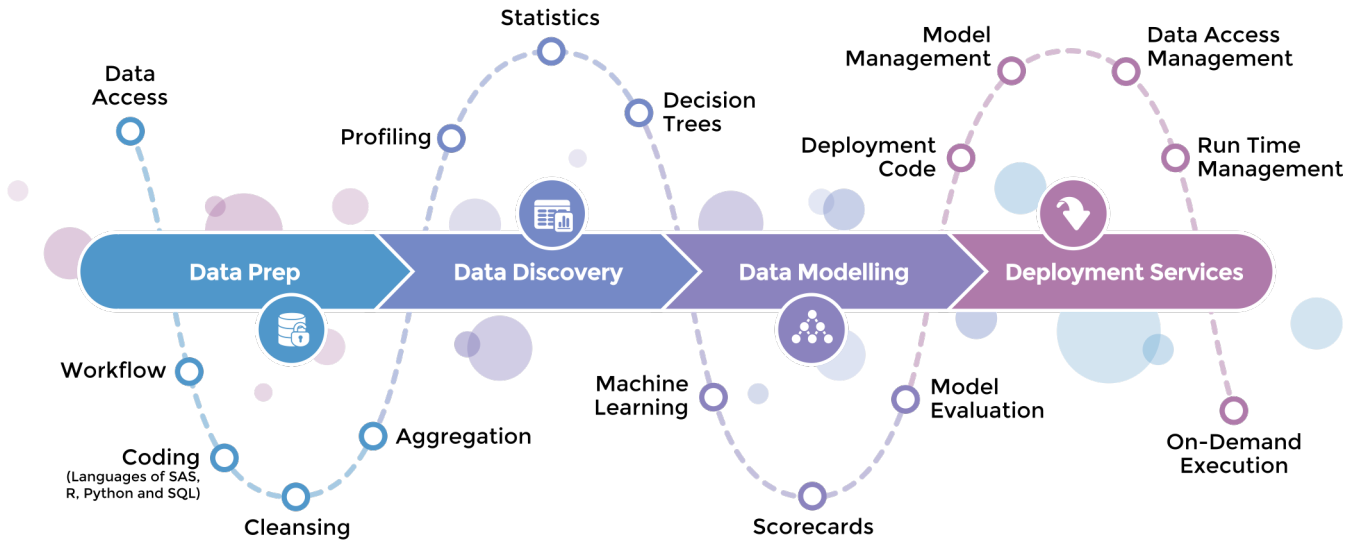


**Wherever you sit in the data landscape,
WPS Analytics provides the tools you need**



- An end-to-end analytics platform combining trusted and emerging technologies
- Workbench GUI/IDE providing workflow and coding perspectives
- Coders can use the languages of SAS, SQL, Python and R
- Built-in SAS language compiler
- Access all major data sources
- Fast, robust processing of high data volumes
- Centralised management facilities

Relied upon globally

Used across multiple industries

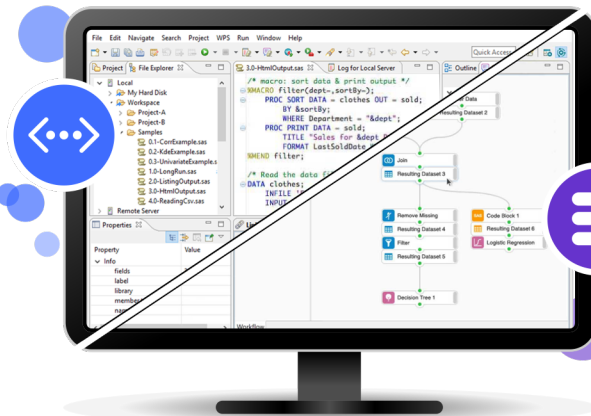
**Thousands of installations
and consumers of WPS output**



Cloud | Desktop | Server | Mainframe



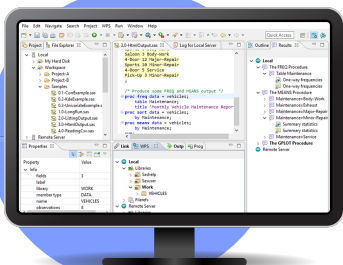
Coding



Workflow

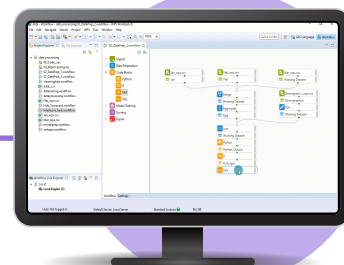
SAS language

- Built-in capability
- No additional licensing
- Rich PROC support



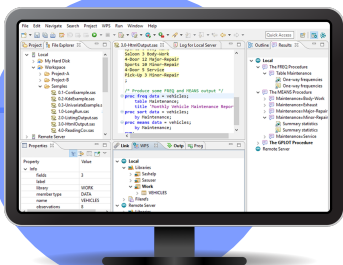
Data prep

- Data cleansing
- Data re-shaping
- Access disparate data sources
- Data mining
- Model preparation



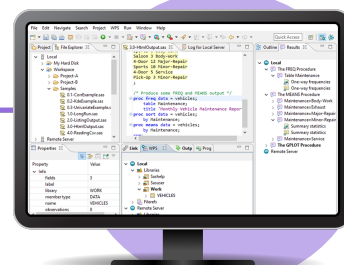
Open source languages

- Python
- R
- SQL



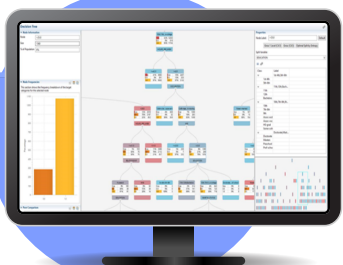
Data discovery

- Data profiler
- Statistics
- Decision trees



Data access

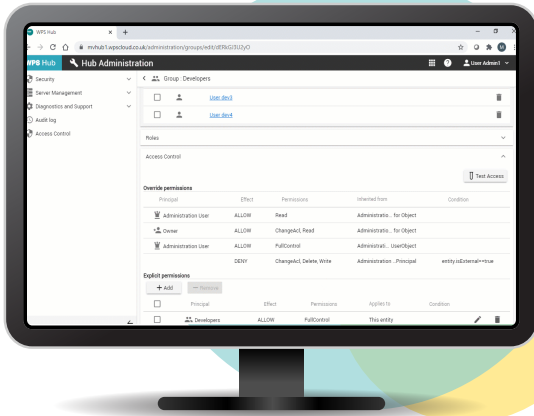
- Cloud data
- Traditional data
- SAS datasets



Data modelling

- Clustering
- Decision forests
- Neural networks
- Regression
- Scorecards
- Model analyser



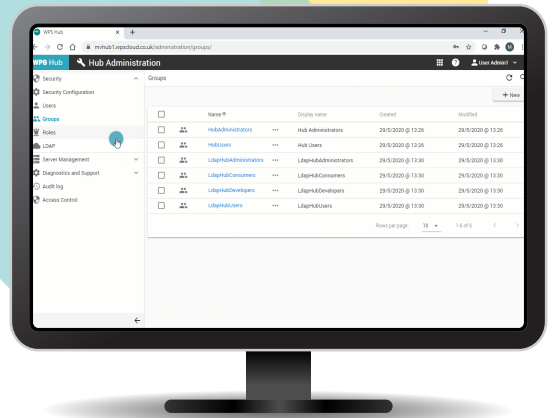


Centrally manage developers and business users

- Single sign-on to Hub services and deployed analytics
- Assign roles and permissions to users
- Synchronise via LDAP with Active Directory Services

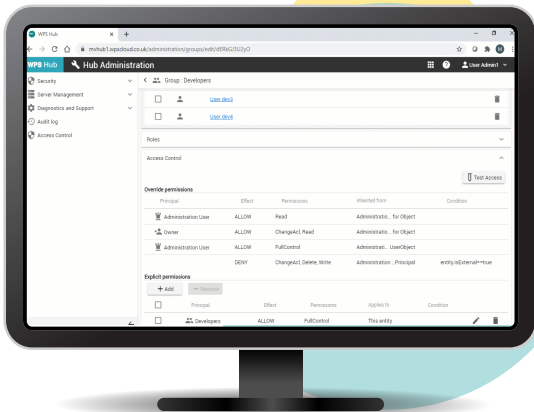
Audit logs

- Logs of user actions and interactions with Hub
- For example, find out who performed a particular action, when it happened, from where it was performed, and so on



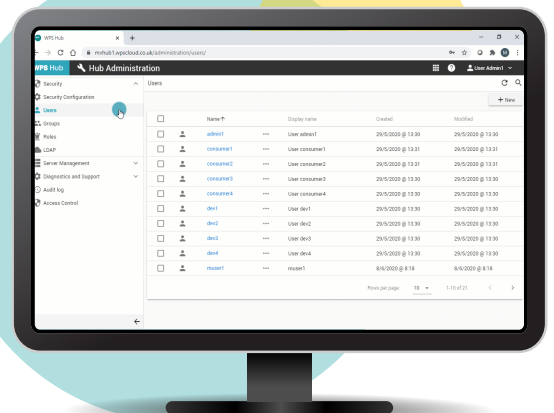
Publish data libraries

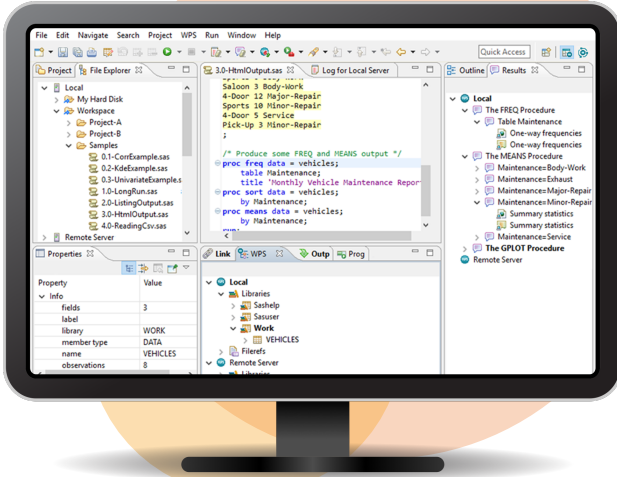
- Define and push data libraries to selected users/groups
- Workbench users can list, access and explore all data libraries that have been published to them



Eliminate exposure of data access credentials

- Store data access credentials centrally
- Single sign-on to Hub allows access to stored credentials
- Credentials are never exposed to user
- Eliminate hard-coding UIDs and PWDs by virtue of operating within an authorisation domain



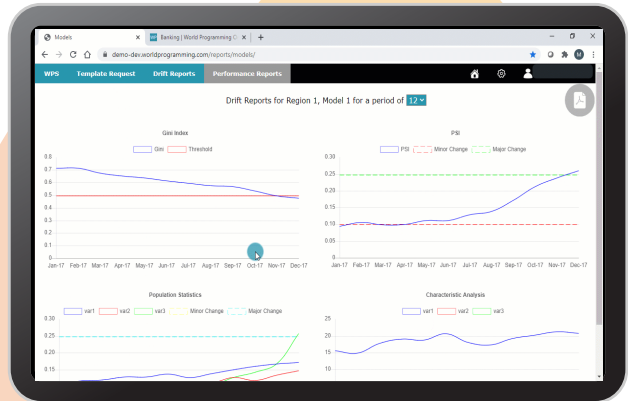


Deploy models and programs

- Publish multi languages
 - SAS language
 - Python
 - R
- RESTful API creation wizard

Orchestration

- Central repository
- Version control and code management
- Optionally connect to Git
- Run-time management
 - Real-time execution
 - On-demand execution
 - Scheduled execution



Analytics anywhere

- MS Excel
- Web browser
- Bespoke reporting portals & dashboards
- Programmatic calls (C ++, C#, .Net, Java, Java Script)

Fully integrated SAS language compiler

WPS Analytics does not require third party technology
to process applications containing SAS code



WPS Analytics is the only true alternative SAS language platform



Wide ranging SAS language support

- ✓ Core language, macros and output features
- ✓ Graphs and charts
- ✓ Statistical analysis
- ✓ Time series analytics
- ✓ Matrix manipulation
- ✓ Machine learning
- ✓ Communication (remote code submit and data upload/download)
- ✓ Language SDK to develop bespoke language items



Procedures for mixing languages

SAS language procedures to seamlessly use Python, R, SQL and Hadoop code inside a single SAS program.

The WPS Analytics Hub provides centralised enterprise management and deployment service



Multiple API Options

In-cloud or on-premise, web and programmatic API options to access execution framework

Report Portals

Bespoke web portals for on-demand and real-time reporting

Real-Time Scoring

Fraud detection, segmentation, lifetime value, churn, retention, acquisition, claim cost

Data Access Governance

Secure and centralised management of data access credentials

Team Management

Centralised management of user and group access to published models and programs

On-Demand Analytics

Centralised publishing and execution controls of new and updated models and programs to desired run-time environments

Program Management

Deploy programs and models in the languages of SAS, Python and R to a central repository for shared use

Processing Environment Management

Simple controls to publish code and manage updates in desired processing environments



Application Examples

Risk Analytics

- Regulatory risk
- Scorecard
- Fraud detection
- Debt recovery
- Model management

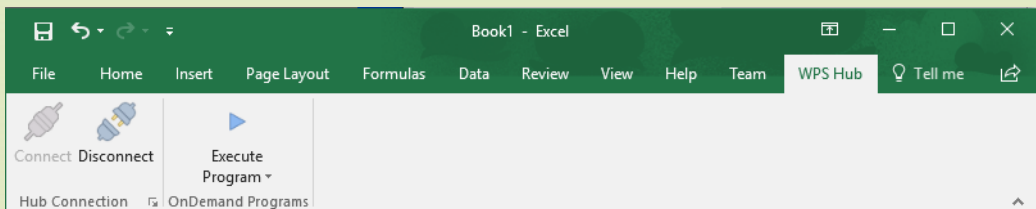
Customer Analytics

- Buyer prediction
- Seller prediction
- Upgrade opportunities
- Assets at risk
- Channel marketing

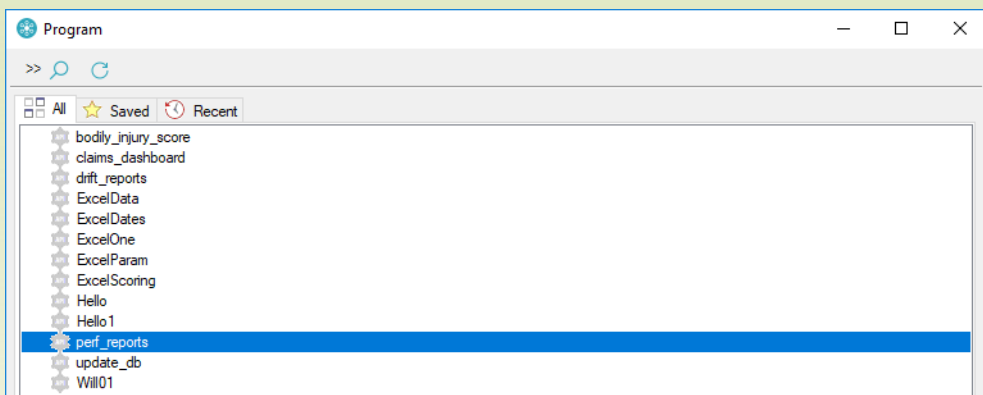
MS Excel plug-in

- Use the WPS Analytics plug-in for Microsoft Excel® to access a central repository of published programs.
- Requires WPS Hub to manage published programs and to connect to the plug-in.
- Data access credentials are automatically managed by WPS Hub.

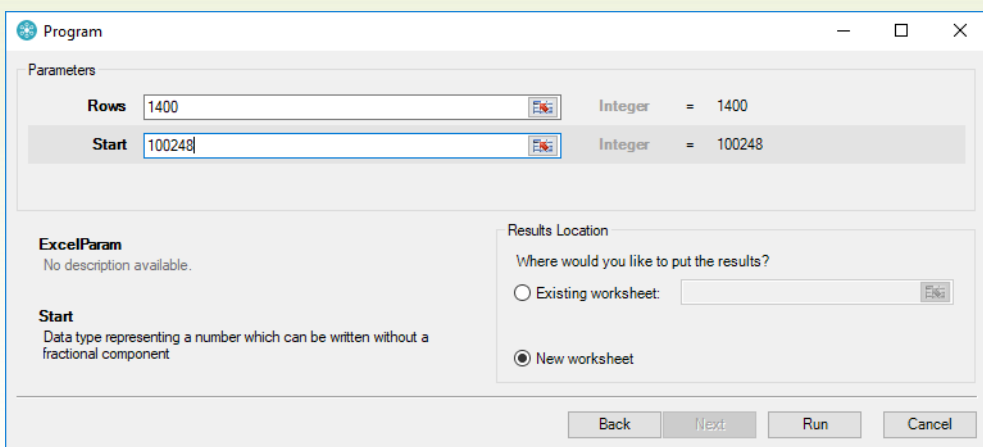
1 Select the **Execute Program** menu item from the WPS Hub ribbon bar.



2 Choose a program from the list of programs published to individual users or groups.



3 Enter any parameters required including the Excel worksheet for the resulting output.



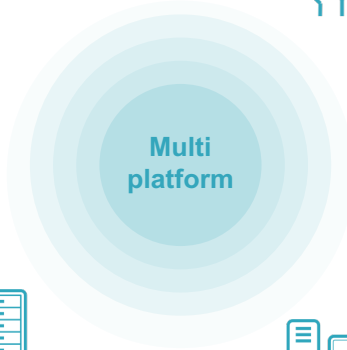
4 Choose the **Run** button and the output is passed back to the selected Excel worksheet.

Cloud
AWS, Azure, Google Cloud
Linux, Windows
Docker, Kubernetes



SaaS

- Cloud analytics platform
- Cloud API
- Cloud app

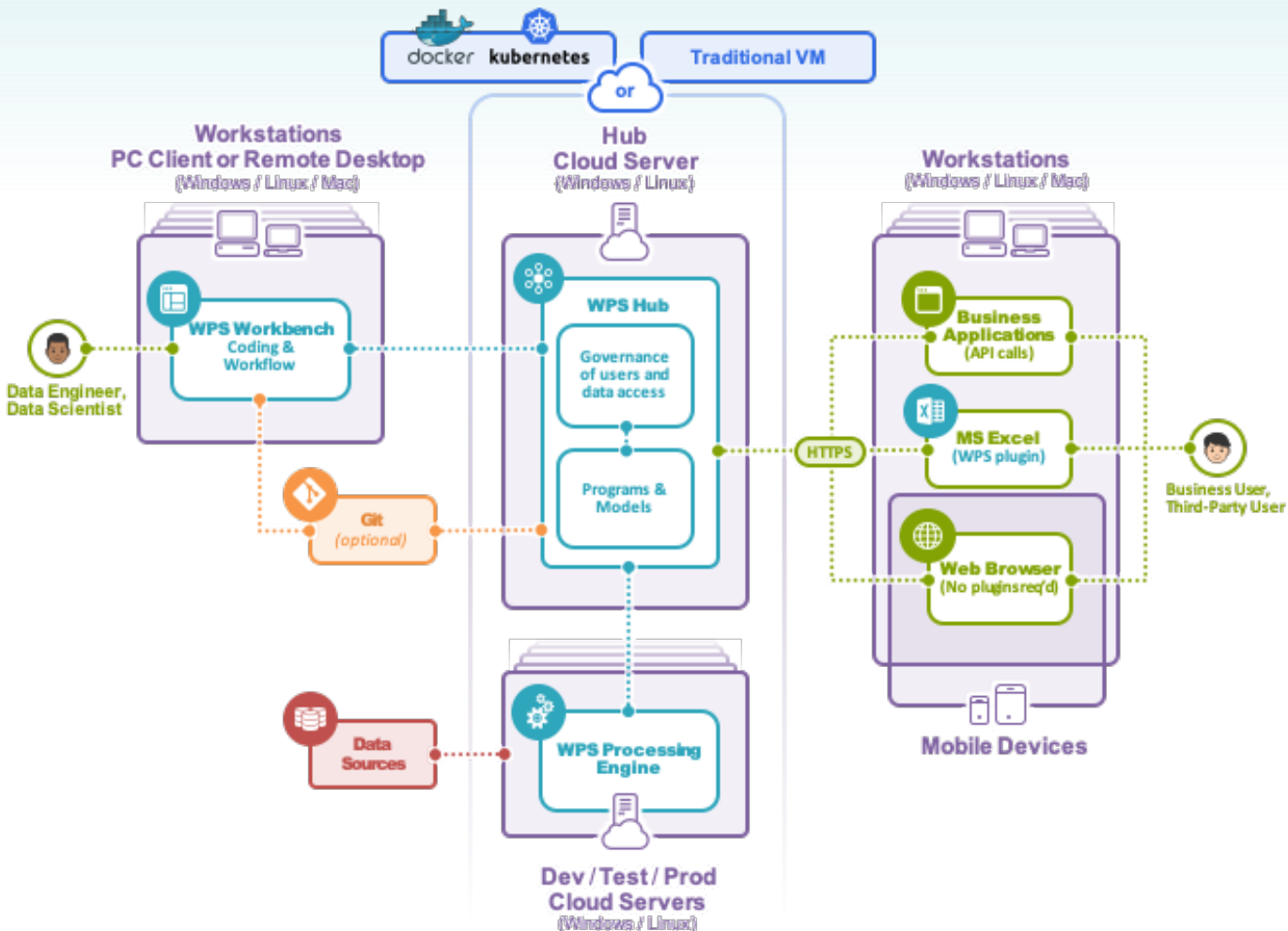


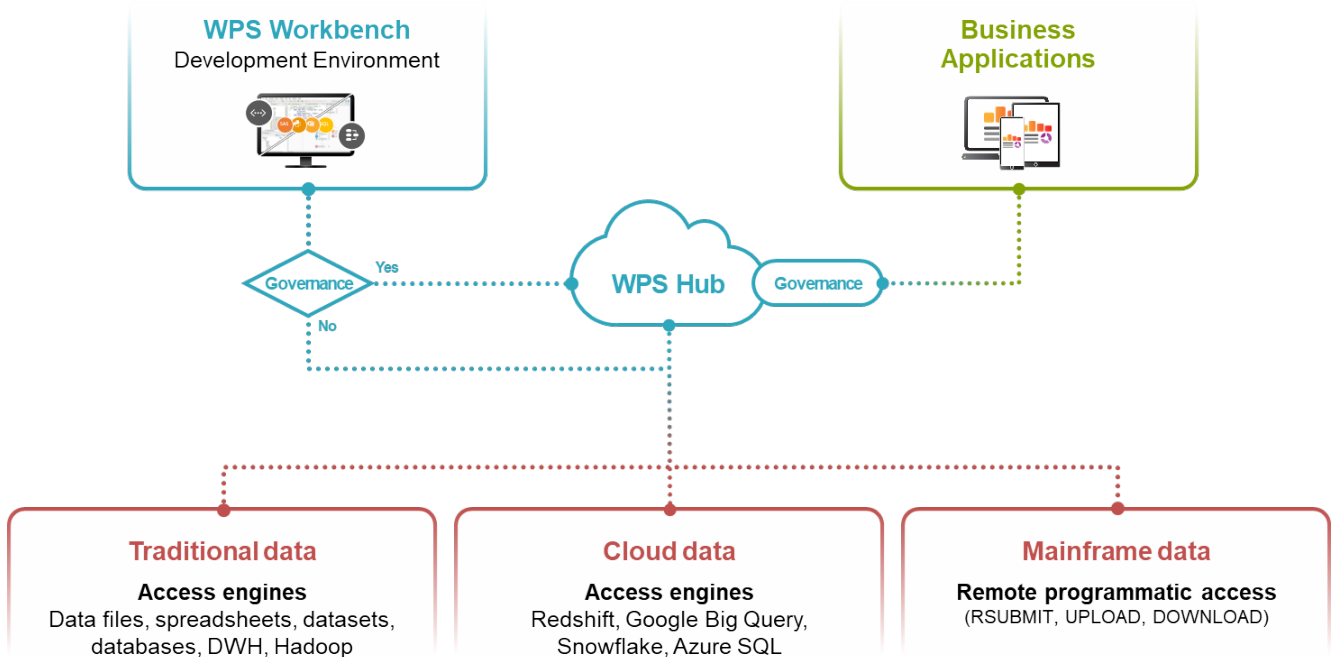
Mainframe
IBM Series z
z/OS, Linux on z



On Premise

Server, desktop, laptop
AIX, Linux, macOS, Windows





Access data anywhere



Cloud data, traditional databases and data warehouses

- ✦ Action Matrix
- ✦ Amazon Redshift
- ✦ DB2
- ✦ Google Big Query
- ✦ Greenplum
- ✦ Informix
- ✦ Kognito
- ✦ MariaDB
- ✦ MySQL
- ✦ Netezza
- ✦ ODBC
- ✦ OLEDB
- ✦ Oracle
- ✦ PostgreSQL
- ✦ SAND
- ✦ Snowflake
- ✦ SQL Server
- ✦ Sybase
- ✦ Sybase IQ
- ✦ Teradata
- ✦ Vertica

I/O features

- ✦ CLIPBOARD (Windows only)
- ✦ DDE (Windows only)
- ✦ EMAIL (via SMTP or MAPI)
- ✦ FTP
- ✦ HTTP
- ✦ PIPE (Windows and UNIX only)
- ✦ SOCKET
- ✦ STUDIO
- ✦ URL

Data file formats

- ✦ dBase Files
- ✦ Flat Files
- ✦ JSON
- ✦ Microsoft Access
- ✦ Microsoft Excel
- ✦ SAS Dataset Files
- ✦ SAS Transport Files
- ✦ Sequential Files
- ✦ SPSS Data Files
- ✦ Tableau
- ✦ VSAM Files
- ✦ WPD (WPS dataset)
- ✦ XML

Hadoop big data

- ✦ Apache Hadoop
- ✦ Cloudera
- ✦ Hortonworks
- ✦ MapR
- ✦ Dataset Support: Hive, Impala
- ✦ Language Support: HDFS, MapReduce, Pig

Coding	Combine SAS code with R, Python and SQL seamlessly in a single executable program
	Built-in SAS language compiler
	SAS macro and matrix programming
	Language SDK for creating custom SAS language items
Workflow	Drag-drop building blocks to support the full data analytics lifecycle
	Visual data profiling
	Interactive predictive modelling using machine learning algorithms
	Interactive decision trees and forests
	Insert code blocks in a workflow written in the languages of SAS, SQL, Python or R
	Business strategy development
	Scoring
	Auto-generate production-ready, error free code from a workflow
Data Handling	Data exploration, blending, ETL, visualisation
	Access traditional data sources and cloud data sources
	Hadoop Big Data access and language support for HDFS, Hive, Impala, Pig and MapReduce
Analytics and Reporting	Statistical and time series analytics
	Machine learning
	Generate graphs and charts
	Output to text, PDF, HTML and MS Excel files
Interfaces	WPS Workbench - GUI/IDE for creating, editing, managing, running and viewing the output from programs and data workflows
	WPS CLI - command line interface for batch and scheduling
	WPS Communicate - remote submit code and upload/download data between WPS installations on servers and mainframes
	WPS Link - Workbench client/server architecture, allowing data and programs to be kept in secure clouds and data centres
	WPS Jupyter Kernel - for SAS language programming in Jupyter Notebook environments
	WPS add-in for MS Excel – from MS Excel, run programs stored in WPS Hub
	REST APIs – connect a business application to WPS Hub to run programs
WPS Hub	Centralised governance of users, groups and data access credentials
	Repository of deployed programs for shared use
	On-demand and real-time execution framework