What's New
in WPS version 4.4

Contents

Introduction

World Programming is pleased to announce version 4.4 of the World Programming System. This version includes many improvements, including updates to the Workbench workflows, new and updated procedures, and new functionality. The new and updated features in this version are described in this document.

Workbench

New and enhanced features in the SAS language and Workflow perspectives of WPS Workbench.

Workflow perspective

New and enhanced blocks and features in the Workflow perspective are provided in this version of WPS Analytics.

Workflow perspective – new

The following features have been added:

- The **Hub** group now includes:

    ‣ The **Program Inputs** block. Passes input Workflow parameters to the WPS Hub to use as part of an executable deployment services program.

    ‣ The **Program Results** block. Contains the results from an executable deployment services program.

- The **Import** group now includes:

    ‣ The **JSON Import** block. Enables import of a JSON-formatted datatset.

    ‣ The **Parameter Import** block. Enables parameters to be imported into the Workflow as a dataset.

- The **Data Preparation** group now includes:

    ‣ The **Deduplicate** block. Enables duplicate observations to be removed from an input dataset.

    ‣ The **Text Transform** block. Enables character variables in an input dataset to be modified.

- The **Hub API Executions** view.

    ‣ This view enables you to show information about an API execution in a WPS project connected to the WPS Hub.

- The **Database Explorer** view can now be used to connect to the following database servers:

    ‣ Google BigQuery.

    ‣ Hadoop.

    ‣ Teradata.

- **Data Preparation** group blocks that contain a single **Input** port can now be inserted between two connected blocks in an existing Workflow.

- The **MLP** block. A seed value for the random number generator can now be specified to initialize weights when training the model.

- When invoking WPS Hub programs, a file or URL input stream can now be specified as a parameter value.

- If the **Promptable** setting is specified for a Workflow parameter, the value of the parameter can be entered or modified in the **Configure Parameters** dialog box during Workflow execution.

- The following Workflow parameter types are now supported:

  ‣ *Choice*

  ‣ *Date*

  ‣ *Datetime*

  ‣ *Float*

  ‣ *Integer*

  ‣ *Password*

  ‣ *Time*

  Workflow parameters can now be used in the **Filter** block, **Mutate** block, and **Query** block.

  Workflow parameters can be used as Hub parameters in executable deployment services programs.

- Variables from a dataset can now be grouped together and stored as a variable list:

  ‣ Variable lists are created in the **Create variable list** dialog box from the **Data Profiler**.

  ‣ To use a variable list, click **Apply variable lists** in the variable selection panel in the supported Workflow blocks.

  ‣ The **Workflow Settings** dialog box can now be used to:

    - Import a variable list into the Workflow.

    - Export an existing variable list from the Workflow.

    - Modify an existing variable list.

    - Delete an existing variable list.

Workflow perspective – enhanced

The following features have been enhanced:

- The **Chart Builder** block:

  ‣ Can now draw line plots and bar charts on the same axis.

- The **Hub Program** block:

  ‣ By default, the **Hub Program** block is no longer visible in the Workflow palette. To view this block in the Workflow palette, select **Use legacy Hub Program blocks** option in the **Hub** tab in the Workflow Settings dialog box.

  ‣ The **Hub Program** block is superseded by the **Program Inputs** and **Program Results** blocks for defining input variables to, and results from, a deployment services program.

- The **Transpose** block.

  Can now be used for columns-to-rows or rows-to-columns transposition:

  ‣ **Columns-to-Rows**. Transposes the dataset so each specified variable corresponds to one or more rows.

  ‣ **Rows-to-Columns**. Transposes the dataset so each row is mapped to one or more columns.

WPS Analytics

New and enhanced features in this version of WPS Analytics.

Core SAS language support

New and enhanced core SAS language support is provided in this version of WPS Analytics.

SAS language functions

The `SASHELP.SLKWXL` catalog can now be specified to either the `CMPLIB` system option or `INLIB` option of the `PROC FCMP` statement and the following functions invoked in a program:

- `ACCRINT_SLK`
- `ACCRINTM_SLK`
- `AMORDEGRC_SLK`
- `AMORLINC_SLK`
- `AVEDEV_SLK`
- `CEILING_SLK`
- `COUPDAYBS_SLK`
- `COUPDAYSNC_SLK`
- `COUPNCD_SLK`
- `COUPNUM_SLK`
- `COUPPCD_SLK`
- `DATDIF4_SLK`
- `DB_SLK`
- `DISC_SLK`
- `DOLLARDE_SLK`
- `DOLLARFR_SLK`
- `DURATION_SLK`
- `EFFECT_SLK`
- `EVEN_SLK`
- `FACTDOUBLE_SLK`
- `FLOOR_SLK`
- `MDURATION_SLK`

- `ODD_SLK`

- `ODDFPRICE_SLK`

- `ODDFYIELD_SLK`

- `ODDLPRICE_SLK`

- `ODDLYIELD_SLK`

- `PRICE_SLK`

- `PRICEDISC_SLK`

- `PRICEMAT_SLK`

- `PRODUCT_SLK`

- `RECEIVED_SLK`

- `TBILLEQ_SLK`

- `TBILLPRICE_SLK`

- `TBILLYIELD_SLK`

- `VARP_SLK`

- `YIELD_SLK`

- `YIELDDISC_SLK`

- `YIELDMAT_SLK`

System options

The following system options have been added at this release:

- `CARDSLEADINGTABSTOPS`. Specifies the number of spaces to replace leading tabs in lines of data in the `DATALINES` statement.

- `CONFIGFONTMVS`. Location of the MVS FONTS dataset in the installation.

- `FILECONTAINERCACHESIZE`. Control the number of blocks that are cached for each library engine that stores its content in a file.

- `MASKDBCONNECTIONSTRINGS`. Specifies whether the database connection strings provided to a database `LIBNAME` statement are written to the log.

- `MFILE`. Specifies whether to write MPRINT information to file.

- `NOFLE`. Prevents the invocation of the PYTHON and R procedures.

- `ODSSTYLE`. Specifies the default ODS style.

- `ORACLEZEROPRECISIONNUMFMT`. Specifies the default format and informat for fields generated from numeric expressions that have zero precision..

- `PAGESOUTPUT`. Specifies whether the log contains the page numbers to which procedure or data step output is written. Supported for PDF and LISTING destinations.

- `SCANDEFAULTMODIFIERS`. Specifies the default modifiers to use with the DATA step `SCAN` function and `CALL SCAN` routine.

- `SFTPCMDENCODING`. Specifies the encoding that is to be used when communicating with the SFTP client using the `FILENAME SFTP` statement.

- `SKIPCARRIAGECONTROLSINSTRINGS`. Specifies whether carriage control (CR, LF and EBCDIC NL) characters are skipped in a string literal value.

- `SQLIPASSTHRUINGENMAXRECS`. Specifies the maximum number of local records used when generating an `IN` clause for SQL passthrough.

- `STSUFFIX`. Specifies whether to use verbose debug tracing in the database engines.

- `WPSCOMABORT`. Enables styling in graphics procedures.

- `XCMD`. Whether the `X` command is available to use.

System options for which the state can be set by prepending `NO`, such as `CLEANUP/NOCLEANUP`, can now be set by specifying `YES` and `NO`, `ON` and `OFF`, or `TRUE` and `FALSE`. For example:

- `CLEANUP`, `CLEANUP=YES`, `CLEANUP=ON` are equivalent.

- `NOCLEANUP`, `CLEANUP=NO`, and `CLEANUP=OFF` are equivalent.

Global statements

The following global statement has been updated at this release:

FILENAME DISK

Now supports the following option:

- `IGNOREDOSEOF`. Ignore an embedded Ctrl+Z character in a file.

FILENAME EMAIL

Now supports the following option:

- `INLINED`. Enables graphics to be embedded in the content of an email.

FILENAME SFTP

Now supports the following options:

- `CMD`. Enables a single command to be sent to the SFTP client.

- `CMDENCODING`. Specifies the encoding that is to be used when communicating with the SFTP client.

- `CMDFILE`. Specifies a file (fileref name or path) that contains a set of commands to send to the SFTP client.

- `LSL`. Enables you to get a verbose directory listing from the server.

FILENAME ZIP

Now supports the following options:

- `DEBUG`. Specifies that additional information about the zip process is written to the log.

- `GZIP`. Specifies that a gzip file is created or read.

Formats and informats

The following informats have been added:

- `B8601DJ`
- `ENGDFDE`
- `STIMER`
- `WEEKU`
- `WEEKV`
- `WEEKW`

Output Delivery System

The Output Delivery System (ODS) produces output in various formats. Existing ODS features have been enhanced in this version of WPS Analytics.

ODS destinations

- The `ODS POWERPOINT` destination is now supported.
- The `ODS EXCEL` destination now supports:
  - ‣ The `GROUP_ROWS` option.
  - ‣ The `GROUP_ROWS_COLLAPSE` option.

ODS procedures

The ODSLIST and ODSTEXT procedures now support:

- The `DATA` option of the procedure statement.
- The `FORMAT` option of the `ITEM` and `P` statements.
- The `CELLSTYLE` statement.
- The `TRANSLATE` statement.

DATA step functions and CALL routines

The following functions have been added at this release:

- `KCOMPOSE`
- `KDECOMPOSE`
- `KDECOMPOSEC`
- `KISCOMPOSED`
- `KISDECOMPOSED`
- `KISDECOMPOSEDC`
- `KUPDATES`
- `LOGISTIC`
- `MONOTONIC`
- `RENAME`
- `WAKEUP`

General procedures

The following core procedures have been enhanced at this release:

COMPARE
The `PROC COMPARE` statement now supports the `QUOTELABEL` option.

CONTENTS
The `PROC CONTENTS` statement now supports the `ORDER` option.

EXPORT
The `PROC EXPORT` statement now supports the `DBLABEL` option.

FORMAT
The `PROC FORMAT` statement now supports the `NOPRINT` option.

HTTP

- The `PROC HTTP` statement now supports the `OAUTH_BEARER` option.
- Now supports the `DEBUG` statement.

IMPORT
Now supports the following statements:

- `ENDCOL`
- `ENDROW`
- `STARTCOL`
- `STARTROW`

PRINT
The `PROC PRINT` statement now supports:

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- The `GRAND_LABEL` option.
- The `NOSUMLABEL` option.

REPORT

The `PROC REPORT` statement now supports the `SPANROWS` option.

TABULATE

Now supports the `TABLES` alias for the `TABLE` statement.

The `TABLE` statement now supports the `NOCELLMERGE` option.

Macros

The following automatic macro variables have been added at this release:

- `SYS_PROCHTTP_STATUS_CODE`. Contains the HTTP numeric return code when the HTTP procedure is invoked.
- `SYS_PROCHTTP_STATUS_PHRASE`. Contains the text associated with the HTTP numeric return code.
- `SYSODSPATH`. Contains the ODS search path locations.

Graphing procedures

The following graphical procedures have been enhanced at this release:

SGPANEL

Now supports the `TEXT` statement.

SGPLOT

Now supports the following statements:

- `TEXT`
- `XAXISTABLE`
- `YAXISTABLE`

Statistical procedures

New statistical procedures are supported, and existing procedures have been enhanced.

Statistical procedures – new

The following procedures have been added at this release:

MCMC
Fits a model to data using Markov chain Monte Carlo methods.

ORTHOREG
Fits an orthogonal regression model to data.

Statistical procedures – enhanced

The following procedures have been enhanced at this release:

LOGISTIC
Now supports the `UNITS` statement.

STDIZE
The `PROC STDIZE` statement now supports the `OPREFIX` and `SPREFIX` options.

Operational Research procedures

The following operational research procedure has been added at this release:

OPTLP
Solves a linear programming problem that might have constraints and defined upper or lower bounds, or defined upper and lower bounds.

Time Series procedures

The following procedures have been added at this release:

VARMAX
Fits a vector autoregressive moving-average model to multivariate time series data.

MDC
Fits a multinomial discrete choice model to data.

Data engines

The following data engines have been enhanced at this release:

Google BigQuery

The following options are now supported using the ODBC data engine:

- `BULKLOAD`. Used to specify whether bulk insert functionality is used.
- `BL_DATAFILE`. Used to specify the file containing the data to be bulk inserted.
- `BL_DEFAULT_DIR`. Used to specify the default path to use for the data file.
- `BL_DELETE_DATAFILE`. Used to specify whether to delete the data file after the bulk insert action is complete.

DB2

The following option is now supported:

- `DEFER`. Used to specify when a library connection is made.

The following dataset option is now supported:

- `DBSASTYPE`. Used to specify the variable type when a column is read into a dataset.

MARIADB

The following option is now supported:

- `DEFER`. Used to specify when a library connection is made.

The following dataset option is now supported:

- `DBSASTYPE`. Used to specify the variable type when a column is read into a dataset.

MYSQL

The following option is now supported:

- `DEFER`. Used to specify when a library connection is made.

The following dataset option is now supported:

- `DBSASTYPE`. Used to specify the variable type when a column is read into a dataset.

NETEZZA

The following option is now supported:

- `DEFER`. Used to specify when a library connection is made.

ODBC

The following option is now supported:

- `DEFER`. Used to specify when a library connection is made.

The following dataset option is now supported:

- `DBSASTYPE`. Used to specify the variable type when a column is read into a dataset.

ORACLE

The following dataset option is now supported:

- `DBSASTYPE`. Used to specify the variable type when a column is read into a dataset.

POSTGRESQLM

The following option is now supported:

- DEFER. Used to specify when a library connection is made.

SNOWFLAKE

The following options are now supported:

- AUTHENTICATOR. Specifies the authorisation method.
- AUTHENTICATOR_URL. Specifies the URL for federated authentication requests.
- BL_LOAD_TRIM_SPACE. Used to trim trailing white space when the formatted column length is longer than the string.
- BL_LOAD_OVERWRITE_STAGE_FILE. Used to overwrite an existing file in the staging area.
- DEFER. Used to specify when a library connection is made.
- PRIVATE_KEY_PATH and PRIVATE_KEY_PASSPHRASE. Used for Key Pair Authentication.

The following dataset option is now supported:

- DBSASTYPE. Used to specify the variable type when a column is read into a dataset.

SQLSERVER

The following option is now supported:

- DEFER. Used to specify when a library connection is made.

The following dataset option is now supported:

- DBSASTYPE. Used to specify the variable type when a column is read into a dataset.

SYBASEIQ

The following option is now supported:

- DEFER. Used to specify when a library connection is made.

The following dataset option is now supported:

- BL_DELIMITER. Used to specify a character that is recognised as the delimiter for fields in a table record.

TERADATA

The following dataset option is now supported:

- FBUFSIZE. Used to specify the size of the buffer, in bytes, for bulkload operations.

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