and Replace	Searches for text or characters in a specified source and replaces it with the provided content.
Search and Insert Before	Searches for text or characters in a specified source and inserts the provided content directly before it.
Search and Insert After	Searches for text or characters in a specified source and inserts the provided content directly after it.
Search and Delete	Searches for and deletes text or characters in a specified source.
Search and Delete Everything Before	Searches for text or characters in a specified source and deletes all the data before the found string.
Search and Delete Everything After	Searches for text or characters in a specified source and deletes all the data after the found string.
Insert Before Start of Source Text	Opens a specified source and inserts the provided text or characters at the beginning of the source text.
Insert After End of Source Text	Opens a specified source and inserts the provided text or characters at the end of the source text.
Transform Text to Record Set	Transforms a source of text into a record set defined by a sample text database and saves that record set as a variable that can be used by subsequent actions.
Transform XML using XSLT	Uses an XSLT stylesheet to transform another application's output XML from its original XML format into another XML format. The reformatted XML is then placed into an output variable.
Oracle WMS and MSCA Print Request to BTXML	Transforms Oracle WMS and MSCA print requests into BarTender XML (BTXML).

SAP All to BTXML	Transforms a SAP All data packet into BarTender XML (BTXML).
BTXML Print Response to IBM WebSphere Sensor Events	Transforms the print result of a BTXML script into the format that an IBM WebSphere Sensor Event web server can accept. The result is saved in a variable that can subsequently be uploaded by a Send Web Service Request action.
IBM WebSphere Sensor Events to BTXML	Transforms the sensor event's generated XML print request into BarTender XML (BTXML).
IBM WebSphere Sensor Events to BTXML with Print Status	For use with a sensor event that specifies a bidirectional printing interface so that once the job is complete, the job status can be reported back to the calling application. It transforms the sensor event's generated XML print request into BarTender XML (BTXML).

Input Actions

Action	Description
Read from Serial Port	Directs the Integration Service to read from a serial port for incoming data.
Read from Network Socket	Directs the Integration Service to read from a serial port for incoming data.
Read File	Directs the Integration Service to read from a serial port for incoming data.
Wait for File	Directs the Integration Service to look in a specified folder for a defined file type. When the file is detected, the action completes and allows subsequent actions to run.

Output Actions

Action	Description
Send Web Service Request	Directs the Integration Service to send an HTTP request to a web service (REST or SOAP).
Send Email	Sends an email to the email account(s) that you specify.
Send to Network Socket	Allows you to send BarTender XML batch script to BarTender for processing the code and completing the tasks that the code defines.
Send to Serial Port	Writes data to a serial port.
Send to Message Queue	Writes a message to the Microsoft Message Queue (MSMQ).
Write File	Writes a data string to a file.
Write Message to Log	Sends information to the message log.

Execute Actions

Action	Description
Group	Allows you to specify a sub-group of actions for an integration. The actions within the group may be executed repeatedly in sequence, or in parallel.
While Loop	Allows you to specify an action or group of actions that the Integration Service will continue to execute sequentially as long as the specified condition continues to be satisfied.
For Loop	Allows you to specify an action or group of actions that the Integration Service will continue to execute sequentially until a specified value is reached by either incrementing or decrementing an assigned variable value with each loop iteration.
Select Case	Allows you to specify an action or group of actions that the Integration Service will continue to execute sequentially until a specified value is reached by either incrementing or decrementing an assigned variable value with each loop iteration.
Go To	Instructs the Integration Service to jump to one of the following locations: <ul style="list-style-type: none"> ○ Any designated action within the integration, whether it is in the same action group or not. ○ To the next iteration of a While Loop or For Loop action. ○ To the end of the current action group. Any actions following the group are then executed.
For Each Database Record	Executes a database query and executes actions for each record.
Stop	Stops all actions for the integration in which it is running. It does not stop the actions running under any other integration within the integration file.

Shell Command	Runs a shell command that can be used to execute operating system commands or third-party utilities.
Power Shell Command	Runs a Power Shell command.
Print BTXML Script	Allows you to send BarTender XML Script to BarTender for processing the code and completing the tasks that the code defines.
Wait	Waits for a specified time period to elapse before completing, which can allow a desired pause in sequential actions.
Wait for File	Directs the Integration Service to look in a specified folder for a defined file type. When the file is detected, the action completes and allows subsequent actions to run.
Set Variable	Sets the value for either an existing variable or a new variable that you specify.
Set Multiple Variables	Sets the values of one or more variables, including existing variables or new variables that you specify.
Increment Variable	Allows you to specify a variable whose value you want to increment each time the action is executed.
Decrement Variable	Allows you to specify a variable whose value you want to decrement each time the action is executed.
Print Command Script	Parses and runs a Print Command Script, which is a set of written instructions that the Integration Service can read and execute.
BarTender Command Line	Executes a BarTender command line print job using the command line interface.

File Actions

Action	Description
Read File	Directs the Integration Service to look in a specified folder for a defined file type, and then read the data contained in that file and save it to a variable.
Write File	Writes a data string to a file.
Copy File	Copies a file from one location to another.
Delete File	Deletes a file.
Move File	Moves a file from one location to another.
Rename File	Renames a file.
Create Folder	Creates a folder.

Database Actions

Action	Description
For Each Database Record	Executes a database query and execute actions for each record.
Transform Text to Record Set	Transforms a source of text into a record set defined by a sample text database and saves that record set as a variable that can be used by subsequent actions.

Appendix C: Transition from Commander

BarTender's native integration solution is a new set of utilities and services that completely replaces the Commander companion application. It has expanded capabilities for communicating with your company's software applications and increased printing efficiency. For more information, refer to the [Transitioning from Commander to Integration Builder](#) white paper.

Related Documentation

White Papers and Manuals

- [BarTender Integration Methods](#)
- [Transitioning from Commander to Integration Builder](#)
- [Administration Console](#)

For downloadable versions, visit:

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

BarTender Help System

- [Integration Builder](#)
- [Administration Console: Integrations](#)

