

# XML Toolkit

V2.0 Documentation



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## Overview

Ever needed the ability to create XML on-the-fly with Switch metadata? Join multiple XML files together into a single XML file? Convert an XML file into a CSV or Excel file? Or, perhaps, you're familiar with other similar automation software like Switch that has similar functionality. This is the answer.

**XML Toolkit** is a collection of apps (or tools) to create, manipulate, and convert XML documents for ease of use within Switch Flows. They were also designed to work together to provide more benefit than just utilizing them separately.

If there is functionality you believe is missing or have an idea on how to expand the current functionality, please reach out to us by sending us an email with the subject prefix "*XML Toolkit Functionality*".

### Simple Use-Cases

- Create an XML/JDF file to send for output to another application or RIP.
- Edit existing XML by adding new information to the file before saving out to a job folder.
- Split on multi-item jobs to send through Switch individually.

### Multi-App Use-Cases

- Create a CSV of batched incoming jobs by using the **Create XML** app to create the individual XML's, **Join XML** app to join these files together, and **Convert From XML** app to make a CSV document.

## About Significans Automation



Significans Automation is a software integrator specializing in delivering next-generation automation to the Printing and Packaging industry.

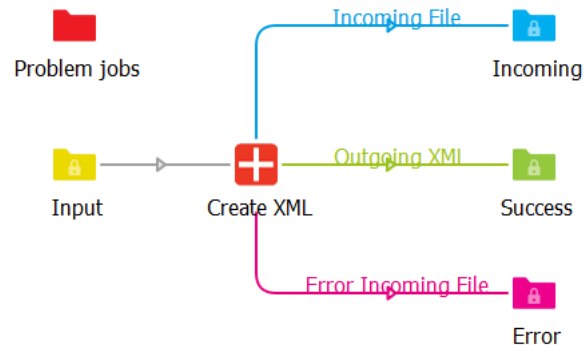
We offer programming and expertise in custom workflow development, deployment of communication and project management systems, color management, and end-to-end business integration. While upholding software neutrality, Significans Automation advises and tailors best in class software to optimally fit the environment.

The level of sophistication that is provided increases profitability, improved quality control, and enhanced production efficiency, enabling Artificial Intelligence and Robotics, while also facilitating new revenue opportunities in e-commerce. We are driven by the conviction that customized automation is the only path forward.

## Create XML

### Description

**Create XML** files with basic syntax validation and variable encoding for correct XML output. Switch metadata fields can be used to create complex structures, including the use of script expressions (with the Scripting Module). This app can also allow you to create simple (non-XML based) text documents for other purposes.



### Compatibility

Switch 2022 Spring and higher. Windows and Mac OSX

### Incoming Connections

At least one incoming connection required.

### Outgoing Connections

At least one outgoing connection required.

- **Move on:** Determining the output type of the job. Either Success or Error.
  - **Outgoing:** What is this connection sending out? Either Incoming or Outgoing. This is only applicable if Move On is "Success".
    - **Attach as dataset:** Option to, on output, save the file as a dataset to itself for later use. Either Yes or No.
      - **Name:** Name of the dataset during creation.
    - **Save private data:** Records results action. Results will be as follows: CreateXML.[Structure/Encoding/Validate/Variables].
    - **Outgoing name:** Name to be used when saving the file on output. Options are to use the Outgoing Connection name, the Job name, or a custom name.
      - **Name:** The custom name to use when the parent property is set to "Custom".

## Flow Element Properties

- Encoding: Select the encoding of the outgoing file. Important for cases where the following operations require a specific encoding. The following options are available `ascii`, `latin1`, `utf8`, and `utf16le`.
- Variables: Built in way to substitute Switch Data or external data sources with custom variables. Variables are entered ***one*** per line with an equal's sign to separate the key and the value. Similar to how Private Data Keys are established. E.g. `ordernumber=123456`
- Encode Variables: If variables exist, decide to encode special XML Characters to their appropriate escape sequence.
- Structure: XML Structure to be created in the outgoing file.
- Validate XML: Validate the XML syntax and structure for errors or problems. *Note: This is a simple validation and will not catch all possible scenarios.*

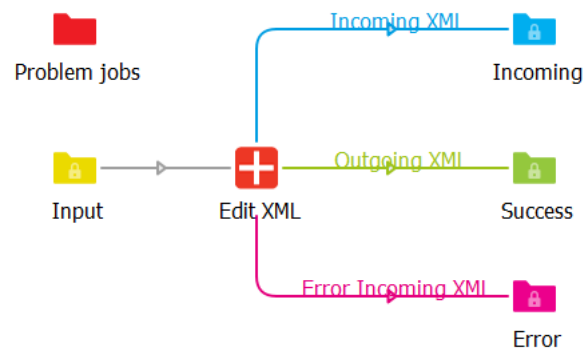
## Edit XML

### Description

**Edit XML** documents using a find-and-replace method, like the Rename job action available in Switch. Each action can build on the previous, by adding new elements/nodes, attributes, comments, or removing node structures entirely.



*Version 2 now supports XPath 2.0 functions!*



### Compatibility

Switch 2022 Spring and higher. Windows and Mac OSX

### Incoming Connections

At least one incoming connection required.

### Outgoing Connections

At least one outgoing connection required.

- **Move on:** Determining the output type of the job. Either Success or Error.
  - **Outgoing:** What is this connection sending out? Either Incoming or Outgoing. This is only applicable if Move On is "Success".
    - **Attach as dataset:** Option to, on output, save the file as a dataset to itself for later use. Either Yes or No.
      - **Name:** Name of the dataset during creation.
    - **Save private data:** Records results of Actions 1-10 via private data key. Results will be as follows: EditXML.Action[1-10].[Type/NodeType/XPath/Found/Result].
    - **Outgoing name:** Name to be used when saving the file on output. Options are to use the Outgoing Connection name, the Job name, or a custom name.
      - **XPath:** XPath 1.0 Expression. E.g. splitting on `/order/items` - with Keep context "No" – any expression would be from `/items` and onward.

- Name: The custom name to use when the parent option is set to “Custom”.

## Flow Element Properties

- Action on: What is this element processing? Will we be taking the incoming file and actioning based on this? Or an attached Dataset?
  - Dataset: If Dataset, a name is required. The dataset type (XML, JSON, Opaque) does not matter in this case.
- Encoding: Select the Encoding of the Incoming File we are actioning on (or dataset). This is important for files that have been saved in a non UTF-8 Encoding.
- XPath version: The version to be utilized when running expressions on the following actions. Version 2 supports a variety of Functions, Operators, and Conditions – whereas Version 1 does not.
- Action (1-10): Type of action to take on the incoming data, below are the list of combinations:
  - **Select - *Not available for Action #10***
    - XPath: XPath 1.0 or 2.0 Expression to select the Node to insert something into.
 

*Note: This function is unique in that it stores the xpath expression result in memory for following “Insert” actions to utilize.*
  - **Insert**
    - XPath: XPath 1.0 or 2.0 Expression to select the Node to insert something into.
    - Type: The Node Type to be Inserted.
      - Name: Name of the Element/Attribute/Processing Instruction to be inserted.
    - Value: The value to insert (can leave this as None to exclude a value).
      - Trim whitespace: Remove excess spaces at the beginning or end of the value specified.

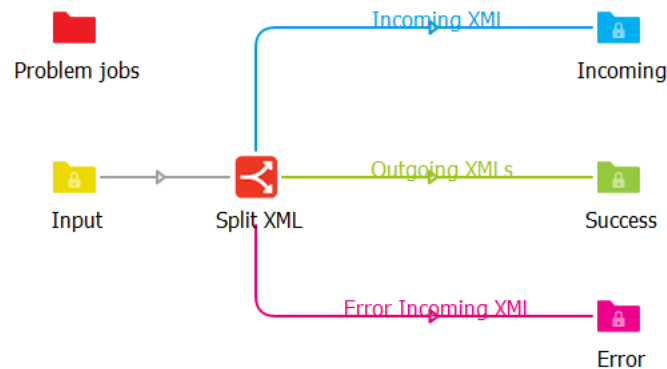
*Note: Value is not utilized if Type is set to “Variable”.*
  - **Update**
    - XPath: XPath 1.0 or 2.0 Expression to select the Node to update.
    - Type: The Node Type to be Searched/Updated.
      - Name: Name of the Attribute to be modified (if Attribute Name/Value is selected).
    - Value: The value to Update (can leave this as None to exclude a value).
      - Trim whitespace: Remove excess spaces at the beginning or end of the value specified.
  - **Delete**
    - XPath: XPath 1.0 or 2.0 Expression to select the Node to delete/remove.



## Split XML

### Description

**Split XML** documents into multiple by a common element. Useful for cases where a singular file contains more than one ‘thing’, you need to take action on. For example, a web-2-print solution sends a single xml file with multiple ordered items. Splitting on this document allows you to send multiple out.



### Compatibility

Switch 2022 Spring and higher. Windows and Mac OSX

### Incoming Connections

At least one incoming connection required.

### Outgoing Connections

At least one outgoing connection required.

- **Move on:** Determining the output type of the job. Either Success or Error.
  - **Outgoing:** What is this connection sending out? Either Incoming or Outgoing. This is only applicable if Move On is “Success”.
    - **Save in folder?:** Saving the split documents inside of a folder on output. Great for maintaining like-items together.
      - **Folder name type:** If parent property is set to yes, specify the name of the folder on output.
        - **Name:** If parent property is custom, specify a name.
      - **Attach as dataset:** If parent property is set to no, option to, on output, save the file as a dataset to itself for later use. Either Yes or No.
        - **Name:** Name of the dataset during creation.

- Indexed: Show the interaction of 'found' split items. E.g., Item\_1, Item\_2, Item\_3, etc.
  - Index separator: Specify the separator character that will be used between the name and the padded value. Default is an underscore.
  - Pad: For sorting capabilities, indicate whether to pad the index value. Great for cases where you have more than 10.
    - Length: When padding, enter the number of characters to pad the outgoing filename. E.g. A pad of "2" will add a character in front of numbers ranging from 1-9. Anything beyond "9" is now two characters in length and the padding will be ignored.
    - String: When padding, specify a prefix string/character to use to prefix the outgoing filename.
- Outgoing name: Name to be used when saving the file on output. Options are to use the Outgoing Connection name, the Job name, or a custom name.
  - XPath: XPath 1.0 Expression. When writing this XPath, keep in mind that the xpath would be after the resulting split action. E.g. splitting on */order/items* - with Keep context "No" – any expression would be from */items* and onward.
  - Name: The custom name to use when the parent option is set to "Custom".
- Save private data: Records results action. Results will be as follows: SplitXML.[Count/JobName/XPath].

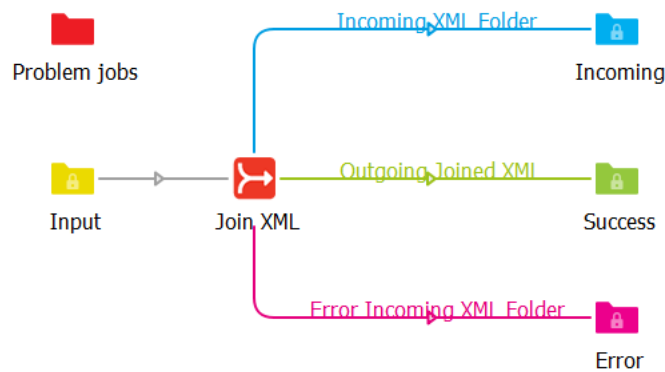
## Flow Element Properties

- Action on: What is this element processing? Will we be taking the incoming file and actioning based on this? Or an attached Dataset?
  - Dataset: If Dataset, a name is required. The dataset type (XML, JSON, Opaque) does not matter in this case.
- Encoding: Select the Encoding of the Incoming File we are actioning on (or dataset). This is important for files that have been saved in a non UTF-8 Encoding.
- XPath: XPath 1.0 Expression to find nodes to split on. E.g., */order/items*
- Keep context: When splitting on complex structures, sometimes it's important to keep the parent level data. Enabling this will include all parent data, but exclude any siblings found.
- Declaration: Add custom declaration.
  - Version: Specifies the version of the XML standard used. Denoted in X.X fashion. E.g., 1.0, 2.0, 3.0.
  - Encoding: It defines the character encoding used in the document. UTF-8 is the default encoding used.
  - Standalone: It informs the parser whether the document relies on the information from an external source, such as external document type definition (DTD), for its content. The default value is set to no. Setting it to yes tells the processor there are no external declarations required for parsing the document.

## Join XML

### Description

**Join XML** documents together from an XPath expression. Merging these documents eliminates the need to keep track of separate documents all together, or to create complex XML structures with ease.



### Compatibility

Switch 2022 Spring and higher. Windows and Mac OSX

### Incoming Connections

At least one incoming connection required.

### Outgoing Connections

At least one outgoing connection required.

- **Move on:** Determining the output type of the job. Either Success or Error.
  - **Outgoing:** What is this connection sending out? Either Incoming or Outgoing. This is only applicable if Move On is "Success".
    - **Attach as dataset:** Option to, on output, save the file as a dataset to itself for later use. Either Yes or No.
      - **Name:** Name of the dataset during creation.
    - **Save private data:** Records results action. Results will be as follows: JoinXML.[XPath/Root/Encoding/Declaration]
    - **Outgoing name:** Name to be used when saving the file on output. Options are to use the Outgoing Connection name, the Job name, or a custom name.
      - **XPath:** XPath 1.0 Expression. E.g. splitting on `/order/items` - with Keep context "No" – any expression would be from `/items` and onward.

- Name: The custom name to use when the parent option is set to "Custom".

### Flow Element Properties

- Encoding: Select the Encoding of the Incoming/Outgoing File we are actioning on (or dataset). This is important for files that have been saved in a non UTF-8 Encoding.
- XPath: XPath 1.0 Expression to find common node elements to merge into a singular file.
- Root element name: Enter an XML-Safe name for the root of these combined elements.
- Add custom declaration: Add custom declaration
  - Version: Specifies the version of the XML standard used. Denoted in X.X fashion. E.g., 1.0, 2.0, 3.0.
  - Encoding: It defines the character encoding used in the document. UTF-8 is the default encoding used.
  - Standalone: It informs the parser whether the document relies on the information from an external source, such as external document type definition (DTD), for its content. The default value is set to no. Setting it to yes tells the processor there are no external declarations required for parsing the document.
- Validate XML structure: If Yes, will validate that the XML is valid, otherwise the process will error out. This is a very limited validation process and will not catch every possible scenario.

## Convert From XML

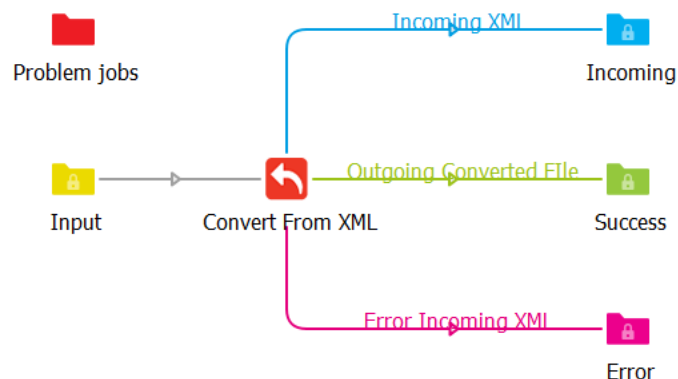
### Description

**Convert From XML** allows you to convert your incoming document to one of several formats.

Below are a list of what is available:



- JSON
- Excel 2007+ XML Format
- Excel 2007+ Macro XML Format
- Excel 2007+ Binary Format
- Excel 97-2004 Workbook Format
- Excel 2.0 - Excel 5.0/95 Workbook Format
- Excel 2003-2004 (Spreadsheet ML)
- Numbers 3.0+ Spreadsheet
- OpenDocument Spreadsheet
- Flat OpenDocument Spreadsheet
- Lotus Workbook (WK3)
- Lotus Worksheet (WK1)
- Lotus Formatted Text
- Comma Separated Values
- UTF-16 Unicode Text (TXT)
- Symbolic Link (SYLK)
- HTML Document
- Data Interchange Format (DIF)
- dBASE II + VFP Extensions (DBF)
- Rich Text Format (RTF)
- Ethercalc Record Format (ETH)



### Compatibility

Switch 2022 Spring and higher. Windows and Mac OSX

## Incoming Connections

At least one incoming connection required.

## Outgoing Connections

At least one outgoing connection required.

- **Move on:** Determining the output type of the job. Either Success or Error.
  - **Outgoing:** What is this connection sending out? Either Incoming or Outgoing. This is only applicable if Move On is “Success”.
    - **Attach as dataset:** Option to, on output, save the file as a dataset to itself for later use. Either Yes or No.
      - **Name:** Name of the dataset during creation.
    - **Save private data:** Records results action. Results will be as follows: ConvertFromXML.[Convert/Type/Rows]. Type and Rows are exclusive to the spreadsheet option.
    - **Outgoing name:** Name to be used when saving the file on output. Options are to use the Outgoing Connection name, the Job name, or a custom name.
      - **Name:** The custom name to use when the parent option is set to “Custom”.

## Flow Element Properties

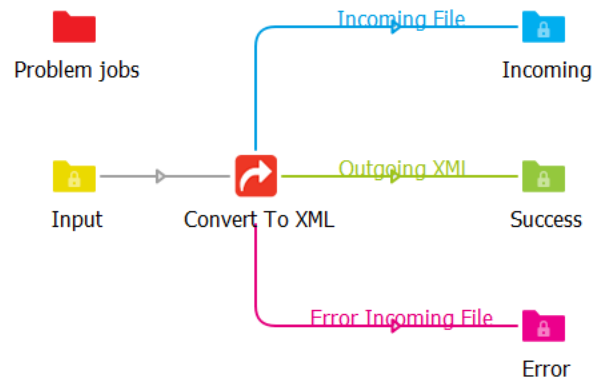
- **Action on:** What is this element processing? Will we be taking the incoming file and actioning based on this? Or an attached Dataset?
  - **Dataset:** If Dataset, a name is required. The dataset type (XML, JSON, Opaque) does not matter in this case.
- **Encoding:** Select the Encoding of the Incoming File we are actioning on (or dataset). This is important for files that have been saved in a non UTF-8 Encoding.
- **Convert:** What format will the XML file be converted to? Below will be broken down by the respective “types”:
  - **JSON**
    - Include declaration: If visible in the XML document, include it.
    - Trim: Trim excess whitespace from the values inside the document.
    - Compact: How detailed do you want the JSON data to be on output?
    - Indentation: Indicate the indentation of the Pretty Printed file on output.
      - # of spaces: Numerical value, default is 4.
    - Advanced features: Enables advanced features, otherwise leave alone.
      - Elements key: Specify the custom name to use.
      - Attributes key: Specify the custom name to use.
      - Type key: Specify the custom name to use.
      - Name key: Specify the custom name to use.

- Text key: Specify the custom name to use.
- Make element name uppercase: Will convert the values to be all uppercase.
- Make attribute name uppercase: Will convert the values to be all uppercase.
- Custom text function: Enables custom handling of text data.
  - Function: Enter JavaScript Code for the app to evaluate and utilize.
- **Spreadsheet**
  - Root XPath: XPath 1.0 Expression. Determine where in the XML document to convert the file into a Spreadsheet compatible file.
  - Clean data: Cleans up incoming data and removes any invalid values.
  - Type: Specify the Spreadsheet type to convert to.
    - Sheet name: The name to set the sheet created on output.
    - Compression: Compress the file to make the overall file size smaller. Meant for large data structures.
    - Properties:
      - Title: Standard Property value for
      - Subject: Standard Property Value
      - Author: Standard Property Value
      - Manager: Standard Property Value
      - Company: Standard Property Value
      - Category: Standard Property Value
      - Keywords: Standard Property Value
      - Comments: Standard Property Value
      - Last author: Standard Property Value
      - Custom properties: Utilize Custom Properties for this Spreadsheet.
        - Properties: Enter the custom properties one per line with a "=" separating the key and value.

## Convert To XML

### Description

**Convert to XML** from incoming JSON or Excel Spreadsheet document. Outputting a proper XML document that can be attached as a dataset to be utilized in Switch.



### Compatibility

Switch 2022 Spring and higher. Windows and Mac OSX

### Incoming Connections

At least one incoming connection required.

### Outgoing Connections

At least one outgoing connection required.

- **Move on:** Determining the output type of the job. Either Success or Error.
  - **Outgoing:** What is this connection sending out? Either Incoming or Outgoing. This is only applicable if Move On is "Success".
    - **Attach as dataset:** Option to, on output, save the file as a dataset to itself for later use. Either Yes or No.
      - **Name:** Name of the dataset during creation.
    - **Save private data:** Results will be as follows: ConvertToXML.[Convert]
    - **Outgoing name:** Name to be used when saving the file on output. Options are to use the Outgoing Connection name, the Job name, or a custom name.
      - **Name:** The custom name to use when the parent option is set to "Custom".



## Flow Element Properties

- Action on: What is this element processing? Will we be taking the incoming file and actioning based on this? Or an attached Dataset?
  - Dataset: If Dataset, a name is required. The dataset type (XML, JSON, Opaque) does not matter in this case.
- Outgoing XML encoding: Select the Encoding of the Outgoing File.
- Convert: What format will the XML file be converted to? Below will be broken down by the respective “types”:
  - **JSON**
    - Encoding: Encoding type to assist in reading the JSON Document.
    - Spaces: Number of Spaces for indentation of XML.
  - **Spreadsheet**
    - Root: XML Top-Level Node Name
    - Row: XML Per Row XML Node Name
    - Cell: XML Per Cell in Row XML Node Name
      - Use cell value?: Use the Cell Value where possible/if valid XML Encoding?
    - Name: Sheet Name to Search
    - Password: Does the Spreadsheet have a password that needs to be entered to modify said spreadsheet?