CTX-Excel
User Guide

Contents

Versions

Document Revisions

The following revisions have been made to this document

Date	Revision	Notes
29/10/2021	1.0	First Release

Module Versions

The following revisions have been made to this document

Module Version	Release Date	Comments
1.0	29/10/2021	Creation of: PEPR-Process-Excel-PowerShell-Response Import-Excel Export-Excel Set-ExcelRange ConvertFrom-ExcelToSQLInsert Send-SQLDataToExcel Get-ExcelSheetInfo Get-ExcelWorkbookInfo ConvertFrom-ExcelSheet

Preface

About this Manual

This document is a user guide for the CTX-Excel module.

Audience

The audience for this document is those wanting to understand how to configure and use CTX-Excel module.

Related Material

Document
CTX-Excel – Deployment Plan
CTX-Excel.studiopkg

Abbreviations used in this Document

DB   Database

JSON   JavaScript Object Notation

OCI   Orchestration Communication Interface

DBMS   Database Management Studio

Requirements

The CTX-Excel module requires the following:

- Minimum Cortex v7.1 installed on the Cortex Application Server

- Cortex PowerShell OCI

- PowerShell v5.0 or later installed on the same server as the Cortex PowerShell OCI

◇ Microsoft Excel is NOT a requirement

Integration

Integration with Third-Party Systems

To use this module, the PowerShell module ImportExcel needs to be installed on the same server as the Cortex PowerShell Agent. This is what is consumed in order to interact with .xlsx files.

Full instructions on how to install this are included in CTX-Excel - Deployment Plan

Integration with Existing Infrastructure

To use the subtask named Send-SQLDataToExcel, Cortex must be able to communicate with the database that is defined in the i_DB-Server and i_DB-Name input parameters.

1 Excel Module Overview

The CTX-Excel module consists of a library of subtasks for interacting with .xslx files, whether Microsoft Excel is installed on the machine or not.

It offers the following functionality:

1. Read from file

2. Write to file

3. Format file contents

4. Create SQL insert statements from file content

5. Write data to file from a SQL statement

6. Retrieve information about file

7. Convert file to a csv

2   Excel Module Subtasks

2.1   PEPR-Process-Excel-PowerShell-Response

2.1.1   Overview

Handles the various variable types returned by the ImportExcel PowerShell module and formats them into a standard form for flows to make use of. This subtask is used by the other CTX-Excel Subtasks and is not intended for use elsewhere.

2.1.2   Input variables

Variable	Type	Required	Description
PEPR_i_Response	Structure	Yes	The raw response from PowerShell that the Cortex PowerShell block returns to the flow.

2.1.3   Output variables

Variable	Type	Description
PEPR_o_Result	Structure	The formatted response.

2.2 Import-Excel

2.2.1 Overview

Creates custom object from the rows in an Excel worksheet

2.2.2 Input variables

Variable	Type	Required	Description

i_credentials	Structure	Yes	The credentials used by the Execute PowerShell Script block to run the script as the specified user. The structure provided must be of the following format:
			
			`{`
			`  "domain":"<example-domain>",`
			`  "username":"<example-username>",`
			`  "password":"<example-password>"`
			`}`

i_dataOnly	Boolean	No	If true, import only rows and columns that contain data, empty rows and empty columns are not imported.
i_endColumn	Text	No	By default, the import reads up to the last populated column. If specified, import stops at this column. "1" for column A, "2" for column B, etc
i_endRow	Text	No	By default, all rows up to the last cell in the sheet will be imported. If specified, import stops at this row.
i_noHeader	Boolean	Yes	If set to True, automatically generate property names (P1, P2, P3, ..) instead of the ones defined in the column headers of the TopRow. This switch is best used when you want to import the complete worksheet 'as is' and are not concerned with the property names.
i_password	Text	No	Accepts a string that will be used to open a password protected Excel file. No effect if the file is not password protected
i_path	Text	Yes	Specifies the path to the Excel file.

i_powerShellAgentDetails	Structure	No	The Host and Port used by the Execute PowerShell Script block to run the script from the specified agent. The structure provided must be of the following format:
			
			`{`
			`  "host": "<example-host>",`
			`  "port": <example-port>`
			`}`

i_runAsAdmin	Text	No	If true, the PowerShell command will check if it is running as administrator.
i_startColumn	Text	No	The number of the first column to read data from. "1" for column A, "2" for column B, etc
i_startRow	Text	No	The row from where we start to import data, all rows above the StartRow are disregarded. By default, this is the first row. When the parameters 'i_NoHeader' and 'i_HeaderName' are not provided, this row will contain the column headers that will be used as property names. If either is provided, the property names are automatically created, and this row will be treated as a regular row containing data.
i_worksheetName	Text	No	Specifies the name of the worksheet in the Excel workbook to import. By default, if no name is provided, the first worksheet will be imported.

2.2.3   Output variables

Variable	Type	Description

o_result	Structure	The output variable containing the call response of the following format:
		
		`{`
		`  "RESULT": [],`
		`  "EXCEPTIONS": []`
		`}`

2.3 Export-Excel

2.3.1 Overview

Exports data to an Excel worksheet.

2.3.2 Input variables

Variable	Type	Required	Description
i_append	Boolean	Yes	If true, data will be added to the end of an existing sheet, using the same column headings. The default behaviour is to overwrite cells in this sheet as needed (but leaving non-overwritten ones in place)
i_clearSheet	Boolean	No	If specified Export-Excel will remove any existing worksheet with the selected name. The default behaviour is to overwrite cells in this sheet as needed (but leaving non-overwritten ones in place).

i_credentials	Structure	Yes	The credentials used by the Execute PowerShell Script block to run the script as the specified user. The structure provided must be of the following format:
			
			`{`
			`  "domain":"<example-domain>",`
			`  "username":"<example-username>",`
			`  "password":"<example-password>"`
			`}`

i_excludeProperty	Text	No	This should be a comma delimited string. Specifies properties which may exist in the target data but should not be placed on the worksheet.
i_inputObject	Text	Yes	JSON data to be exported
i_noHeader	Boolean	Yes	If true, field names should not be put at the top of columns.
i_numberformat	Text	No	Formats all values that can be converted to a number to the format specified. For example: '0' integer (not really needed unless you need to round numbers, Excel will use default cell properties). '#' integer without displaying the number 0 in the cell. '0.0' number with 1 decimal place. '0.00' number with 2 decimal places.

			'#,##0.00' number with 2 decimal places and thousand-separator.
			'?#,##0.00' number with 2 decimal places and thousand-separator and money-symbol.
			'0%' number with 2 decimal places and thousand-separator and money-symbol.
			'[Blue]$#,##0.00;[Red]-$#,##0.00' blue for positive numbers and red for negative numbers; Both proceeded by a '$' sign
i_password	Text	No	Accepts a string that will be used to open a password protected Excel file.
i_path	Text	Yes	Specifies the path to the Excel file.

i_powerShellAgentDetails	Structure	No	The Host and Port used by the Execute PowerShell Script block to run the script from the specified agent. The structure provided must be of the following format:
			
			`{`
			`  "host": "<example-host>",`
			`  "port": <example-port>`
			`}`

i_runAsAdmin	Boolean	No	If true, the PowerShell command will check if it is running as administrator.
i_startColumn	Text	No	Column to start adding data - 1 by default.
i_startRow	Text	No	Row to start adding data. 1 by default. Row 1 will contain the title, if any is specified. Then headers will appear (Unless -No header is specified) then the data appears.
i_worksheetName	Text	No	Specifies the name of the worksheet in the Excel workbook to import. By default, if no name is provided, the first worksheet will be imported.

2.3.3   Output variables

Variable	Type	Description

o_result	Structure	The output variable containing the call response of the following format:
		
		`{`
		`  "RESULT": [],`
		`  "EXCEPTIONS": []`
		`}`

2.4 Set-ExcelRange

2.4.1 Overview

Applies number, font, alignment and/or colour formatting, values, or formulas to a range of Excel cells.

2.4.2 Input variables

Variable	Type	Required	Description
i_autoSize	Boolean	No	Autofit cells to width (columns or ranges only).
i_backgroundColor	Text	No	Change background colour
i_bold	Boolean	No	Makes text bold. Use false to remove bold.

i_credentials	Structure	Yes	The credentials used by the Execute PowerShell Script block to run the script as the specified user. The structure provided must be of the following format:
			
			{
			  "domain":"\<example-domain>",
			  "username":"\<example-username>",
			  "password":"\<example-password>"
			}

i_fontColor	Text	No	Colour for the text - if none is specified, it will be left as it is.
i_fontName	Text	No	Font to use - Excel defaults to Calibri.
i_fontShift	Text	No	Subscript or Superscript (or none).
i_fontSize	Text	No	Point size for the text.
i_formula	Text	No	Formula for the cell.
i_height	Text	No	Set cells to a fixed height (rows or ranges only).
i_horizontalAlignment	Text	No	Position cell contents to Left, Right, Centre etc. default is 'General'.
i_italic	Boolean	No	Makes text italic. Use false to remove italic.
i_merge	Boolean	No	Merges cells - it is recommended that you explicitly set i_HorizontalAlignment
i_numberformat	Text	No	Formats all values that can be converted to a number to the format specified. For example: '0' integer (not really needed unless you need to round numbers, Excel will use default cell properties). '#' integer without displaying the number 0 in the cell. '0.0' number with 1 decimal place.

			'0.00' number with 2 decimal places.
			'#,##0.00' number with 2 decimal places and thousand-separator.
			'?#,##0.00' number with 2 decimal places and thousand-separator and money-symbol.
			'0%' number with 2 decimal places and thousand-separator and money-symbol.
			'[Blue]$#,##0.00;[Red]-$#,##0.00' blue for positive numbers and red for negative numbers; Both proceeded by a '$' sign
i_password	Text	No	Accepts a string that will be used to open a password protected Excel file.
i_path	Text	Yes	Specifies the path to the Excel file.

i_powerShellAgentDetails	Structure	No	Structure. The Host and Port used by the Execute PowerShell Script block to run the script from the specified agent. The structure provided must be of the following format:
			
			`{`
			` "host": "<example-host>",`
			` "port": <example-port>`
			`}`

i_range	Text	Yes	One or more row(s), Column(s) and/or block(s) of cells to format. E.g. "A1:F10", "B:B", "1,1"
i_resetFont	Boolean	No	Clear Bold, Italic, StrikeThrough and Underline and set color to Black.
i_runAsAdmin	Boolean	No	If true, the PowerShell command will check if it is running as administrator.
i_strikeThru	Boolean	No	Strike through text. Use false to remove strike through
i_textRotation	Text	No	Degrees to rotate text; up to +90 for anti-clockwise ("upwards"), or to -90 for clockwise.
i_underline	Boolean	No	Underline the text. Use false to remove underlining.
i_value	Text	No	Value for the cell.
i_verticalAlignment	Text	No	Position cell contents to Top, Bottom or Centre.
i_width	Text	No	Set cells to a fixed width (columns or ranges only), ignored if Autosize is specified.
i_worksheetName	Text	No	Specifies the name of the worksheet in the Excel workbook to import. By default, if no name is provided, the first worksheet will be imported.

| i_wrapText | Boolean | No | Turn on Text-Wrapping. Use false to turn off wrapping. |

2.4.3   Output variables

Variable	Type	Description

o_result	Structure	The output variable containing the call response of the following format:
		
		`{`
		`  "RESULT": [],`
		`  "EXCEPTIONS": []`
		`}`

2.5 ConvertFrom-ExcelToSQLInsert

2.5.1 Overview

Generate SQL insert statements from Excel spreadsheet.

2.5.2 Input variables

Variable	Type	Required	Description
i_convertEmptyStringsToNull	Boolean	Yes	If specified, cells without any data are replaced with NULL, instead of an empty string. This is to address behaviours in certain DBMS where an empty string is inserted as a 0 for an integer column, instead of a NULL value.

i_credentials	Structure	Yes	The credentials used by the Execute PowerShell Script block to run the script as the specified user. The structure provided must be of the following format:
			
			`{`
			`  "domain":"<example-domain>",`
			`  "username":"<example-username>",`
			`  "password":"<example-password>"`
			`}`

i_dataOnly	Boolean	No	IF true, import only rows and columns that contain data. Empty rows and empty columns are not imported.
i_header	Text	No	Specifies custom property names to use instead of the values defined in the column headers of the TopRow. If you provide fewer header names than there is data in the worksheet, then only the data with a corresponding header name will be imported and the data without header name will be disregarded. If you provide more header names than there is data in the worksheet, then all data will be imported and all objects will have all the property names you defined in the header names. As such, the last properties will be blank as there is no data for them.
i_noHeader	Boolean	Yes	Specifies that field names should not be put at the top of columns.
i_numberformat	Text	No	Formats all values that can be converted to a number to the format specified. For example:

			'0' integer (not really needed unless you need to round numbers, Excel will use default cell properties).
			'#' integer without displaying the number 0 in the cell.
			'0.0' number with 1 decimal place.
			'0.00' number with 2 decimal places.
			'#,##0.00' number with 2 decimal places and thousand-separator.
			'?#,##0.00' number with 2 decimal places and thousand-separator and money-symbol.
			'0%' number with 2 decimal places and thousand-separator and money-symbol.
			'[Blue]$#,##0.00;[Red]-$#,##0.00' blue for positive numbers and red for negative numbers; Both proceeded by a '$' sign
i_password	Text	No	Accepts a string that will be used to open a password protected Excel file.
i_path	Text	Yes	Specifies the path to the Excel file.

i_powerShellAgentDetails	Structure	No	Structure. The Host and Port used by the Execute PowerShell Script block to run the script from the specified agent. The structure provided must be of the following format:
			
			`{`
			`  "host": "<example-host>",`
			`  "port": <example-port>`
			`}`

i_runAsAdmin	Boolean	No	If true, the PowerShell command will check if it is running as administrator.
i_startColumn	Text	No	Column to start adding data - 1 by default.
i_startRow	Text	No	Row to start adding data. 1 by default. Row 1 will contain the title, if any is specified. Then headers will appear (Unless -No header is specified) then the data appears.
i_worksheetName	Text	No	Specifies the name of the worksheet in the Excel workbook to import. By default, if no name is provided, the first worksheet will be imported.

2.5.3   Output variables

Variable	Type	Description

o_result	Structure	The output variable containing the call response of the following format:
		
		``
		{
		 "RESULT": [],
		 "EXCEPTIONS": []
		}
		``

2.6 Send-SQLDataToExcel

2.6.1 Overview

Inserts a DataTable - returned by a SQL query - into an ExcelSheet

2.6.2 Input variables

Variable	Type	Required	Description
i_append	Boolean	Yes	If specified data will be added to the end of an existing sheet, using the same column headings. The default behaviour is to overwrite cells in this sheet as needed (but leaving non-overwritten ones in place)
i_clearSheet	Boolean	No	If specified Export-Excel will remove any existing worksheet with the selected name. The default behaviour is to overwrite cells in this sheet as needed (but leaving non-overwritten ones in place).

i_credentials	Structure	Yes	The credentials used by the Execute PowerShell Script block to run the script as the specified user. The structure provided must be of the following format:
			``
			{
			  "domain":"<example-domain>",
			  "username":"<example-username>",
			  "password":"<example-password>"
			}
			``

i_DB-Name	Text	Yes	Name of the database
i_DB-Query	Text	Yes	Query that the results of which will be sent to the excel file
i_DB-Server	Text	Yes	Name of the database server
i_noHeader	Boolean	Yes	Specifies that field names should not be put at the top of columns.
i_numberformat	Text	No	Formats all values that can be converted to a number to the format specified. For example: '0' integer (not really needed unless you need to round numbers, Excel will use default cell properties). '#' integer without displaying the number 0 in the cell. '0.0' number with 1 decimal place. '0.00' number with 2 decimal places.

			'#,##0.00' number with 2 decimal places and thousand-separator.
			'?#,##0.00' number with 2 decimal places and thousand-separator and money-symbol.
			'0%' number with 2 decimal places and thousand-separator and money-symbol.
			'[Blue]$#,##0.00;[Red]-$#,##0.00' blue for positive numbers and red for negative numbers; Both proceeded by a '$' sign
i_password	Text	No	Accepts a string that will be used to open a password protected Excel file.
i_path	Text	Yes	Specifies the path to the Excel file.

i_powerShellAgentDetails	Structure	No	Structure. The Host and Port used by the Execute PowerShell Script block to run the script from the specified agent. The structure provided must be of the following format:
			
			`{`
			`  "host": "<example-host>",`
			`  "port": <example-port>`
			`}`

i_queryTimeout	Text	Yes	The amount of time the database interaction will wait before timing out
i_runAsAdmin	Boolean	No	If true, the PowerShell command will check if it is running as administrator.
i_startColumn	Text	No	Column to start adding data - 1 by default.
i_startRow	Text	No	Row to start adding data. 1 by default. Row 1 will contain the title, if any is specified. Then headers will appear (Unless -No header is specified) then the data appears.
i_worksheetName	Text	No	Specifies the name of the worksheet in the Excel workbook to import. By default, if no name is provided, the first worksheet will be imported.

2.6.3   Output variables

Variable	Type	Description

o_result	Structure	The output variable containing the call response of the following format:
		
		`{`
		`  "RESULT": [],`
		`  "EXCEPTIONS": []`
		`}`

2.7 Get-ExcelSheetInfo

2.7.1 Overview

Get worksheet names and their indices of an Excel workbook.

2.7.2 Input variables

Variable	Type	Required	Description

i_credentials	Structure	Yes	The credentials used by the Execute PowerShell Script block to run the script as the specified user. The structure provided must be of the following format:
			
			`{`
			`  "domain":"<example-domain>",`
			`  "username":"<example-username>",`
			`  "password":"<example-password>"`
			`}`

i_path	Text	Yes	Specifies the path to the Excel file.

i_powerShellAgentDetails	Structure	No	The Host and Port used by the Execute PowerShell Script block to run the script from the specified agent. The structure provided must be of the following format:
			
			`{`
			`  "host": "<example-host>",`
			`  "port": <example-port>`
			`}`

i_runAsAdmin	Boolean	No	If true, the PowerShell command will check if it is running as administrator.

2.7.3 Output variables

Variable	Type	Description

o_result	Structure	The output variable containing the call response of the following format:
		
		`{`
		`  "RESULT": [],`
		`  "EXCEPTIONS": []`
		`}`

2.8 Get-ExcelWorkbookInfo

2.8.1 Overview

Retrieve information of an Excel workbook.

2.8.2 Input variables

Variable	Type	Required	Description

i_credentials	Structure	Yes	The credentials used by the Execute PowerShell Script block to run the script as the specified user. The structure provided must be of the following format:
			
			`{`
			`  "domain":"<example-domain>",`
			`  "username":"<example-username>",`
			`  "password":"<example-password>"`
			`}`

i_path	Text	Yes	Specifies the path to the Excel file.

i_powerShellAgentDetails	Structure	No	Structure. The Host and Port used by the Execute PowerShell Script block to run the script from the specified agent. The structure provided must be of the following format:
			
			`{`
			`  "host": "<example-host>",`
			`  "port": <example-port>`
			`}`

i_runAsAdmin	Boolean	No	If true, the PowerShell command will check if it is running as administrator.

2.8.3 Output variables

Variable	Type	Description

o_result	Structure	The output variable containing the call response of the following format:
		
		`{`
		`  "RESULT": [],`
		`  "EXCEPTIONS": []`
		`}`

2.9 ConvertFrom-ExcelSheet

2.9.1 Overview

Exports Sheets from Excel Workbooks to CSV files.

2.9.2 Input variables

Variable	Type	Required	Description
i_append	Boolean	Yes	If specified data will be added to the end of an existing sheet, using the same column headings. The default behaviour is to overwrite cells in this sheet as needed (but leaving non-overwritten ones in place)
i_credentials	Structure	Yes	The credentials used by the Execute PowerShell Script block to run the script as the specified user. The structure provided must be of the following format: ```{"domain":"<example-domain>","username":"<example-username>","password":"<example-password>"}```
i_delimiter	Text	No	Selects , or ; as the delimiter for the exported data - if not specified , is used by default.
i_encoding	Text	No	Sets the text encoding for the output data file; UTF8 by default
i_extension	Text	No	Sets the file extension for the exported data, defaults to CSV
i_outputPath	Text	No	The directory where the output file(s) will be created. The file name(s) will match the name of the workbook page which contained the data.
i_path	Text	Yes	Specifies the path to the Excel file.
i_powerShellAgentDetails	Structure	No	The Host and Port used by the Execute PowerShell Script block to run the script from the specified agent. The structure provided must be of the following format: ```{"host": "<example-host>","port": <example-port>}```
i_runAsAdmin	Boolean	No	If true, the PowerShell command will check if it is running as administrator.
i_sheetName	Text	No	Specifies the name of the worksheet in the Excel workbook to import. By default, if no

			name is provided, the first worksheet will be imported.

2.9.3 Output variables

Variable	Type	Description

o_result	Structure	The output variable containing the call response of the following format:
		
		``
		{
		  "RESULT": [],
		  "EXCEPTIONS": []
		}
		``