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What's New in SAS® 9.4

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What's New in SAS® 9.4

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Using This Book

Audience

This book provides you with a high-level summary of SAS 9.4 and the products that run on SAS 9.4. At the end of a topic for a specific product, a link is provided to the more detailed What's New topic in the product documentation. If the documentation is secure, only licensed customers can access the What's New topic. For secure documentation, the topic in the What's New links to the software product page.

The initial release of SAS 9.4 shipped in July 2013. The first maintenance release for SAS 9.4 shipped in December 2013. The second maintenance release for SAS 9.4 shipped in August 2014.

If you need information about any SAS product, contact your SAS account representative.



See what's new in 9.4

With the delivery of high-performance analytics, the ability to deploy in cloud environments and standardized data management, SAS® 9.4 delivers more than ever to innovate, enable and simplify your decision making. Check out our Website to learn more.



go.sas.com/94new



Introduction to SAS 9.4

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Overview of SAS 9.4

SAS 9.4 includes features that are beneficial to all users at your site.

- For IT departments, SAS 9.4 provides a simplified architecture, increased security, and more deployment options.
- For SAS administrators, SAS 9.4 provides new management capabilities and administration tools.
- For data administrators, the integration of the DataFlux products creates a more complete data management solution. Also, new programming languages enable you to manipulate your data and access relational data from various data sources. New programming languages enable you to update data on the database and access relational data from various sources.
- For SAS programmers, high-performance analytics enable you to quickly analyze large amounts of data. Multi-threading capabilities have also been added so that you can perform analyses on single-machine deployments.

SAS Studio provides a web browser-based interface for SAS programmers to write, edit, and submit SAS code.

- For the business user, SAS 9.4 extends the options for mobile access and self-service options for data access, reporting, and exploration.

During the SAS 9.4 life cycle, maintenance releases enable us to continue delivering new functionality to our users. The second maintenance release for SAS 9.4 (which shipped in August 2014) includes new releases of the SAS analytical products, such as SAS/STAT 13.2, SAS Enterprise Miner 13.2, SAS Contextual Analysis 13.2, SAS/ETS 13.2, and many more.

Deploying and Administering SAS

Increasing Software Availability By Using Cloud Deployments

To make SAS available to all users in your global organization, SAS 9.4 delivers tools and technologies that support deploying, managing, and maintaining your software in public and private cloud environments. To promote innovation, SAS provides a cloud development platform. With a cloud environment, your IT department can quickly meet the demands for increased computing capacity, which makes it easier for your software to grow as your business grows.

In addition, SAS continues to support deploying SAS at your site and as hosted solutions by using SAS Solutions OnDemand.

Reducing the Cost and Complexity of SAS Deployments

With SAS 9.4, no web application server, such as JBoss, WebSphere, or WebLogic, is required. SAS 9.4 includes an embedded middle-tier server called SAS Web Application Server. As a result, you don't need to spend time or money acquiring, integrating, maintaining, and supporting third-party software. The SAS Web Application Server also simplifies IT management and supports deploying SAS in a cloud environment.

Support for 32-Bit and 64-Bit Operating Environments

SAS applications are typically used to process large data sets. This processing benefits from higher performance environments. SAS 9.4 takes advantage of the additional memory and processing capability of the 64-bit Windows operating environments.

The first maintenance release for SAS 9.4 includes 32-bit Windows support for a broader list of products.

Reducing Downtime By Clustering the Metadata and Middle-Tier Servers

To make your software more available to users in your organization, SAS 9.4 supports clustering the metadata and middle-tier servers. A metadata server cluster is a group of three or more nodes that are configured as identical metadata servers. If the servers are clustered and each server manages copies of the same data, you drastically reduce the threat of data loss. If one node in the cluster fails, users can continue working on the remaining nodes, thus reducing potential system downtime. Finally, clustering helps distribute the workload, which can result in improved performance.

Enhanced Management Capabilities for SAS Administrators with the SAS Environment Manager

SAS administrators have access to enhanced management capabilities with the new SAS Environment Manager, a web-based monitoring solution for a SAS environment. SAS Environment Manager enables you to administer, monitor, and manage SAS resources, including administering the SAS Web Application Server and monitoring SAS foundation servers. The application collects and charts data on metrics for monitored resources, providing a comprehensive view of resource health and operation. It provides functions such as auto-discovery of resources, monitoring of log events, and reporting of alerts. The application also enables administrators to manage access for metadata objects.

Increased Security

Beginning with SAS 9.4, SAS/SECURE is shipped with Base SAS. You no longer need a separate license for SAS/SECURE. SAS/SECURE enhances your security options with the industry standard Advanced Encryption Standard (AES) with 64-bit salt.

Accessing SAS from Mobile Devices

Often, the consumers of SAS reports are high-level executives who are in meetings, traveling, or otherwise away from the office. To meet the demands of these business professionals, SAS reports are now available from mobile devices. In the SAS Output Delivery System, the new ODS EPUB destination creates SAS reports as e-books that work optimally with the Apple iBooks e-book reader on the iPad, iPhone, or iPod.

ODS now also supports output to HTML5 and Microsoft PowerPoint.

If you license the SAS Enterprise BI Server, you can now use the Mobile BI app.

Using High-Performance Analytics

Analyzing Large Amounts of Data with High-Performance Analytics

If you are developing analytical models by using large amounts of data, SAS provides in-memory analytics that enable you to perform these analyses in a distributed environment. Because multiple nodes are working on the same tasks in parallel, in-memory analytics can provide significant gains in performance.

In SAS 9.4, six new domain-specific high-performance analytics products are available:

- SAS High-Performance Statistics
- SAS High-Performance Data Mining
- SAS High-Performance Text Mining
- SAS High-Performance Forecasting
- SAS High-Performance Econometrics
- SAS High-Performance Optimization

Using Multi-Threaded Capabilities on Single-Machine Deployments

In addition, the analytics procedures in these products are available from traditional SAS analytics products (such as SAS/STAT). Because these SAS High-Performance Analytics procedures are available from the traditional SAS analytics products, you can now run these high-performance analytics procedures on single-machine deployments.

- SAS Enterprise Miner
- SAS/ETS
- SAS Forecast Server
- SAS/OR
- SAS/STAT
- SAS Text Miner

Managing Your Data

Building an Integrated Information Management Platform

SAS has now fully integrated the DataFlux suite of data quality, data integration, data governance, and master data management solutions. Incorporating the DataFlux brand into SAS helps customers build a more integrated information management approach that goes beyond data management and governance to support analytics and decision management.

Some DataFlux products have changed their names to SAS, and others will in the future. For example, DataFlux Federation Server is now SAS Federation Server. Instead of being licensed separately, DataFlux products are now being combined with SAS software offerings that include other SAS products as well. Changes in offerings might affect your license renewals.

Performing Advanced Data Manipulation In-Database By Using DS2

DS2 is a new SAS proprietary programming language that is appropriate for advanced data manipulation and applications. DS2 is included with Base SAS and is used in conjunction with the SAS DATA step. This language also includes additional data types, ANSI SQL types, programming structure elements, and user-defined methods and packages.

To allow SQL pre-processing on input tables, the SET statement for DS2 supports FedSQL syntax. The queries that are generated at run time can exchange data interactively between DS2 and any supported database. You can run your DS2 threaded packages on a database by using the SAS In-Database Code Accelerator.

Managing Relational Data Optimally By Using SAS FedSQL

SAS FedSQL is a SAS proprietary implementation of the ANSI SQL:1999 core standard. It provides support for new data types and other ANSI 1999 core compliance features and proprietary extensions. FedSQL provides data access technology that provides a scalable, threaded, high-performance way to access, manage, and share relational data in multiple data sources. When possible, FedSQL queries are optimized with multi-threaded algorithms to resolve large-scale operations.

SAS FedSQL enables you to access multiple data sources without performing a different SQL query for each data source. The same FedSQL query can be used on several data sources, and the results are presented in a single table. By using the FEDSQL procedure, you can submit FedSQL language statements in a Base SAS session.

Improving Access to Your Data

In SAS 9.4, the SAS/ACCESS engines to Oracle, DB2, and Teradata are enhanced to improve READ and WRITE performance. In addition, there are several new SAS/ACCESS engines:

- SAS/ACCESS Interface to Impala
- SAS/ACCESS Interface to the PI System
- SAS/ACCESS Interface to PostgreSQL
- SAS/ACCESS Interface to SAP HANA
- SAS/ACCESS Interface to Vertica

Note: The SAS/ACCESS Interface to Impala and the SAS/ACCESS Interface to the PI System were added in the second maintenance release for SAS 9.4.

Integration with SAS Visual Analytics

As SAS products are integrated with SAS Visual Analytics, you can access them from a single interface. You can now access SAS Strategy Management and the SAS Business Rules Manager from the Hub in SAS Visual Analytics. In later releases, more products will be added.

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Base SAS 9.4

DS2 Language

DS2 is a new SAS proprietary programming language that is appropriate for advanced data manipulation and applications. DS2 is included with Base SAS and intersects with the SAS DATA step. It also includes additional data types, ANSI SQL types, programming structure elements, and user-defined methods and packages. Several DS2 language elements accept embedded FedSQL syntax, and the run-time-generated queries can exchange data interactively between DS2 and any supported database. This action enables SQL preprocessing of input tables, which effectively combines the

power of the two languages. The DS2 procedure enables you to submit DS2 language statements from a Base SAS session. Leveraging the power of the SAS Embedded Process, the SAS In-Database Code Accelerator enables you to publish a DS2 thread program to the database and execute the thread program in parallel inside the database.

The first maintenance release for SAS 9.4 includes the following DS2 changes:

- The behavior for the SAS In-Database Code Accelerator has changed where the DS2 code is not executed inside the database, by default. An option must be set to send the DS2 code to the database.
- The SAS In-Database Code Accelerator for Teradata can now run the DS2 data program as well as the thread program inside the database.
- New DS2 configuration and run-time loggers have been added to the SAS Logging Facility.

The second maintenance release for SAS 9.4 includes the following DS2 changes:

- The SAS In-Database Code Accelerator for Hadoop runs the DS2 data program as well as the thread program inside the database.
- A new predefined HTTP package enables you to construct an HTTP client to access web services.
- A new logger enables logging of HTTP traffic through the SAS Logging Facility.
- A connection string parameter is available when instantiating an SQLSTMT package.

For more information, see [SAS DS2 Language Reference](#) and [Base SAS Procedures Guide](#).

FedSQL Language

SAS FedSQL is a SAS proprietary implementation of the ANSI SQL:1999 core standard. It provides support for new data types and other ANSI 1999 core compliance features and proprietary extensions. FedSQL provides data access technology that brings a scalable, threaded, high-performance way to access, manage, and share

relational data in multiple data sources. When possible, FedSQL queries are optimized with multi-threaded algorithms in order to resolve large-scale operations. For applications, FedSQL provides a common SQL syntax across all data sources. That is, FedSQL is a vendor-neutral SQL dialect that accesses data from various data sources without submitting queries in the SQL dialect that is specific to the data source. In addition, a single FedSQL query can target data in several data sources and return a single result table. The FEDSQL procedure enables you to submit FedSQL language statements from a Base SAS session.

In its initial release, FedSQL provided access to the following data sources: SAS data sets, SAS Scalable Performance Data Engine (SPD Engine) data sets, and the following databases: Aster, DB2 for UNIX and PC operating environments, Greenplum, MySQL, Netezza, ODBC databases (such as Microsoft SQL Server), Oracle, SAP (Read-only), Sybase IQ, and Teradata.

The first maintenance release for SAS 9.4 adds support for Memory Data Store (MDS), SAP HANA, and SASHDAT data sources.

The second maintenance release for SAS 9.4 has the following FedSQL enhancements:

- Support for Hive, HDMD, and PostgreSQL data sources. Not all FedSQL statements are supported for each data source. See the documentation for FedSQL statements to determine statement support.
- The CAST function for ODBC enables you to convert a value from one data type to another.
- DBMS-specific clauses can be added when indexes are created.
- SASHDAT files can be compressed.

For more information, see [SAS FedSQL Language Reference](#) and [Base SAS Procedures Guide](#).

Hadoop Support

The first maintenance release for SAS 9.4 enables you to use the SPD Engine to read, write, and update data in a Hadoop cluster through the HDFS. In addition, you can now use the HADOOP procedure to submit configuration properties to the Hadoop server.

The second maintenance release for SAS 9.4 has the following enhancements:

- *SAS Hadoop Configuration Guide for Base SAS and SAS/ACCESS* is available from the third-party site for Hadoop on support.sas.com. This book explains how to configure SAS components so that you can use SAS technology to connect to Hadoop.
- SAS can write Hadoop MapReduce job information to the SAS log.
- The SPD Engine improves Hadoop performance.
- You can submit HDFS commands through WebHDFS.

For more information, see [SAS 9.4 SPD Engine: Storing Data in the Hadoop Distributed File System](#) and the HADOOP procedure in [Base SAS Procedures Guide](#). For more information about HDFS commands, see “FILENAME (Hadoop Access Method)” in [SAS Statements: Reference](#).

Improved Performance

- SAS can process large amounts of data more efficiently by using new system options to align data and utility files on a page boundary and to set the page size for a SAS library to be the same size as a RAID stripe.
- Optimization processes to determine page size and the default size of a logical record length have been enhanced.
- The Scalable Performance Data Engine (SPD Engine) enables the caching of opened SPD Engine files.

In the second maintenance release for SAS 9.4, the SPD Engine enhances I/O control and efficiency, and improves Hadoop performance.

For more information, see [SAS System Options: Reference](#), [SAS Language Reference: Concepts](#), and [SAS Scalable Performance Data Engine: Reference](#).

Increased Security

- SAS/SECURE is a product within the SAS System, and it is now included with Base SAS. In prior releases, SAS/SECURE was an add-on product that was licensed separately. A separate license for SAS/SECURE is no longer required. This change makes strong encryption available in all deployments (except where prohibited by import restrictions).
- SAS/SECURE increases the security by using the industry standard Advanced Encryption Standard (AES) with 64-bit salt. The components of the SAS language that support security use the AES encryption to encrypt and secure SAS data.
- SAS supports mixed-case passwords and the IBM standard for password phrases up to 100 characters.
- SAS data sets can be better secured by placing them in a metadata-bound library, which is a physical library that is tied to a metadata object.
- The SAS logging facility supports SAS/CONNECT spawner and encryption activity, and the auditing of logging configuration changes, SAS data set access, and access to metadata-bound libraries. Logger activity and level settings can be made secure.
- E-mail security has been enhanced.

The first maintenance release for SAS 9.4 incorporates a new default location for the TLS Certificate Authority for UNIX and z/OS foundation servers, and support for Subject Alternative Names in TLS certificates on UNIX and z/OS clients and servers. Authorized users of metadata-bound libraries can access data without supplying the key-in code.

In the second maintenance release for SAS 9.4, SAS 9.4 on UNIX and z/OS supports OpenSSL 1.0.1h.

For more information, see [Encryption in SAS](#), [Base SAS Procedures Guide](#), [SAS Logging: Configuration and Programming Reference](#), [SAS System Options: Reference](#), and [SAS Guide to Metadata-Bound Libraries](#).

Execute the DATA Step in New Supported Environments

In the first maintenance release for SAS 9.4, the DATA step runs in-memory in the SAS LASR Analytic Server and inside Hadoop using SAS/ACCESS and the SAS Embedded Process, with limitations. Note that the DATA step processing in Hadoop is preproduction.

In the second maintenance release for SAS 9.4, DATA step processing in Hadoop has moved from preproduction status to production status.

For more information, see [SAS LASR Analytic Server: Reference Guide](#) and [SAS In-Database Products: User's Guide](#).

Enhance Your SAS Output

- The Output Delivery System (ODS) Report Writing Interface (RWI) enables you to create and manipulate predefined ODS objects in a DATA step to create highly customized output.
- Using new ODS destinations, you can create EPUB, HTML5, and Microsoft PowerPoint files.
- You can now create text and list templates.
- You can arrange ODS output objects exactly where you want them on a page, or use dynamic placement of objects by using a grid structure.
- A new procedure creates table templates and binds them with input data set in one statement.
- You can animate multi-page GIF images and SVG files by setting system options.

The first maintenance release for SAS 9.4 enables you to apply cascading style sheets and includes support for EPUB 3 standard.

The second maintenance release for SAS 9.4 has enhancements for the EPUB, EPUB3, and HTML5 destinations.

For more information, see [SAS Output Delivery System: User's Guide](#), [SAS Language Reference: Concepts](#), and [SAS System Options: Reference](#).

Enhanced ODS Statistical Graphs

- The ODS Graphics products provide several new plot types, including axis tables that create an axis-aligned row or column of textual data.
- Numerous plot layout, panel, and axis options have been added to control and enhance the output of your graphs. For example, you can now customize the appearance attributes for group values without changing the ODS style template. You can also now specify a color-priority rotation pattern for cycling graph data attributes.
- A new sub-pixel rendering feature provides smoother curves for line charts and more consistent spacing in bar charts.
- The ODS Graphics products provide more options for fitting or splitting data labels, curve labels, and axis tick values when there is not enough room to display the text normally. The data label positioning algorithm was improved to better position the data labels with their data markers. In addition, data markers can now be adjusted when multiple observations have the same response value.
- The ODS Graphics Designer introduces an Auto Charts feature that generates a variety of graphs automatically, based on your data.
- The ODS Graphics suite of products includes the Graph Template Language, ODS Graphics procedures, ODS Graphics Designer, and ODS Graphics Editor.

In the first maintenance release for SAS 9.4, ODS Graphics has new and revised plots, charts, and panels.

In the second maintenance release for SAS 9.4, ODS Graphics has a new text plot and several enhancements to the graphics output.

For more information, see [SAS Graph Template Language: Reference](#), [SAS ODS Graphics: Procedures Guide](#), [SAS ODS Graphics Designer: User's Guide](#), and [SAS ODS Graphics Editor: User's Guide](#).

Locked-down State

In the first maintenance release for SAS 9.4, the SAS server administrator can create an environment where your SAS client has access to a specific set of directories and files if you are running in a client/server environment. All other directories and files would be inaccessible. When SAS is in a locked-down state, access to several SAS language elements is restricted.

In the second maintenance release for SAS 9.4, certain access methods and their related procedures are disabled, by default, when a SAS session is locked down.

For more information, see [SAS Language Reference: Concepts](#)

Create Customized Attributes for Data Sets and Variables

You can create attributes for data sets and variables to contain information that you supply by using extended attributes. Extended attributes are part of a data set and are managed with the DATASETS procedure. The procedures that process data sets, such as CPORT, DOWNLOAD, and SQL, support extended attributes. For more information, see [SAS Language Reference: Concepts](#).

Preserve the SAS Environment between SAS Sessions

The Work library data sets and catalogs, and the values of global statements, macro variables, and system options can be preserved between SAS sessions. For more information, see [SAS Language Reference: Concepts](#), [SAS System Options: Reference](#), and [Base SAS Procedures Guide](#).

Write JavaScript Object Notation (JSON)

SAS data sets can be written to an external file in JSON representation. For more information, see [Base SAS Procedures Guide](#).

View SAS Data Sets By Using JMP

SAS data sets can be converted to JMP files to view them by using JMP applications such as the JMP Graph Builder iPad application. For more information, see [Base SAS Procedures Guide](#) and [SAS Statements: Reference](#).

Process Streamed Data

- SAS now processes arbitrary text that contains SAS macro specifications in an input stream. The macro code in the stream can be expanded and stored in a file.
- Stream-record format can be processed by the SFTP access method. Data is transferred in image (binary) mode.

For more information, see [Base SAS Procedures Guide](#) and [SAS Statements: Reference](#).

Write to a SharePoint Document Library

You can use the WebDAV access method to write a file to a SharePoint document library, specify the name of an authentication domain metadata object, and create and delete a directory. For more information, see [SAS Statements: Reference](#).

Read User Text

The DATAURL Access Method reads character and URL-encoded characters, and BASE64 data. For more information, see [SAS Statements: Reference](#).

Read ZIP Files

The new ZIP Access Method reads ZIP files. For more information, see [SAS Statements: Reference](#).

Process Time and Datetime Values By Using Time Zones

The SAS language now supports time zones based on Universal Coordinate Time (UTC). Data sets and catalog time stamps can specify the time based on a specific time zone. You can specify a specific time zone, or you can specify an area of the world for SAS to determine the time for that area, taking into account Daylight Saving Time.

The second maintenance release for SAS 9.4 includes new time zone functions.

For more information, see [SAS Functions and CALL Routines: Reference](#), [SAS System Options: Reference](#), and [SAS National Language Support \(NLS\): Reference Guide](#).

Manage Locale Information in a Data Set

After placing locale information in a data set, SAS can use the data set to configure SAS for a locale. A new procedure manages the data set and writes the locale information to the SAS registry. For more information, see [SAS National Language Support \(NLS\): Reference Guide](#).

Change the Language That Is Used for Output

Using system options, you can change the language of SAS output and the SAS log. For more information, see [SAS National Language Support \(NLS\): Reference Guide](#).

Audit and Report More about SAS and SAS Applications

- New loggers audit logging configurations, access to SAS data sets, and metadata-bound libraries.
- The ARM_DSIO subsystem has new ARM metrics that report data set information.

The second maintenance release for SAS 9.4 enables additional control over log file permissions and destinations.

For more information, see [SAS Logging: Configuration and Programming Reference](#) and [SAS Interface to Application Response Measurement \(ARM\): Reference](#).

Support for Clustered or Single SAS Metadata Server

The SAS Metadata Server can be configured as a clustered metadata server or as a single metadata server in SAS 9.4. For more information about enhancements that enable you to monitor and manage the cluster from SAS, see [SAS Language Interfaces to Metadata](#).

Transporting SAS Files

The second maintenance release for SAS 9.4 can read from and write to transport files in SAS Version 5 (V5) or SAS Version 8 (V8) formats by using autocall macros. For more information, see [Moving and Accessing SAS Files](#).

General Enhancements to SAS Procedures

In the first maintenance release for SAS 9.4, changes and enhancements to procedures enable you to determine the encoding of data sets in a transport file, transport data sets with timezone offsets, generate a one-time password from the metadata server to access the SAS Content Server, and support user identity authentication. A link and supporting text were added for Microsoft Excel functions.

The second maintenance release for SAS 9.4 includes the following enhancements:

- In DS2 and FedSQL, you can control the behavior of the SAS session when an NLS transcoding failure occurs.
- You can control the sorting of imported files according to the destination collating sequence.
- Passwords are hidden in the SAS log.
- The REPORT procedure supports several statistical keywords.

For more information, see [Base SAS Procedures Guide](#).

Enhancements to Base SAS Statistical Procedures

- The CORR procedure can now create an output data set that contains polychoric correlation statistics and an output data set that contains polyserial correlation statistics.
- The FREQ procedure now does the following:
 - supports Baker, exact mid- p , likelihood ratio, and logit binomial confidence limits
 - provides score confidence limits for the odds ratio and relative risk and displays them in the corresponding plots
 - provides Mantel-Haenszel, stratified Newcombe, and summary score estimates of the common risk (proportion) difference, which can be displayed in the risk difference plot
 - produces mid p -values for exact tests
 - colors mosaic plot tiles according to the values of the Pearson residuals or the standardized residuals
 - displays the Pearson residuals in the CROSSLIST table
- The UNIVARIATE procedure now enables you to overlay histograms that are associated with different levels of a CLASS variable onto a single plot, offers improved maximum likelihood estimation for Johnson S_U distribution parameters, and calculates the geometric means of analysis variables.

For more information, see [Base SAS Procedures Guide: Statistical Procedures](#).

SAS under UNIX

In the first maintenance release for SAS 9.4, you can enable SAS programs to send messages to and receive messages from an ActiveMQ message broker and any JMS API-compliant message service in the UNIX environment.

The second maintenance release for SAS 9.4 has the following enhancements:

- You can specify Read, Write, and Execute permissions for a fileref.
- In a locked-down state, some FILENAME statement access methods are, by default, not available but can be re-enabled by the SAS server administrator.
- New information is available about UNIX environment variables.
- You can measure system performance.

For more information, see [SAS Companion for UNIX](#).

SAS under Windows

In the first maintenance release for SAS 9.4, details have been added in support of Windows 32-bit architecture.

The second maintenance release for SAS 9.4 has the following enhancements:

- SAS provides a utility to clear temporary files.
- You can specify Read, Write, and Execute permissions for a fileref.
- In a locked-down state, some FILENAME statement access methods are, by default, not available but can be re-enabled by the SAS server administrator.

For more information, see [SAS Companion for Windows](#).

SAS under z/OS

The second maintenance release for SAS 9.4 has the following enhancements:

- Large block size support for SAS libraries on tape devices improves performance and efficiency.
- The LOCKDOWN feature is supported for foundation servers.
- SAS can generate TCW channel programs for Read operations on some direct access bound libraries, improving I/O performance.

For more information, see [SAS Companion for z/OS](#).

Additional Information

For more information, see these resources:

- [New Base SAS 9.4 Features](#)
- [What's New in Base SAS 9.4 Procedures](#) in *Base SAS Procedures Guide*
- [What's New in Base SAS 9.4 Statistical Procedures](#) in *Base SAS Procedures Guide: Statistical Procedures*
- [What's New in Base SAS 9.4 System Options](#) in *SAS System Options: Reference*
- [What's New in Base SAS 9.4 Language Concepts](#) in *SAS Language Reference: Concepts*
- [What's New in SAS 9.4 Scalable Performance Data Engine](#) in *SAS Scalable Performance Data Engine: Reference*
- [What's New in Encryption in SAS 9.4](#) in *Encryption in SAS*
- [What's New in the SAS 9.4 Logging Facility](#) in *SAS Logging: Configuration and Programming Reference*
- [What's New in the Output Delivery System](#) in *SAS Output Delivery System: User's Guide*
- [What's New in SAS 9.4 Graph Template Language](#) in *SAS Graph Template Language: Reference*
- [What's New in SAS ODS 9.4 Graphics Procedures](#) in *SAS ODS Graphics: Procedures Guide*
- [What's New in SAS 9.4 ODS Graphics Designer](#) in *SAS ODS Graphics Designer: User's Guide*
- [What's New in SAS 9.4 ODS Graphics Editor](#) in *SAS ODS Graphics Editor: User's Guide*
- [What's New in SAS 9.4 Statements](#) in *SAS Statements: Reference*

- [What's New in SAS 9.4 Functions and CALL Routines](#) in *SAS Functions and CALL Routines: Reference*
- [What's New in SAS 9.4 National Language Support](#) in *SAS National Language Support (NLS): Reference Guide*
- [What's New in SAS 9.4 Application Response Measurement](#) in *SAS Interface to Application Response Measurement (ARM): Reference*
- [What's New in SAS 9.4 Language Interfaces to Metadata](#) in *SAS Language Interfaces to Metadata*

SAS/ACCESS

SAS/ACCESS 9.4 Interface for Relational Databases

In SAS 9.4, there are several new SAS/ACCESS engines:

- SAS/ACCESS Interface to Impala
- SAS/ACCESS Interface to PI System
- SAS/ACCESS Interface to PostgreSQL
- SAS/ACCESS Interface to SAP HANA
- SAS/ACCESS Interface to Vertica

Note: The SAS/ACCESS Interface to Impala and the SAS/ACCESS Interface to PI System were added in the second maintenance release for SAS 9.4.

These new engines provide direct, transparent access to the engine through LIBNAME statements and the SQL pass-through facility. You can use various LIBNAME statement options and data set options that the LIBNAME engine supports to control the data that is returned to SAS.

For more information, see [What's New in SAS/ACCESS 9.4 Interface for Relational Databases](#) in *SAS/ACCESS for Relational Databases: Reference* and *SAS/ACCESS Interface to the PI System: Reference*.

SAS/ACCESS 9.4 Interface to Hadoop

Starting in the second maintenance release for SAS/ACCESS 9.4 Interface to Hadoop, HiveServer2 is supported as the default Hive protocol. You can create and append to Hive tables by using the WebHDFS service. SAS supports Hive data types TIMESTAMP, DATE, and VARCHAR for Hive 0.12 and CHAR for Hive 0.13. Also, SAS supports Hive authorization and authentication by using IBM InfoSphere BigInsights 2.1. For more information, see [“Hadoop Support” on page 13](#).

SAS/ACCESS 9.4 Interface to Oracle

Starting in the second maintenance release for SAS/ACCESS 9.4 Interface to Oracle, you can perform bulk loading by using the Oracle Direct Path API instead of the Oracle SQL*Loader utility. Starting with Oracle 12c, the default data type for SAS character variables in SAS output is either VARCHAR2 or CLOB, depending on the length of the variable.

SAS/ACCESS 9.4 Interface to PC Files

SAS/ACCESS 9.4 Interface to PC Files enables you to exchange (import and export) PC files between the original source format and SAS data sets. Files are moved between the native PC format and SAS data sets by using the IMPORT and EXPORT procedures and wizards or by using LIBNAME statements.

SAS/ACCESS 9.4 has several enhancements to support Microsoft Excel XLSX files. For example, you can add a new Microsoft Excel XLSX worksheet to an existing workbook, and you can replace an existing worksheet in a workbook. You can export Excel XLSX files directly to UNIX. In this release, you can specify DBMS=XLSX to read and write to Excel workbooks under UNIX and Microsoft Windows directly without accessing the PC Files Server.

Certain statements used with the IMPORT and EXPORT procedures have been updated: RANGE=, SHEET=, GETNAMES=, GUESSINGROWS=. How RANGE= and SHEET= handle special characters in names has changed in Microsoft Excel XLSX files.

The EXPORT procedure supports the ENCRYPTKEY= option, which specifies the key value that is required for exporting an AES-encrypted SAS data set. Support for the Base SAS ENCRYPTKEY= data set option is also added.

SAS/ACCESS 9.4 imports data from JMP files saved with Version 7 or later formats, and exports SAS data to JMP files with Version 7 or later formats. Support for these newer file formats enables you to access JMP files from an application such as the JMP Graph Builder iPad. SAS/ACCESS 9.4 also supports importing and exporting JMP files with more than 32,767 variables. JMP variable names can be up to 255 characters in length.

Because you can use the Base SAS IMPORT and EXPORT procedures on JMP files without a SAS/ACCESS license, the preceding information applies to SAS 9.4 as well.

In earlier releases of SAS, the META statement was used for importing and exporting JMP files. In SAS 9.4, this statement is no longer supported. Instead, extended attributes are automatically used. If extended attributes are in a file, they are automatically transferred to the new file when that file is imported or exported. For example, when importing a JMP file with extended attributes, the attributes are automatically attached to the new SAS data set.

The ROWSTATE data type is generated by JMP and is used to store several row-level characteristics. If the JMP file contains row state information, PROC IMPORT stores this information as a new variable with the name `_rowstate_`. If the EXPORT procedure finds a column named `_rowstate_`, the procedure converts this column to the row state information in the output JMP file. For more information, see “JMP Data Types” in *SAS/ACCESS Interface to PC Files: Reference*.

Beginning with SAS/ACCESS 9.4, when you import a Stata file, SAS can read multiple Stata missing values and map them to multiple SAS special missing values such as `.a–.z` or a single dot (`.`) for up to 27 missing values.

The PC Files Server can be operated as a Microsoft Windows service or as a Windows application on the 64-bit or 32-bit Windows operating system. Beginning with

SAS/ACCESS 9.4, if the machine does not have Microsoft Office or an ACE driver already installed on it, the 64-bit version of the SAS PC Files Server is the default. For more information, see *SAS PC Files Server: Installation and Configuration Guide*. (This document was first available in the second maintenance release for SAS 9.4.)

Starting in the second maintenance release, SAS/ACCESS 9.4 Interface to PC Files has added a new SAS LIBNAME engine called XLSX. It enables you to directly read and write data between Microsoft Excel XLSX files and SAS on Linux, UNIX, and Microsoft Windows operating environments.

For more information, see [What's New in SAS/ACCESS 9.4 Interface to PC Files](#) in *SAS/ACCESS Interface to PC Files: Reference*.

SAS/CONNECT 9.4

SAS/CONNECT 9.4 offers enhanced tools for managing the SAS/CONNECT spawner, including new spawner start-up options, a new spawner interface, and a new spawner executable file that is the same for each operating environment. SAS/CONNECT also features enhanced logging and messaging support, enhanced data transfer of encoded data, support for several new Base SAS language elements, and support for the upload and download of extended attributes that use the UPLOAD and DOWNLOAD procedures.

The LOCKDOWN statement and LOCKDOWN system option are new in the first maintenance release for Base SAS 9.4. With LOCKDOWN, the SAS server administrator can create a restricted environment in which the SAS/CONNECT client has limited access to a designated set of directories and files.

In the second maintenance release for SAS/CONNECT 9.4, you can now use the wildcard character to specify 0 or more characters anywhere in the filename. This new pattern-matching capability enables you to more efficiently transfer data comprised of multiple files to and from remote sessions.

For more information, see [What's New in SAS/CONNECT 9.4](#) in *SAS/CONNECT User's Guide*.

SAS/GIS 9.4

SAS/GIS 9.4 expands its import capability to include the U.S. Census Bureau's Topologically Integrated Geographic Encoding and Referencing (TIGER) shapefiles (.shp) that are dated 2007 to the present. You can now organize and analyze, either interactively or programmatically, the most current spatial data. You can also continue to work with TIGER Record Type (RT) files that are dated prior to 2007.

For more information, see [What's New in SAS/GIS 9.4](#) in *SAS/GIS: Spatial Data and Procedure Guide*.

SAS/GRAPH 9.4

SAS/GRAPH 9.4 includes the following enhancements:

- The GEOCODE procedure now supports non-U.S. street geocoding. To support non-U.S. street geocoding, new lookup data sets are available, and the existing lookup data sets are reformatted. A new import macro program, %GEOBASE2GEOCODE, and an updated version of %TIGER2GEOCODE are available from the SAS Maps Online website. These macros create lookup data sets in the new format. The new DIRECTION= option enables you to specify an alternate data set of street direction names and abbreviations, such as northwest or NW. The new STATE= option enables you to specify an alternate data set that contains state or province character names rather than FIPS numeric codes. The STREET geocoding method now provides several new and changed values for the output variables _MATCHED_ and _NOTES_ to support U.S. and non-U.S. street geocoding.
- The map data sets in the MAPSGFK library have been updated.
- The GINSIDE procedure provides two new options to control whether to keep or drop map data set variables, KEEPMAPVARS and DROPMAPVARS.

- In the GMAP procedure, the new LATLON= option specifies that the unprojected LAT and LONG variables from the map data set are used for coordinate data instead of the Y and X variables. The new RESOLUTION= option specifies that the GMAP procedure use those map observations containing a resolution variable with a certain level (value). The new preproduction OSM option enables you to specify an OpenStreetMaps style and project map data onto an OSM map.
- In the GPROJECT procedure, the LATLON= option specifies that the unprojected LAT and LONG variables from the map data set are used for coordinate data instead of the Y and X variables. The new FROM= and TO= options invoke the PROJ4 projection and enable you to specify a coordinate system for the projection. These FROM= and TO= options can also be used together to reverse a projection.
- In the GREMOVE procedure, the new DROPVARS option drops all input data set variables from the output map data set.
- In the GPLOT procedure, the new CBASELINE= option specifies the color of the horizontal baseline for reference lines of a plot.
- The GCHART procedure provides new options. The PPERCENT= option modifies the font, height, and color of the percentages that are displayed in pie slice labels. When used with the PLABEL= option (which controls the text attributes of pie slice labels), you can easily differentiate between percentages and text labels. The EXPLODE=ALL option pulls all of the slices outward from the center of the pie.
- In the GKPI procedure, the FORMAT= option now accepts user-defined formats.
- The SVG and GIF devices now support animation. In addition, the GIF device now supports RGBA color mode (transparency) and anti-aliasing.
- The new TIFF and TIFFK devices produce TIFF images and support the RGBA and CMYK color modes, respectively.
- The new EMFDUAL device produces a graphics file that contains both EMF and EMF Plus records. It supports RGBA colors (transparency).
- The new %SHORTCUT autocall macro creates a shortcut device that is linked to the existing Universal Printers of the same name. It can also define a new Universal Printer and shortcut device and link the device to the Universal Printer.

- The Annotate Facility has several enhancements. The IMGPATH variable now accepts a URL location for graphics that are on web pages. The HTML= option enables you to animate text labels that are created with the LABEL function, and it has been added to the ARROW function. The %CENTROID macro has been enhanced to return more accurate centroid locations.
- The Tile Chart applet supports adding one or more custom menu items to the tile chart pop-up menu.
- The Treeview applet supports assigning multiple drill-down links for each node in the diagram.
- TITLE and FOOTNOTE statements now support the ALT= option, which specifies descriptive text for a URL to which a title or footnote links, or for the title or footnote itself.

Starting with the first maintenance release of SAS 9.4, the following new functionality and enhancements are included:

- The GEOCODE procedure for street geocoding offers a new variable to handle multiple street type abbreviations, changes requirements for data set indexes, clarifies the text string requirements for the DIRECTION variable, and adds four note value tokens. In addition, the GEOCODE procedure adds two variables to the SASHELP.ZIPCODE lookup data set to support city geocoding.
- The CHORO statement in the GMAP procedure supports a production level of the OSM (OpenStreetMap) option when displaying maps using a JAVA or JAVAIMG device.
- To see a brief description of any SAS data set in the SASHELP library, as well as output displaying the first five observations in each data set, see [SASHELP Data Sets](#).

Starting in the second maintenance release for SAS 9.4, the following new functionality and enhancements are included:

- The GEOCODE procedure for city geocoding offers a new variable to handle nonstandard state values, changes requirements for the customized versions of the SASHELP.GCSTATE lookup data set, changes variable values within the

SASHELP.GCSTATE lookup data set, allows non-abbreviated state names, and offers an improved %TIGER2GEOCODE import program.

- The GRADAR procedure offers a new parameter on the SPKLABEL= option.
- The PowerPoint destination supports both the JAVAIMG device and the ACTXIMG device. The ZPNG device is disabled. Also, new HTML attributes are added to the SVG, SVGT, and SVGView devices.
- The GTILE procedure now supports the NOLEGEND option.

For more information, see [What's New in SAS/GRAPH 9.4](#) in *SAS/GRAPH: Reference*.

SAS Grid Manager 9.4

SAS Grid Manager provides grid options sets and grid-launched workspace servers. A grid options set is a collection of grid options, SAS options, and required grid resources that can be assigned when a specified SAS application is used by a specified user or group. Using grid options sets enables you to map options for grid jobs to application users without creating a new SAS Application Server context for each option and without requiring input from the application users.

Using grid-launched workspace servers enables SAS Grid Manager to launch new workspace servers for load balancing. This capability enables the grid's management and policies to be applied to the workspace server and simplifies how some SAS applications, such as SAS Enterprise Guide, send jobs to a SAS grid.

Starting in the second maintenance release for SAS 9.4, a Grid Manager plug-in is available from SAS Environment Manager. This plug-in enables you to perform these tasks:

- view information about LSF clusters
- view information about and manage grid jobs, hosts on the grid, and queues
- view information about and manage high availability applications
- view audit records

For more information, see the software product page for [SAS Grid Manager](#).

SAS/SHARE 9.4

SAS/SHARE 9.4 features enhanced security with metadata-bound library support and a new USETRUSTEDUSER procedure option, as well as support for extended attributes in SAS data sets and SAS libraries. Also, SAS/SHARE naming conventions for user IDs and passwords have been enhanced to allow longer names (up to 256 characters), mixed case, spaces, and punctuation.

For more information, see [What's New in SAS/SHARE 9.4](#) in *SAS/SHARE User's Guide*.

SAS Studio

SAS Studio 3.1

SAS Studio is a development application for SAS that you access through your web browser. With SAS Studio, you can access your data files, libraries, and existing programs, and you can write new programs. You can also use the predefined tasks in SAS Studio to generate SAS code. When you run a program or task, SAS Studio connects to a SAS server to process the SAS code. The SAS server can be a hosted server in a cloud environment, a server in your local environment, or a copy of SAS on your local machine. After the code is processed, the results are returned to SAS Studio in your browser.

SAS Studio supports multiple web browsers, such as Microsoft Internet Explorer, Apple Safari, Mozilla Firefox, and Google Chrome.

In addition to writing and running your own SAS programs, you can use the predefined tasks that are included with SAS Studio to analyze your data. The tasks are based on SAS System procedures and provide access to some of the most commonly used graph

and analytical procedures. You can also use the default task template to write your own tasks.

SAS Studio 3.2

SAS Studio 3.2 includes several new features for programmers. The SAS Program Package is a file that contains a snapshot of a SAS program along with its log and HTML results. The autosave functionality creates copies of each previously saved program so that you can recover files if your browser closes unexpectedly. You can create a summary page for code that you have written as well as for code that is automatically generated when you run a task. New code snippets show you how to use the SAS macro functionality.

In addition, you can now send a copy of your results, the associated code, and the log files to another user through e-mail. You can also access files on an FTP server by creating a folder shortcut.

Several new analytical tasks (Binary Logistic Regression, Linear Regression, and Predictive Regression Modeling) are available. The new Box Plot task enables you to easily create box plots, and the new Data Exploration task uses graphs to help you learn more about your data.

For more information, see [What's New in SAS Studio 3.2](#) in *SAS Studio: User's Guide*.

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SAS Business Rules Manager

SAS Business Rules Manager 2.1

SAS Business Rules Manager 2.1 runs on SAS 9.4 and includes several new features and enhancements:

- integration of SAS Business Rules Manager into the SAS Decision Manager suite of products
- support for authorization
- ability to define and view data tables
- ability to easily run SAS Visual Data Builder to define and create data tables
- ability to generate rule flows from market basket data
- macros for importing and exporting folders and lookup tables
- support for SAS Web Infrastructure Platform Data Server
- ability to view publish information for rule flows
- support for intermediate terms

For more information, see the product documentation page for [SAS Business Rules Manager](#)..

SAS Business Rules Manager 2.2

SAS Business Rules Manager 2.2 runs on the second maintenance release for SAS 9.4. New features and enhancements in this release enable you to perform these tasks:

- create libraries and register tables in the SAS Metadata Repository
- send rule flows through approval workflows and track workflow tasks
- manage versions of rule sets and rule flows

- create rule flows as stored processes
- run a wizard to generate and import vocabularies, rule sets, and rule flows from an input data source by using the Decision Tree, Scorecard, Market Basket Analysis, or Recency Frequency Monetary discovery techniques
- execute rule flows inside the databases by using the SAS In-Database Code Accelerator for Teradata and Greenplum
- selectively include rule sets in a rule flow
- save rule flow tests and display the results of previous tests
- display the terms and lookup tables that are used in a rule set
- import terms from an input data table
- search for rule sets by term

For more information, see [What's New in SAS Business Rules Manager 2.2](#) in *SAS Business Rules Manager: User's Guide*.

SAS Contextual Analysis

SAS Contextual Analysis 12.3

New for SAS 9.4, SAS Contextual Analysis is a web-based categorization application that combines the powers of SAS Text Miner and SAS Enterprise Content Categorization into a single user interface. Using SAS Contextual Analysis, you can build models that automatically categorize a set of input documents, identify key textual data in your document collections, remove meaningless textual data, categorize that data, and customize your models in order to realize the value of your text-based data.

SAS Contextual Analysis 13.2

SAS Contextual Analysis 13.2 is a major product release with an enhanced user interface. SAS Contextual Analysis 13.2 combines more of the machine learning capabilities of SAS Text Miner with the rules-based linguistic methods for categorization

and extraction in SAS Enterprise Content Categorization. It is now also possible to import SAS Enterprise Content Categorization projects and create custom concepts in SAS Contextual Analysis. Generated category rules follow the SAS Enterprise Content Categorization category rules format (MCAT) and are fully supported. Document-level sentiment scoring is now available. A feature for viewing and downloading score code for concepts, sentiment, and categories enables you to leverage your model to score external documents. In addition, the interfaces for document viewing, project creation and editing, and the Properties page have been enhanced.

For more information, see the product documentation page for [SAS Contextual Analysis](#).

SAS Decision Manager

SAS Decision Manager 2.1

SAS Decision Manager enables businesses to automate decisions that affect everything from profitability to customer satisfaction. By automating decisions, organizations in every industry can function more efficiently and improve interactions with customers, partners, suppliers, and employees. Organizations that are highly regulated, such as financial services, health care, and insurance, can more easily achieve compliance as a result of repeatable, traceable decisions.

SAS Decision Manager helps organizations manage data, business rules, analytical models, and optimization techniques. Rule management, model management, data preparation, and deployment are integrated into a consistent interface for easier accessibility.

SAS Decision Manager 2.2

SAS Decision Manager 2.2 runs on the second maintenance release for SAS 9.4. The full functionality of the SAS Model Manager Java Client application and the Workflow Console web-based application have been integrated into SAS Decision Manager 2.2.

New features and enhancements in this release enable you to perform these tasks:

- create libraries and register tables in the SAS Metadata Repository
- manage workflows and track workflow tasks
- manage versions of projects, rule sets, and rule flows
- publish models to Hadoop and SAP HANA
- create rule flows as stored processes
- run a wizard to generate and import vocabularies, rule sets, and rule flows from an input data source by using the Decision Tree, Scorecard, Market Basket Analysis, or Recency Frequency Monetary discovery techniques
- execute rule flows inside the databases by using the SAS In-Database Code Accelerator for Teradata and Greenplum
- selectively include rule sets in a rule flow
- save rule flow tests and display the results of previous tests
- display the terms and lookup tables that are used in a rule set
- import terms from an input data table
- search for rule sets by term

For more information, see the product documentation page for [SAS Decision Manager](#).

SAS Enterprise Miner

SAS Enterprise Miner 12.3

SAS Enterprise Miner 12.3 is a new release that runs on SAS 9.4. This major release includes new tools and significant updates to existing tools to enhance your data mining experience. Improved scalability emphasizes the ability to train high-performance data mining nodes on complex data that is used by existing personal SAS workstations or SAS servers.

Key updates to the core data mining tools include the following:

- link analysis for the visualization of translational data as a network of interconnected, linked entities
- updated decision tree node

Data mining application extensions include the following:

- support for time varying covariates with the **Survival Data Mining** node. Users can also set left-truncation and censor dates.
- treatment level selection for the incremental response node.
- interval target including loss given default support for the interactive grouping node of SAS Credit Scoring for SAS Enterprise Miner.

All of the high-performance data mining nodes are now available (at no additional licensing fee) for threaded parallel processing on your existing SAS Enterprise Miner desktop or server. High-performance *k*-means clustering and decision tree nodes have been added to SAS High-Performance Data Mining.

SAS Enterprise Miner 13.1

SAS Enterprise Miner 13.1 is a major release that runs on the first maintenance release for SAS 9.4 and later releases.

Here are some of the new features and enhancements in the core user interface:

- The **Open Source** node enables users to integrate R language code inside a SAS Enterprise Miner process flow diagram.
- The **Save Data** node provides users with a simple way to save training, validation, test, score, or transaction data from a SAS Enterprise Miner path to a user-defined path, or a previously defined SAS library.
- The **Decision Tree** node enables users to import a previously created model and apply this model to new data.
- The **Time Series Dimension Reduction** node extracts features from each time series and reduces the dimension of time.

- The **Time Series Correlation** node helps users perform correlation and cross-correlation analyses. It calculates numerous auto-correlation and cross-correlation statistics on time series data.
- The **Time Series Decomposition** node enables you to perform seasonal decomposition of time series.

Here are some of the new features and enhancements in the SAS Enterprise Miner High-Performance Data Mining nodes:

- The **HP Cluster** node uses the high-performance HPCLUSTER procedure to perform k -means clustering analysis in distributed computing environments.
- The **HP Forest** node provides users with a choice of variable selection methods: Out-of-Bag (OOB) Average Error for interval targets, or OOB marginal reduction for class targets.
- The **HP GLM** node uses the high-performance HPGENSELECT procedure to fit a generalized linear model in a distributed computing environment.
- The **HP Neural** node now provides a User-Defined Architecture.
- The **HP Principal Components** node performs principal component analysis by using the high-performance HPPRINCOMP procedure.
- The **HP Support Vector Machine** node uses the newly developed high-performance HPSVM procedure for binary classification problems.
- The **HP Tree** node adds support for models that have interval targets.

Here are some of the new features and enhancements in the SAS Enterprise Miner high-performance procedures:

- The new HPBNET procedure learns a Bayesian network from an input data set to create a predictive model in supervised data mining.
- The new HPCLUS procedure enables you to read and write data in distributed form and to perform clustering and scoring in parallel.
- The new HPSVM procedure executes the support vector machine (SVM) algorithm in multiple threads.

- The HPFOREST procedure offers enhancements to enable the training algorithm to use multiple concurrent threads, to segregate data for pruning and early stopping, and to generate an observation ID in scored data.
- The HPNEURAL procedures now enables you to use an arbitrary number of hidden layers to support deep learning, to specify the Poisson and gamma error function and the exponential output layer activation function to support modeling of count data, and to specify an activation function for hidden layers and for the output layer.

SAS Enterprise Miner 13.2

SAS Enterprise Miner 13.2 is a major release and runs on the second maintenance release for SAS 9.4 and later releases.

SAS Enterprise Miner 13.2 creates a `metadcode.sas` file that enables you to specify global metadata changes. Also, the **Model Regression** node provides a new Mining Function property that enables you to specify the type of model to register.

Here are the new features and enhancements in the SAS Enterprise Miner High-Performance **Data Mining** node:

- The **HP Regression** node produces a new variance inflation factor (VIF) table that can be used to detect multicollinearity.
- The **HP Forest** node adds support for a partitioned validation data.
- SAS Enterprise Miner 13.2 adds support for SAP HANA and Scalable Performance Data Engine (SPD Engine).

Here are some of the new features in the SAS Enterprise Miner high-performance procedures:

- The new HPTSDR procedure reduces the dimensionality of time series (in transposed, transactional, and columnwise formats), enabling you to take advantage of fewer dimensions to perform tasks such as similarity and clustering.
- The HPCLUS procedure now uses the *k*-modes algorithm for clustering nominal input variables and enables you to specify the imputation method for nominal variables and the distance measure for similarity in the *k*-modes algorithm for nominal input variables.

- The HPFOREST procedure now enables you to create an ODS table that contains a variety of fit statistics for each target variable and enables you to specify the cosine activation function for both hidden layer neurons and target layer neurons.
- The HPSVM procedure now supports cross validation for penalty selection, the ID statement, training output, and a new ODS table that contains penalties and their corresponding fit statistics.

For more information about SAS Enterprise Miner 13.2, see the software product page for [SAS Enterprise Miner](#).

SAS Event Stream Processing Engine

2.3

SAS Event Stream Processing Engine 2.3 includes a new Streamviewer tool that uses the HTTP protocol. The tool provides enhanced graphic and publishing capabilities. 1+N way failover has been enhanced to support the RabbitMQ messaging system. SAS Event Stream Processing Engine now enables expressions to access an event's opcode or flags. This release also includes a new Project publish connector and a new RabbitMQ connector and adapter.

For more information, see the product documentation page for [SAS Event Stream Processing Engine](#).

SAS/ETS

SAS/ETS 12.3

SAS/ETS 12.3 is essentially a maintenance release of SAS/ETS software that runs on SAS 9.4.

In addition, the procedures that make up the SAS High-Performance Econometrics product are available with SAS/ETS for use in single-machine mode. Depending on

data characteristics and model complexity, you might see performance improvements over comparable SAS/ETS functionality that is not multithreaded.

For more information, see [Overview of SAS/ETS High-Performance Procedures](#) in *SAS/ETS User's Guide: High-Performance Procedures*.

SAS/ETS 13.1

SAS/ETS 13.1 is a major release that runs on the first maintenance release of SAS 9.4 and later releases.

Here are some of the new features and enhancements:

- The AUTOREG procedure now enables you to estimate GARCH models without constraints on parameters.
- The COPULA procedure now supports tail dependence plots.
- The COUNTREG procedure now supports the following features:
 - The STORE statement enables you to save your model parameter estimates and other statistics in item stores.
 - New options in the CLASS statement enable you to control parameterization methods, reference levels, and sort order for classification variables.
- The SEVERITY procedure now supports the following features:
 - The scale regression model can include offset variables.
 - The new OUTSCORELIB statement creates scoring functions.
- The PANEL procedure now supports the Blundell and Bond system GMM estimator.
- The QLIM procedure now provides the following features:
 - Bayesian estimation is available for most of the multivariate models.
 - Endogeneity issues can now be addressed in most models.
 - Heckman's two-step procedure now enables the model for the selected sample to be a discrete choice or limited dependent variable model.

- The SSM procedure now supports the following features:
 - A more general state-transition equation permits inclusion of regression effects.
 - You can now search for structural breaks in any model component.
- The UCM procedure now provides a bootstrap-based procedure for computing standard error of a series and component forecasts.
- The VARMAX procedure now supports the following features:
 - huge performance and scalability improvements for VARMAX and VARMAX-GARCH models that are estimated by maximum likelihood
 - inequality constraints on parameters
 - initial values for parameters
 - matrix expressions, operators, and functions in the BOUND, INITIAL, RESTRICT, and TEST statements
 - multivariate DCC GARCH models
 - four new forms of univariate GARCH models: exponential GARCH (EGARCH), power GARCH (PGARCH), quadratic GARCH (QGARCH), and the threshold GARCH (TGARCH)
 - concentrated likelihood estimation for CCC and DCC GARCH models
- The new SASEFRED interface engine enables you to retrieve economic data from the FRED website, which is hosted by the Economic Research Division of the Federal Reserve Bank of St. Louis.
- The SASECRSP interface engine supports Linux X64 (64-bit), Solaris Sun Ultra Sparc, Solaris on Intel x86, and Windows.
- The new SASEXFSM interface engine enables you to access FactSet data that are provided by the FactSet FASTFetch web service.

Here are some of the new high-performance features and procedures in SAS/ETS 13.1:

- The experimental high-performance HPCDM procedure estimates a compound distribution model, which is the distribution of an aggregate loss that you expect to see in a given period of time.
- The new HPCOPULA procedure is a high-performance version of the COPULA procedure, which enables you to simulate realizations of multivariate distributions by using the copula approach.
- The new HPPANEL procedure is a high-performance version of the PANEL procedure, which analyzes a class of linear econometric panel data models.
- The HPCOUNTREG procedure now supports the BY statement.
- The HPQLIM procedure now supports discrete choice models and the BY statement.
- The HPSEVERITY procedure now supports the following features:
 - BY statement
 - offset variables in the scale regression model
 - a new OUTSCORELIB statement, which creates scoring functions

For more information, see [What's New in SAS/ETS 13.1](#) in *SAS/ETS 13.1 User's Guide*.

SAS/ETS 13.2

SAS/ETS 13.2 runs on the second maintenance release for SAS 9.4 and later releases.

Here are some of the new features and enhancements:

- The new SASEQUAN interface engine enables you to retrieve economic data from the Quandl website.
- The COUNTREG procedure now supports the following features:
 - A number of Bayesian estimation features are supported.
 - You can control the number of threads that are used during optimization.

- You can store parameter estimates and other results on a per-BY-group basis in the item store so that they can be retrieved later for scoring the BY groups in another data set.
- The PANEL procedure now supports the following features:
 - first-differenced methods for one-way and two-way models
 - panel data cross-sectional dependence test
 - Lagrange multiplier (LM) test for cross-sectional and time effects
 - locally mean most powerful (LMPP) and standardized Lagrange multiplier (SLM) tests
 - Gourieroux, Holly, and Monfort Lagrange multiplier test
 - tests for serial correlation and cross-sectional effects
- The QLIM procedure has added an automated algorithm to monitor the quality of the posterior representation through MCMC methods. In doing so, this algorithm can retune and/or reinitialize the MCMC methods until the posterior distribution representation is satisfactory.
- The SASEFRED interface engine now performs error checking to avoid incompatibility of various options.
- The SEVERITY procedure now supports the following features:
 - The CLASS statement is supported.
 - You can specify a wide variety of regression effects, such as singleton continuous effects, polynomial continuous effects, main CLASS variable effects, and more.
 - You can save estimation results in an item store and use them for parameter initialization in a subsequent run of the SEVERITY or HPSEVERITY procedure.
 - You can create scoring functions.
 - You can limit the number of observations that are used to prepare the empirical distribution function (EDF) estimates, enabling you to speed up the EDF

estimation step for large data sets, especially when you specify censoring or truncation effects.

- The VARMAX procedure now supports the following features:
 - p -values for the Johansen cointegration rank test
 - multistep forecast for the multivariate GARCH model, enabling you to obtain the multistep forecast of conditional covariance matrices at any horizons ahead
- The X12 procedure now enables you to specify the following:
 - the size of forecast confidence limits
 - the difference in critical values for almost outliers
 - the alpha value for outlier detection
 - the method of calculating the critical value for outlier detection based on the alpha value and the number of observations in the span that is used for analysis
 - the number of level-shift outliers to consider for forming a temporary level shift
 - the method of adding outliers at each iteration of model estimation
 - the rate of decay for temporary change outliers
 - the moving average filter for each period

For more information, see [What's New in SAS/ETS 13.2](#) in *SAS/ETS 13.2 User's Guide*.

Here are some new features in SAS/ETS high-performance procedures:

- The HPCOUNTREG procedure now supports panel data analysis.
- The HPSEVERITY procedure now supports the following features:
 - The CLASS statement is supported.
 - You can specify a wide variety of regression effects, such as singleton continuous effects, polynomial continuous effects, main CLASS variable effects, and more.
 - You can save estimation results in an item store and use them for parameter initialization in a subsequent run of the SEVERITY or HPSEVERITY procedure.

- You can create scoring functions.
- PROC HPSEVERITY supports the following functions, which were previously available only in the SEVERITY procedure: You can request a variety of plots in single-machine mode; you can create a SAS data set in single-machine mode that contains the EDF and CDF estimates of all distributions that do not fail to converge; you can specify the probability of observability; and you can specify the same options in the NLOPTIONS statement that you can specify in PROC SEVERITY.

For more information, see [What's New in SAS/ETS 13.2 High-Performance Procedures](#) in *SAS/ETS User's Guide: High-Performance Procedures*.

SAS Forecast Server

SAS Forecast Server 12.3

SAS Forecast Server 12.3 runs on SAS 9.4 and includes updates to the web infrastructure. SAS Forecast Server is now integrated with SAS Time Series Studio, which is now production software. SAS Time Series Studio enables you to analyze and structure your time-stamped data. You can export data from SAS Time Series Studio and import it into SAS Forecast Studio.

SAS Forecast Server 13.1

SAS Forecast Server 13.1 is a new release that runs on the first maintenance release for SAS 9.4.

Here are some of the new features and enhancements in this release:

- support for Integrated Windows Authentication, clustered servers, and grid computing environments
- new options for changing the ODS format and execution server when running a report or stored process
- the ability to create a forecast data set for independent variables

For more information about SAS Forecast Server 13.1, see the software product page for [SAS Forecast Server](#).

SAS High-Performance Risk

SAS High-Performance Risk 3.1

SAS High-Performance Risk 3.1 runs on SAS 9.4 and includes these features:

- enhancements to risk analytics include netted and collateralized exposure calculations, portfolio stressing and filtering, and an enhanced scenario builder
- integration with Hadoop and SAS LASR
- enhancements to the user interface include enhanced sorting, the ability to export graphs to Microsoft Excel, the ability to drill down in bar charts, and enhancements to stress testing
- ability for high-performance sensitivity analysis
- improvements to performance

SAS High-Performance Risk 3.2

SAS High-Performance Risk 3.2 provides the following new features:

- access to SAS High-Performance Risk through the SAS Visual Analytics application bar
- ability to export risk explorations to a PDF file
- user interface enhancements
- ability to send data sets from grid nodes directly to a distributed data file system or to in-memory data
- ability to perturb instrument variables in a portfolio

SAS High-Performance Risk 3.3

SAS High-Performance Risk 3.3 provides the following features:

- enhancements to scenario creation and stress testing
- enhanced support for counterparty risk and credit value adjustment
- ability to price a portfolio by both positions and market states
- new SAS language statements

For more information, see the software product page for [SAS High-Performance Risk](#).

SAS/IML

SAS/IML 12.3

SAS/IML 12.3 is essentially a maintenance release of SAS/IML software that runs on SAS 9.4.

For more information, see the software product page for [SAS/IML](#).

SAS/IML 13.1

SAS/IML 13.1 is a major release that runs on the first maintenance release of SAS 9.4 and later releases.

Here are some of the new features and enhancements:

- enhancements to the SAS/IML language syntax:
 - The NEXT keyword now supports expressions.
 - The STOP and ABORT statements now accept a default message that is displayed in the SAS log.
 - The parentheses in the RETURN statement are now optional.

- new support of the Tweedie distribution by the RANDGEN subroutine
- new statistical functions, subroutines, and modules:
 - The CV function returns the sample coefficient of variation for each column of a matrix.
 - The HEATMAPCONT call creates a heat map of a matrix whose values are visualized by using a continuous color ramp.
 - The HEATMAPDISC call creates a heat map of a matrix whose values are visualized by using a discrete color ramp.
 - The KURTOSIS function returns the sample kurtosis for each column of a matrix.
 - The LOGABSDDET function returns the logarithm of the absolute value of a matrix determinant.
 - The LPSOLVE call solves linear programming problems.
 - The MILPSOLVE call solves mixed-integer linear programming problems.
 - The PALETTE function returns a discrete color palette that is suitable for choropleth maps, heat maps, and other graphical visualizations that display a relatively small number of discrete values.
 - The PARENTNAME function returns the name of the matrix that was passed to a module.
 - The SKEWNESS function returns the sample skewness for each column of a matrix.

For more information, see [What's New in SAS/IML 13.1](#) in *SAS/IML 13.1: User's Guide*.

SAS/IML 13.2

SAS/IML 13.2 runs on the second maintenance release for SAS 9.4 and later releases.

Here are some of the new features and enhancements:

- The new experimental EXECUTEFILE subroutine executes SAS/IML statements that are contained in a text file.

- Although not formally a part of SAS/IML software, the new SAS/IML File Exchange in the SAS/IML Support Community enables you to share SAS/IML programs and download programs written by others. You can post SAS/IML functions, tag files, and rate files, and search for files by tags, content, or author.

For more information, see [What's New in SAS/IML 13.2](#) in *SAS/IML 13.2: User's Guide*.

SAS Model Manager

SAS Model Manager 12.3

SAS Model Manager 12.3 runs on SAS 9.4. Major themes for this release include the ability to manage projects collaboratively as one control group, to support additional model classes, and to perform more activities from within SAS Model Manager Workflow Console. New features and enhancements in this major release enable you to perform the following tasks:

- create and manage multiple projects in a control group
- monitor performance of champion models for all projects within a control group and publish the champion models to the SAS Metadata Repository
- schedule performance monitoring tasks.
- specify multiple data sources and collection dates when defining performance monitoring tasks.
- remove models that are published to a database.
- create folders, projects, and versions by using macros. You can also set project properties.
- create and view reports within a workflow activity.
- view the process flow diagram for a workflow.

In addition, SAS Model Manager 12.3 provides support for these areas:

- SAS Enterprise Miner Random Forest (HPFOREST), as well as the SAS/ETS COUNTREG and SEVERITY models
- multiple SAS application servers when scoring or retraining a model, and monitoring performance of champion and challenger models

For more information, see [What's New in SAS Model Manager 12.3](#) in *SAS Model Manager: User's Guide*.

SAS Model Manager 13.1

SAS Model Manager 13.1 runs on the second maintenance release for SAS 9.4. The SAS Model Manager Java Client application and the Workflow Console web-based application have been replaced with an integrated web-based application. The SAS Model Manager Client installation is no longer required on a user's desktop. New features and enhancements in this release enable you to perform the following tasks:

- create libraries and register tables in the SAS Metadata Repository
- manage workflows and track workflow tasks
- publish models to Hadoop and SAP HANA
- manage all versions within a project in one place
- schedule recurrent jobs
- retrain models based on the dashboard project status
- specify performance options for using dynamic data sources and generating dashboard reports
- specify additional reporting options
- attach documents and add comments

For more information, see [What's New in SAS Model Manager 13.1](#) in *SAS Model Manager: User's Guide*.

SAS OpRisk VaR 6.1

SAS OpRisk VaR 6.1 enables you to perform incremental data load, incremental VaR calculation, and reporting using web services rather than the user interface. New reports in this release include FFIEC – Schedule 5 and COREP – Operational Risk.

Here are the enhanced analytics in this release:

- the ability to compute the effect of one additional large loss on VaR
- the ability to model the severity of your losses by combining two lognormal distributions

For more information, see the software product page for [SAS OpRisk VaR](#).

SAS/OR

SAS/OR 12.3

SAS/OR 12.3 is largely a maintenance release of SAS/OR software that runs on SAS 9.4. The most significant addition is PROC OPTLSO for parallel hybrid local search optimization. This procedure, formerly named PROC HPLSO, previously was included only in SAS High-Performance Optimization but is now available with SAS/OR for use in single-machine mode.

For more information, see the software product page for [SAS/OR](#).

SAS/OR 13.1

SAS/OR 13.1 is a major release that runs on the first maintenance release of SAS 9.4 and later releases. It includes new features and enhancements to current features in optimization, discrete-event simulation, and constraint programming.

Here are some of the new features and enhancements:

- The OPTMODEL procedure now supports:
 - direct access to network optimization and analysis algorithms (Experimental)
 - parallel execution of solver invocations in a COFOR loop
 - support for function definition via PROC FCMP in Base SAS software
- The OPTLSO procedure now provides:
 - multiobjective optimization
 - support for the use of array-structured data in function definition (via PROC FCMP)
- The mixed integer linear programming (MILP) solver adds the option to execute in parallel on multiple computational cores. (Experimental)
- SAS Simulation Studio adds:
 - support for custom block icons
 - improvements to the simulation clock display
 - enhancements to the Submodel block interface
 - other interface improvements

For more information, see [What's New in SAS/OR 13.1](#) in *SAS/OR 13.1 User's Guide: Mathematical Programming*.

SAS/OR 13.2

SAS/OR 13.2 runs on the second maintenance release for SAS 9.4 and later releases.

Here are some of the new features and enhancements:

- Several optimization solvers improve their performance.
- PROC OPTMODEL adds the experimental constraint logic programming (CLP) solver.

- The nonlinear programming (NLP) solver adds output of the covariance matrix for the decision variables (parameter estimates).
- The decomposition (DECOMP) algorithm adds new block detection features.
- For the linear programming (LP) interior point solver, the crossover algorithm is applied by default.
- The network solver is now production.
- The parallel implementation of the mixed integer linear programming (MILP) solver is now production.
- SAS Simulation Studio 13.2 provides a new optional parallel mode that executes design points and replications simultaneously on multiple computational cores, a central facility in the new Data Trimmer block to control data collection, and added control on the precision of the numeric values that the Formula block produces.

For more information, see [What's New in SAS/OR 13.2](#) in *SAS/OR 13.2 User's Guide: Mathematical Programming*.

SAS/QC

SAS/QC 12.3

SAS/QC 12.3 is essentially a maintenance release of SAS/QC software that runs on SAS 9.4.

For more information, see the software product page for [SAS/QC](#).

SAS/QC 13.1

SAS/QC 13.1 is a major release that runs on the first maintenance release of SAS 9.4 and later releases.

Here are some of the new features and enhancements:

- The CAPABILITY procedure now provides the following:

- improved parameter estimation for the Johnson S_U distribution
- support for the OVERLAY option, which overlays, onto a single plot, histograms that are associated with different levels of a CLASS variable
- The MVPMONITOR procedure supports the new SCORECHART statement, which produces control charts of principal component score.
- The RELIABILITY procedure now supports the following features:
 - horizontal plots of failure and censoring times for recurrent events data
 - parameter estimation and probability plotting for the Gompertz and Gompertz-Makeham distributions
- The SHEWHART procedure has several new options:
 - The ACTUALALPHA option displays the effective α value, which might not be the same as the requested α value, in the limits legend of an attribute chart. This option is available in the CCHART, NPCHART, PCHART, and UCHART statements.
 - The IDSYMBOLHEIGHT= option controls the size of the symbols that are used to plot outliers in box plots that are produced by the BOXCHART statement.
 - The PROBLIMITS=DISCRETE option requests discrete control limits for attribute charts. This option is available in the CCHART, NPCHART, PCHART, and UCHART statements.
 - The WESTGARD= option applies Westgard rules to a Shewhart chart for quality control in health care laboratories.
 - The WHISKERPERCENTILE= option requests that the whiskers of the box plots that are produced by the BOXCHART statement be drawn to percentile values.

There are four new macros for measurement system analysis:

- The %basicEMP macro performs a basic evaluating-the-measurement-process (EMP) analysis.
- The %shortEMP macro performs the eight steps for characterizing relative utility.

- The %gaugeRR macro performs a traditional gauge repeatability and reproducibility analysis.
- The %honestGaugeRR macro creates an “honest” gauge repeatability and reproducibility report.

For more information, see [What's New in SAS/QC 13.1](#) in *SAS/QC 13.1 User's Guide*.

SAS/QC 13.2

SAS/QC 13.2 runs on the second maintenance release for SAS 9.4 and later releases.

Here are some of the new features and enhancements:

- The ANOM, CUSUM, MACONTROL, and SHEWHART procedures now use templates that are written in the Graph Template Language to produce ODS Graphics.
- The CAPABILITY procedure now calculates the geometric means of analysis variables and can save them in an output data set or display them in a graph (or both).
- The MVPMONITOR procedure now includes an option that enables you to specify the distribution that is used to compute control limits.
- The RELIABILITY procedure can now produce confidence bands for stress-lifetime plots that are produced by the RELPLOT statement.

For more information, see [What's New in SAS/QC 13.2](#) in *SAS/QC 13.2 User's Guide*.

SAS Risk Dimensions 6.1

SAS Risk Dimensions 6.1 includes infrastructure changes to support SAS High-Performance Risk 3.1 and SAS Risk Management for Banking 3.2.

For more information, see the software product page for [SAS Risk Dimensions](#).

SAS/STAT

SAS/STAT 12.3

SAS/STAT 12.3 is essentially a maintenance release of SAS/STAT software that runs on SAS 9.4.

In addition, the procedures that make up the SAS High-Performance Statistics product are available with SAS/STAT for use in single-machine mode. Depending on data characteristics and model complexity, you might see performance improvements over comparable SAS/STAT functionality that is not multi-threaded. Also, these procedures provide some new features; for example the HPGENSELECT procedure provides model selection for generalized linear models.

For more information, see [Overview of SAS/STAT High-Performance Procedures](#) in *SAS/STAT User's Guide: High-Performance Procedures*.

SAS/STAT 13.1

SAS/STAT 13.1 is a major release that runs on the first maintenance release of SAS 9.4 and later releases.

Here are some of the new features and enhancements:

- The experimental BCHOICE procedure performs Bayesian analysis for discrete choice models.
- The new ICLIFETEST procedure performs nonparametric survival analysis for interval-censored data.
- The experimental IRT procedure fits item response models.
- The MI procedure now provides the MNAR statement to facilitate sensitivity analysis.
- The Tweedie distribution is now supported by the GENMOD procedure.

- The competing risk model of Fine and Gray (1999) is available in the PHREG procedure.
- With the NLIN procedure, you can generate both bootstrap estimates of confidence intervals for the parameters and bootstrap estimates of the covariance matrix and correlation matrix of the parameter estimates.
- The MCMC procedure is now multithreaded.
- Path diagrams are available with the CALIS procedure.
- You can now compute power for PROC GLM-type MANOVA and repeated measurements with the GLMPOWER procedure.
- The SURVEYMEANS procedure produces domain quantile estimates.

Here are some new high-performance features and procedures in SAS/STAT:

- The new HPCANDISC procedure performs high-performance canonical discriminant analysis.
- The new HPPFMM procedure performs high-performance finite mixture model analysis.
- The new HPPRINCOMP procedure performs high-performance principal component analysis.
- The SCREEN option in the SELECTION statement for the HPREG procedure requests screening stages that reduce a large number of regressors to a much smaller subset from which the final model is chosen.

For more information, see [What's New in SAS/STAT 13.1](#) in *SAS/STAT 13.1 User's Guide*

SAS/STAT 13.2

SAS/STAT 13.2 runs on the second maintenance release for SAS 9.4 and later releases.

Here are some of the new features and enhancements:

- The new ICPHREG procedure fits proportional hazards regression models to interval-censored data.
- The new SPP procedure analyzes spatial point patterns.
- The experimental GEE procedure fits generalized linear models for longitudinal data by using the generalized estimating equations (GEE) estimation method of Liang and Zeger (1986). It also provides weighted GEE analyses.
- The FACTOR procedure generates path diagrams.
- The FMM procedure fits multinomial models.
- The IRT procedure generates polychoric correlation matrices, item characteristic curves, and test information curve plots.
- The MCMC procedure supports a categorical distribution in the MODEL, RANDOM, and PRIOR statements.
- The NLMIXED procedure enables you to specify more than one RANDOM statement in order to fit hierarchical nonlinear mixed models.
- The SEQDESIGN procedure enables you to create a ceiling-adjusted design that corresponds to integer-valued sample sizes at the stages for nonsurvival data.
- The LOGISTIC procedure enables you to add or relax constraints on parameters in nominal response and partial proportional odds models.
- The FREQ procedure now provides score confidence limits for the odds ratio and the relative risk.
- The GLMSELECT procedure enables you to apply safe screening and sure independence screening methods to reduce a large number of regressors to a smaller subset from which model selection is performed.

For more information, see [What's New in SAS/STAT 13.2](#) in *SAS/STAT 13.2 User's Guide*.

SAS Text Miner

SAS Text Miner 12.3

SAS Text Miner 12.3 includes enhancements to node performance and results. When importing table information in various dialog boxes, the **Import** button has been replaced with the **Replace Table** and **Add Table** buttons. You can choose whether to replace the currently selected table or add to the currently selected table. Results for the **Text Rule Builder** node include a new Document Rules table and a Rule Success graph.

You can use SMP mode in SAS 9.4 on a properly enabled SAS Server to deploy the **HP Text Miner** node in a process flow diagram, and use the HPTMINE and HPTMSCORE procedures. Using the **HP Text Miner** node in a process flow diagram can lead to multi-threaded processing gains in many cases. For more information, see the HP Text Miner Node chapter in *SAS Enterprise Miner High-Performance Data Mining Node Reference*.

SAS Text Miner 13.1

SAS Text Miner 13.1 is a major release that runs on the first maintenance release for SAS 9.4 and later releases. This release includes the new **Text Profile** node, enhancements to node performances and results, and an enhancement to the high-performance HPTMINE procedure.

- The new **Text Profile** node enables you to profile a target variable by using terms that are found in the documents.
- The **Text Parsing** node contains a new **Select Languages** property, which enables you to specify the languages to keep in the document collection.
- The results for the **Text Topic** node contain these new items:
 - a **Terms** table, which shows terms and their weights for each topic
 - a **Topic Terms** matrix graph, which shows the topic values across terms.

- The high-performance HPTMINE procedure now supports the NONORMDOC keyword in the OUTDOCPRO= option in the SVD statement to control whether document projections are normalized.

SAS Text Miner 13.2

SAS Text Miner 13.2 is available with the second maintenance release for SAS 9.4.

Here are some of the new features and enhancements in the high-performance procedures for SAS Text Miner:

- The HPTMINE procedure supports the following new functionality:
 - You can parse text data in the German language, and you can specify which language is used in the input data set of documents.
 - You can parse documents that contain more than 32K characters.
 - You can run in SVD-only mode, which enables you to parse documents and compute the singular value decomposition (SVD) separately in two procedure calls when you want to try different parameters for SVD computation after document parsing.
 - You can discover topics that exist in your text corpus.
 - You can store the term-by-document matrix in the Base64-encoded sparse rows (BESR) format.
 - You can use either the default coordinate list (COO, or transactional) format or the Base64-encoded sparse rows (BESR) format to store the term-by-document matrix.
 - You can specify custom LITI files for custom entity and noun group extraction.
 - You can specify whether to include terms that have `_keep=N` in the `OUTTERMS=` data set and in the `OUTCHILD=` data set.
- The HPTMSCORE procedure supports the following new functionality:
 - You can parse text data in the German language.
 - You can parse documents that contain more than 32K characters.

- Custom LITI files for custom entity and noun group extraction are supported.

For more information about the new features and enhancements in SAS Text Miner 13.2, see the software product page for [SAS Text Miner](#).

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In-Memory Analytics

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SAS In-Memory Statistics for Hadoop

SAS In-Memory Statistics for Hadoop provides a single, interactive programming environment for the entire analytical life cycle inside the Hadoop environment.

- Interactive programming enables you to move through the entire analytical life cycle in Hadoop with an extremely fast, multi-user environment.
- In-memory analytical processing enables you to get fast analytic computations that are optimized for multiple passes across distributed clusters.
- Because data is held in-memory, you can increase speed and reduce latency.
- Analytical data management enables you to prepare data for modeling with data integration, variable transformations and creation, and exploratory analysis.
- You can quickly create, evaluate, and compare multiple statistical models.
- With statistical algorithms and machine-learning techniques, you can uncover patterns and trends faster.
- You can analyze your unstructured and structured data by using a wide range of text analysis techniques.
- You receive personalized, meaningful recommendations in real time with a high level of customization.

SAS High-Performance Analytics Infrastructure

About the SAS High-Performance Analytics Infrastructure

The SAS High-Performance Analytics Infrastructure consists of these products:

- SAS High-Performance Computing Management Console
- SAS High-Performance Deployment of Hadoop
- SAS High-Performance Analytics environment

SAS High-Performance Analytics Infrastructure 2.1

SAS High-Performance Analytics Infrastructure 2.1 supports Kerberos. This release also provides a way to configure SAS High-Performance Deployment of Hadoop with multiple data devices. Finally, SAS supplies a security wrapper that you can use to limit the use of sudo commands to specific directories.

SAS High-Performance Analytics Infrastructure 2.4

In SAS High-Performance Computing Management Console 2.4, you can use the RPM installer to install the console into any directory that contains the `-prefix` option. SAS High-Performance Computing Management Console 2.4 also includes a tarball installer. Use this tarball installer when a non-RPM installer is desired or the RPM version on the machine is not compatible with the console.

In the SAS High-Performance Analytics environment, a new installation script supports the new word cloud feature in SAS Visual Analytics. Also, the simultaneous utilities commands (`simcp` and `simsh`) are installed with the SAS High-Performance Analytics environment.

SAS High-Performance Analytics Infrastructure 2.8

In this release, the SAS High-Performance Deployment of Hadoop has been upgraded to Apache Hadoop version 2.4.

The SAS High-Performance Analytics environment now supports Cloudera CDH 5 and IBM BigInsights as co-located data sources. The environment can also read data from SAP HANA in parallel. This environment also now includes a resource management template and support for YARN.

SAS High-Performance Analytics Infrastructure 2.91

SAS High-Performance Analytics Infrastructure 2.91 includes a new environment variable that helps you decide how much memory to request. During installation, you can now specify whether the SAS High-Performance Analytics environment reads and writes MapR data directly. Finally, enhancements have been made to the prompts in the installation script for the SAS High-Performance of Hadoop.

SAS High-Performance Computing Management Console

About SAS High-Performance Computing Management Console

The console is a web application that is used by system administrators to manage high-performance computing environments that use SAS software. Maintaining high-performance computing (HPC) environments is challenging because of the large number of machines that are used in the distributed computing environment. The console eases this challenge by propagating changes, such as adding user IDs, to all the machines in the environment.

SAS High-Performance Computing Management Console 2.1

The console is enhanced to support machine groups. It is now possible to perform operations on groups of machines rather than all of the machines in the SAS High-Performance Analytics environment. The simultaneous copy (`simcp`) command is enhanced to support return codes. Return codes can be used to provide error checking in scripts.

SAS High-Performance Computing Management Console 2.4

The installation process for the console is enhanced to support a relocatable RPM so that you can install the console in any directory that you choose. The console can also be installed from a tarball (TAR file). This installation method also enables you to install the console in any directory that you choose.

Other than the enhancements to the installation process, the console has no other customer-visible features for the 2.4 release.

SAS LASR Analytic Server

SAS LASR Analytic Server 2.1 and 2.2

SAS LASR Analytic Server functions as an analytic platform, providing speedy, secure, multi-user access to in-memory data. For smaller data sets, the server can be deployed on a single machine. For larger data volumes, the server can be deployed on a distributed computing environment.

In SAS LASR Analytic Server 2.1, the server is enhanced to offer administrators controls for enforcing memory utilization limits for distributed deployments. The IMSTAT procedure is enhanced to enable administrators to manage in-memory tables.

In SAS LASR Analytic Server 2.2, the IMSTAT procedure is enhanced to support joining in-memory tables in a simple star schema and appending the entire in-memory tables. The DATA step is enhanced to support running in-memory for scoring.

SAS LASR Analytic Server 2.3

SAS LASR Analytic Server 2.3 includes many updates, including the following:

- The new RECOMMEND procedure enables you to develop a recommender system. A common goal for a recommender system is to make personalized recommendations.

- The IMSTAT procedure is enhanced to enable in-memory statistical programming. The procedure statements that enable statistical programming are licensed separately from the statements for data and server management. SAS In-Memory Statistics for Hadoop is an offering that includes the statistical statements.
- The TEXTPARSE statement is added to the IMSTAT procedure to support in-memory text analysis. This statement is licensed separately from the data and server management statements.

SAS LASR Analytic Server 2.4

SAS LASR Analytic Server 2.4 includes many updates, including the following:

- The server supports compressed in-memory tables. The SAS Data in HDFS engine also supports adding tables to HDFS in compressed form.
- The IMSTAT procedure is enhanced as follows:
 - The AGGREGATE statement is new. It is used to aggregate values of one or more variables. Many aggregation methods are available, including quartiles and distinct counts.
 - The FORECAST statement is enhanced to support goal-seeking analysis.
 - The DROPCOLUMN statement is added to remove a column that was added with the COMPUTE statement.
- The RECOMMEND procedure is enhanced to support storing recommendations in a temporary in-memory table. The procedure is also enhanced to support reading transaction data from an in-memory table. This can be used for the ARM method to recommend new items based on recent activities.

SAS LASR Analytic Server 2.5

SAS LASR Analytic Server 2.5 includes many updates, including the following:

- The server has two automatic tables that you can use to monitor server and table memory use. The two tables are named `_T_LASRMEMORY` and

_T_TABLEMEMORY. The tables are automatically available in a SAS LASR Analytic Server library.

- The IMSTAT procedure is enhanced as follows:
 - The AGGREGATE statement is enhanced to support the KEEPRECORD option and the KEEP= option. The KEEPRECORD option is used to add an aggregated value for each input observation by aggregating the input observations with ID= values that are specified in the INTERVAL= option and the WINDOWINT= option. The KEEP= option is used to transfer variables from the active table to the ODS table output or temporary table.
 - The NEURAL statement is added to the IMSTAT procedure. The statement is used to train feed-forward artificial neural networks (ANN). The statement can also use the trained networks to score data sets.
 - The SAVE statement is enhanced to support a CSV option. This option enables saving in-memory tables to HDFS in comma-separated value format.
 - The SERVERPARM statement is enhanced to support the TABLECEILING option. This option enables an administrator to set a soft limit for memory use by tables.
 - The analytic statements that support generating SAS DATA step code with a CODE= option are enhanced. If the active table that is analyzed includes columns with special characters or international characters that require the name literal syntax for a column such as `'profit (%)'`, then the generated code also uses the name literal syntax. The enhancement applies to the following statements:
 - CLUSTER
 - DECISIONTREE
 - GENMODEL
 - GLM
 - LOGISTIC
 - NEURAL

- RANDOMWOODS

For more information, see the product documentation page for [SAS LASR Analytic Server](#) and the software product page for [SAS Visual Analytics](#).



SAS Business Intelligence Products

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SAS Add-In for Microsoft Office

SAS Add-In 6.1 for Microsoft Office

The SAS Add-In 6.1 for Microsoft Office provides integration with SAS Visual Analytics 6.1. (The first maintenance release for the SAS Add-In 6.1 provides integration with SAS Visual Analytics 6.2 and 6.3.) Because of this integration, you can use the SAS add-in to open and refresh reports that were created using SAS Visual Analytics Designer and SAS Visual Analytics Explorer. You can access and manage favorites that were created in SAS Visual Analytics. In Microsoft Outlook, the SAS add-in also provides a view similar to the Hub in SAS Visual Analytics. This view enables you to

easily access and comment on your favorite and recently opened SAS Visual Analytics reports.

A new stand-alone installer is also available for the SAS Add-In for Microsoft Office. The new installer is much smaller, thereby making it easier to install over a distributed deployment, especially using provisioning tools such as Microsoft System Center Configuration Manager (SCCM). For more information, see *SAS Deployment Wizard and SAS Deployment Manager 9.4: User's Guide* at <http://support.sas.com/deploywizug94.html>.

SAS Add-In 7.1 for Microsoft Office

The SAS Add-In 7.1 for Microsoft Office runs on Microsoft Office 2013, 2010, and 2007, and can be run with a SAS 9.2, a SAS 9.3, or a SAS 9.4 server.

A key feature in this release is integration with SAS Visual Analytics 6.2, 6.3, 6.4, and 7.1.

- Starting with this release, the SAS Add-In for Microsoft Office supports SAS Visual Analytics reports that enable you to brush, filter, drill, expand, and collapse elements. You can interact with this functionality in Microsoft Excel, Microsoft Word, Microsoft PowerPoint, and Microsoft Outlook.
- You can preview the contents of a SAS Visual Analytics report before inserting any objects into your Microsoft Office document. You can select the specific objects to include, or you can insert the entire report.
- You can specify whether to display any specified filters before an object in a SAS Visual Analytics report. If you are opening a crosstabulation report, the filter also includes any breadcrumbs.
- You can also view and add comments to a SAS Visual Analytics report. You can view the rules for conditional highlighting. (These rules were defined when the report was created in SAS Visual Analytics.) You can also view the aggregated data that was used to create a graph in a SAS Visual Analytics report.

Another key feature in this release is the new task interface and integration of tasks that are shipped with SAS Studio. The redesigned task interface displays your recent and favorite tasks. Categories, filters, and searching functionality enable you to quickly find

the task that you need. From this interface, you can access SAS Add-In for Microsoft Office tasks and SAS Studio tasks.

Additional new features include the availability of SAS Central in Microsoft Excel, Microsoft Word, Microsoft PowerPoint, and Microsoft Outlook. Using SAS Central (a view similar to the Hub in SAS Visual Analytics), you can easily access your SAS Visual Analytics reports and SAS Stored Processes.

Also, the SAS Add-In 7.1 for Microsoft Office includes the new Upload to LASR task that enables you to upload data to SAS LASR Analytic Server so that you can access the data in SAS Visual Analytics.

For more information, see the software product page for [SAS Add-In for Microsoft Office](#).

SAS Enterprise Guide

SAS Enterprise Guide 6.1

SAS Enterprise Guide 6.1 is supported on SAS 9.4, 9.3, and 9.2. Enhancements for this release include the following:

- integration with SAS high-performance tools with the addition of the High-Performance Logistic and High-Performance Linear Regression tasks.
- improved programmer productivity with the new Log Summary window, which lists all the errors, warnings, and notes that were generated when the program ran, as well as related line numbers and a sample of the affected code.
- the ability to analyze a SAS program to determine whether there are any possible internationalization issues. Internationalization is the process by which a program is optimized so that it can be adapted to any language and region without being rewritten. When you analyze a program for internationalization, SAS Enterprise Guide lists the lines of code that might be affected and suggests substitutions when possible.

- the ability to use notes to add information to a process flow or to specific objects in the process flow.
- administration enhancements, such as the new stand-alone installer and application streaming support. The new installer is much smaller, thereby making it easier to install over a distributed deployment, especially using provisioning tools such as System Center Configuration Manager (SCCM). For more information, see *SAS Deployment Wizard and SAS Deployment Manager 9.4: User's Guide* at <http://support.sas.com/deploywizug94.html>.

The first maintenance release for SAS Enterprise Guide 6.1 (which shipped in December 2013) provides integration with SAS Visual Analytics 6.2 and 6.3. Because of this integration, you can open and refresh reports that were created using SAS Visual Analytics Designer and SAS Visual Analytics Explorer. You can also save a SAS Visual Analytics report with your SAS Enterprise Guide project.

SAS Enterprise Guide 7.1

SAS Enterprise Guide 7.1 is supported on SAS 9.4, 9.3, and 9.2. Some of the new features and enhancements include the following:

- SAS Enterprise Guide 7.1 supports integration with SAS Visual Analytics 6.2, 6.3, 6.4, and 7.1.
- The new program history feature enables you to track the changes that you and other programmers make to programs in SAS Enterprise Guide.
- You can search your project for text that you specify.
- In the Tasks pane, you can now search for a task by name, SAS procedure, or keyword. You can filter the list of tasks by predefined categories or by SAS procedure. You can also quickly access any tasks that you recently opened or that you marked as favorites.
- If you have SAS Studio and Microsoft Internet Explorer 10 (or later) installed on your machine, you can also run SAS Studio tasks in SAS Enterprise Guide.

- SAS Enterprise Guide 7.1 includes the new Upload to LASR task that enables you to upload data to SAS LASR Analytic Server so that you can access the data in SAS Visual Analytics.
- The new Project Log Summary window is displayed with the Project Log window and includes an aggregated list of all the messages that have been generated in the project log.
- The SAS Macro Variable Viewer enables you to view all of the SAS macro variables that are defined in your current SAS session. You can use this window to see changes to the macro variables while you work in SAS Enterprise Guide and to quickly evaluate a macro expression.
- The SAS System Options Viewer enables you to view all of the SAS system options that are defined for your current SAS session.
- Smart highlighting is available in the Program Editor. By default, when you select or search for a word in the Program Editor, all other occurrences of that word are also highlighted.
- You can now open the Query Builder with multiple tables selected. The Query Builder automatically joins the tables if the tables include columns with matching names and data types.
- You can now copy and paste process flows.

For more information, see the software product page for [SAS Enterprise Guide](#).

SAS 9.4 OLAP Server

The SAS 9.4 OLAP Server has several new features for 9.4:

- new OLAPCONTENTS procedure for generating reports of OLAP cube information
- new OLAPCONFIG method for setting SAS OLAP Server options in batch mode
- updated OLAPOPERATE procedure
- new MDX Case statement

- new VISUALTOTALS_BEHAVIOR option for calculated measures

In addition, properties for multilingual cubes are automatically updated in multiple languages when reports are generated. And, the SQLRC macro can be used with the SQL pass-through facility for OLAP.

In the first maintenance release for the SAS 9.4 OLAP Server, these new features and enhancements were added:

- A new LOGICALSERVERNAME option was added to the OLAPOPERATE procedure.
- You can enable execution of user-defined (FORMAT procedure style) formats in the SPD Server. For more information, see *SAS OLAP Server: User's Guide*.
- A new INSTR MDX function was added. For more information, see *SAS OLAP Server: MDX Guide*.
- The LOCKDOWN option and statement are supported by the SAS OLAP Server.

For more information, see [What's New in SAS 9.4 OLAP Server](#) in *SAS OLAP Server: User's Guide*.

SAS Web Parts 6.1 for Microsoft SharePoint

Web Parts are an integrated set of controls that enable you to provide customized, dynamic content on your website. By using Microsoft Windows SharePoint Services, you can add SAS content directly to your website.

In SAS Web Parts 6.1 for Microsoft SharePoint, administrators can create connection profiles for the SharePoint users at your site. Two SAS Web Parts are now available:

- The SAS Central Web Part lists any SAS Visual Analytics reports that you recently opened and any favorites that you have created. It also enables you to open additional reports. These reports open in a new web browser.

Note: The SAS Central Web Part is available only if your site licenses SAS Visual Analytics.

- The SAS Content Viewer Web Part enables you to add SAS content such as reports, the results from a stored process, or a dashboard to your SharePoint site.

For more information, see [What's New in SAS Web Parts 6.1 for Microsoft SharePoint](#) in the *SAS Web Parts for Microsoft SharePoint: User's Guide*.

SAS Web Report Studio 4.4

SAS Web Report Studio 4.4 provides enhanced totals and subtotals, as well as support for additional browsers.

For more information, see [What's New in SAS Web Report Studio 4.4](#) in the *SAS Web Report Studio: User's Guide*.

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Data Management and Integration

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SAS Data Management Standard

Starting in SAS 9.4, the SAS Data Management Standard 2.41 (or later) offering replaces the SAS Enterprise Data Integration Server offering. For more information, see the software product page for [SAS Data Management and SAS Data Integration Server](#).

DataFlux Authentication Server

DataFlux Authentication Server 3.2

DataFlux Authentication Server supports authorization and authentication for the DataFlux Data Management Platform in certain SAS software offerings, such as the SAS Data Management offerings. Some components in the offerings are now configured by default to use a SAS Metadata Server instead of the Authentication Server. Other components, such as the optional SAS Federation Server, are required to use the DataFlux Authentication Server. For more information, see *DataFlux Authentication Server Administrator's Guide*.

DataFlux Authentication Server 4.1

The installation process for the UNIX and Linux operating environments now automates the configuration process for host authentication. In prior releases, this configuration process occurred after installation. After installation, authentication can be reconfigured in any operating environment.

The configuration option `AdminLoginManagementPolicy` now defines an administrator's ability to add, modify, or delete users with the `ASBATCH` utility.

DataFlux Authentication Server 4.1 Administrator's Guide now describes how to display user names in log files, rather than login names. For more information, see the product documentation page for [DataFlux Authentication Server](#).

DataFlux Data Management Server

DataFlux Data Management Server 2.5

DataFlux Data Management Server runs jobs and real-time services in response to requests that are submitted by authorized SOAP/HTTP clients.

Here are the primary enhancements in DataFlux Data Management Server 2.5:

- The DataFlux Data Management Server has a new server configuration and security.
- The SAS Metadata Server is configured by default for security.
- The SAS Metadata Server provides configuration options when the server starts.
- SAS Job Monitor collects job status and statistics.

DataFlux Data Management Server 2.6

Here are the primary enhancements in DataFlux Data Management Server 2.6:

- When you import objects that replace existing objects, you can now apply the permissions from the existing object to the new object.
- Objects, jobs, and services receive a default access control list (ACL) when they are added to the DataFlux Data Management Server. In the 2.6 release, the default ACL contains ALLOW or DENY permissions for lists of users and groups.
- To make batch and profile job logs more accessible to administrators and to the SAS Job Monitor, you can now specify a separate storage location for those log files.
- When you run jobs with the `dmpexec` command, you can now configure the log files that are generated by those job runs.
- You can now enable the capture of log data for the SOAP packets that are received and transmitted by the DataFlux Data Management Server.
- You can now validate XML in output data from real-time services.

For more information, see the software product page for [DataFlux Data Management Studio and DataFlux Data Management Server](#).

DataFlux Data Management Studio

DataFlux Data Management Studio 2.5

Here are the main enhancements for DataFlux Data Management Studio 2.5:

- SAS Metadata Servers can now authenticate connections to DataFlux Data Management Servers.
- The job logs now provide run-time statistics for nodes within jobs.
- If your site has licensed SAS Environment Manager and SAS Job Monitor, then you can use a web browser to display run-time statistics for Data Management Studio jobs and the nodes within those jobs.

DataFlux Data Management Studio 2.6

Here are the main enhancements for DataFlux Data Management Studio 2.6:

- enhanced interface for customizing quality knowledge bases
- new ODBC drivers for Apache Hive and Cloudera Impala
- changes to clustering
- support added for SAS Lineage Viewer
- support added for SAS Business Data Network

For more information, see the software product page for [DataFlux Data Management Studio and DataFlux Data Management Server](#).

DataFlux Secure 2.5

DataFlux Secure enables the enhancement of security for components in certain SAS software offerings, such as the Data Management offerings. The DataFlux Secure software is now installed by default, in a disabled state, together with these components. You can enable enhanced encryption, SSL/TLS protection, and FIPS compliance on your platform components. Starting in the May 2014 release, the keyconfig utility is available to assist with the configuration of SSL on the SAS Federation Server Manager.

For more information, see *DataFlux Secure 2.5 Administrator's Guide* available from the product documentation page for [DataFlux Secure](#).

SAS Quality Knowledge Base for Contact Information

SAS Quality Knowledge Base for Contact Information 22

SAS Quality Knowledge Base for Contact Information 22 includes updates to the E-mail Parse and Standardization definitions for all locales.

In addition, these languages and locales have updates:

- English, New Zealand
- English, United States
- Danish, Denmark
- French, France
- Portuguese, Brazil

SAS Quality Knowledge Base for Contact Information 23

SAS Quality Knowledge Base for Contact Information 23 introduces support for Hebrew, Israel **Date** definition.

This release also includes updates for these locales:

- Portuguese, Brazil
- Spanish, Mexico
- Turkish, Turkey

For all locales, these definitions are updated:

- **Address (Global)** parse definitions
- **E-mail** match definitions

SAS Quality Knowledge Base for Contact Information 23 also includes updates for **Field Name** identification analysis and match definitions for these locales:

- All English locales
- Chinese, China
- Danish, Denmark
- German, Germany
- French, France
- Hebrew, Israel

SAS Quality Knowledge Base for Contact Information 24

SAS Quality Knowledge Base for Contact Information 24 includes updates for the following locales and definitions:

- Portuguese, Brazil
- Spanish, Mexico
- Spanish, Spain

For more information, see the software product page for [Quality Knowledge Base \(QKB\) for SAS and DataFlux](#).

Quality Knowledge Base Locales for Contact Information 2013A

Quality Knowledge Base Locales for Contact Information 2013A introduces support for the Hebrew, Israel language and locale.

Support is updated for address-related definitions for the English, New Zealand language and locale.

SAS Quality Knowledge Base for Product Data 5

SAS Quality Knowledge Base for Product Data contains extraction, parsing, standardization, and pattern analysis definitions for attributes in generic product data. This release also contains additional generic character-based standardization definitions.

Quality Knowledge Base Locales for Product Data 2013A

Quality Knowledge Base Locales for Product Data 2013A introduces support for the Italian, Italy language and locale.

Support is updated for the French and German Packaging/UOM Standardization definitions.

SAS Business Data Network 3.1

A business data term list is an authoritative vocabulary that promotes a common understanding between stakeholders in an organization. SAS Business Data Network 3.1 is an application that enables you to manage a business data term list. It supports a collaborative approach to managing the following information:

- Descriptions of business terms, including their requirements and attributes
- Related source data and reference data
- Contacts (such as technical owners, business owners, and interested parties)
- Relationships between terms and processes (such as Data Management Studio jobs, services, and business rules)

By linking terms to business rules and data monitoring processes, SAS Business Data Network provides a single entry point for all data consumers to better understand their data. Data stewards, IT staff and enterprise architects can use the terms to promote a common vocabulary across projects and business units. Permissions can be set to allow only specific users to access and control the data in SAS Business Data Network.

SAS Data Integration Studio

SAS Data Integration Studio 4.7

You can now access third-party web clients from SAS Data Integration Studio jobs. This feature enables you to programmatically access the information from these clients and use it in your data integration projects. You can also deploy many jobs at once through a new command-line interface.

SAS Data Integration Studio 4.8

Here are the main enhancements for SAS Data Integration Studio 4.8:

- new transformations that support conditional processing in jobs
- new source designer wizards for Vertica and SAP HANA
- a new, experimental transformation that incorporates SAS Decision Manager flows into jobs

SAS Data Integration Studio 4.9

Here are the main enhancements for SAS Data Integration Studio 4.9:

- A new source designer wizard is available for Cloudera Impala.
- The High-Performance Analytics Transformations and Enterprise Decision Management transformation are now production.

For more information, see [What's New in SAS Data Integration Studio 4.9](#) in *SAS Data Integration Studio: User's Guide*.

SAS Data Management Console

SAS Data Management Console is a central, web-based environment that enables you to open data management and data governance products that are installed on your system. The console enables you to set preferences for these products and to view information from them. The console's home page displays SAS products, components, and features based on the roles and capabilities that are associated with your logon.

For more information, see the product documentation page for [SAS Data Management Console](#).

SAS Data Quality Accelerator for Teradata

SAS Data Quality Accelerator 2.4 for Teradata

SAS Data Quality Accelerator for Teradata is a new product that provides in-database data quality functionality. The data quality functionality is provided as Teradata stored procedures, which enable you to perform a number of tasks, such as parsing, analyzing patterns, and generating match codes. Executing data quality operations inside of the database, rather than as a separate utility outside of the database, provides the following benefits: eliminates network I/O performance, leverages multi-node architectures for linear performance gains, and makes information more secure because it never leaves the database. This product includes a Quality Knowledge Base (QKB) and tools for transferring and deploying the QKB in the Teradata database.

SAS Data Quality Accelerator 2.5 for Teradata

SAS Data Quality Accelerator 2.5 for Teradata includes new stored procedures and changes to existing stored procedures.

SAS Data Quality Accelerator 2.5 for Teradata expands its data quality offerings by adding parsed variants of the DQ_GENDER(), DQ_MATCH(), and DQ_STANDARDIZE() stored procedures. The new DQ_GENDER_PARSED(), DQ_MATCH_PARSED(), and DQ_STANDARDIZE_PARSED() stored procedures accept pre-parsed data as input instead of a single input string.

This release also adds pre-parsed support, informational, and session-management stored procedures.

- The pre-parsed support stored procedures create and manage token-to-column mappings that serve as input to the DQ_OPERATION_PARSED() stored procedures.
- The informational stored procedures list the locales and SAS Quality Knowledge Base definitions that are available to the SAS Data Quality Accelerator for Teradata session.
- The stored procedure for session management can cause the stored procedures to overwrite existing output tables instead of appending data to them.

For more information, see the product documentation page for [SAS Data Quality Accelerator for Teradata](#).

SAS 9.4 Data Quality Server

SAS Data Quality Server consists of SAS language elements that perform data quality operations (matching, standardization, and so on), as well as elements that interoperate with the DataFlux Data Management Server. SAS Data Quality Server is delivered with a sample Quality Knowledge Base (QKB), which is available from SAS.

SAS 9.4 Data Quality Server communicates with components in certain SAS offerings, such as the SAS Data Management offerings, 2.41 and later, to provide an integrated system. SAS Data Quality Server is also a key component of the SAS Data Quality offerings.

For more information, see [What's New in SAS 9.4 Data Quality Server](#) in *SAS Data Quality Server: Reference*.

SAS Data Remediation 2.1

SAS Data Remediation enables users to manage and correct issues that are triggered by business rules in SAS MDM batch jobs and real-time processes. Data remediation allows user- or role-based access to data exceptions, which are categorized by application and subject area. Once data remediation issues have been reviewed, they can be corrected through the same application, eliminating the need for another user to complete the correction process.

The most current release is the first maintenance release for SAS Data Remediation 2.1.

For more information, see the product documentation page for [SAS MDM](#).

SAS Data Surveyor 5.1 for SAP

SAS Data Surveyor 5.1 for SAP includes new functions for semantically partitioned objects (SPO) and SAP HANA-optimized InfoCubes.

For more information, see the software product page for [SAS Data Surveyors](#).

SAS Federation Server

About SAS Federation Server

SAS Federation Server provides the business ability to quickly build virtual views of data from multiple sources, without moving or copying the data. It also supports data caching for frequently used data, which can result in improved query performance. The security features for SAS Federation Server include data masking, row-level security, and centralized access for improved governance.

SAS Federation Server 3.2

DataFlux Federation Server is now SAS Federation Server. This renaming is a result of the recent integration of DataFlux products into the SAS suite of data quality, data integration, data governance, and master data management solutions.

In-Memory Data Store (MDS) is a transactional in-memory data store that can be implemented on SAS Federation Server.

Privilege caching is offered as a tool for streamlining privilege determination, which results in improved performance.

For more information, see [What's New in SAS Federation Server 3.2](#) in *SAS Federation Server: Administrator's Guide*.

SAS Federation Server 4.1

Here are the main enhancements for SAS Federation Server 4.1.

- There are four new drivers:
 - SAS Federation Server Driver for SAP HANA
 - SAS Federation Server Driver for Netezza
 - SAS Federation Server Driver for PostgreSQL

- SAS Federation Server SASHDAT Data Source Driver
- SAS Federation Server delivers a new data masking function as a method of ‘de-identifying’ sensitive information within data sources.
- The SQL language scripting capabilities handle administrative needs for start-up and shutdown events.
- New API (which is implemented as a REST interface) supports interacting with and managing SAS Federation Server.

For more information, see [What’s New in SAS Federation Server 4.1](#) in *SAS Federation Server: Administrator’s Guide*.

SAS Job Monitor 2.1

SAS Job Monitor is a plug-in for SAS Environment Manager that integrates information from SAS Data Integration Studio, DataFlux Data Management Server, and specific jobs from DataFlux Data Management Studio so that you can oversee the state of jobs that are run from these applications.

SAS Job Monitor reads job logs at specified locations and displays run-time statistics from the logs, enabling you to monitor status information and performance statistics. Using the jobs table, you can view historical run times and also drill down to a job for details, trends, and status.

Help is available from within the product.

SAS Lineage 3.1

SAS Lineage 3.1 is a web-based diagram component for visualizing relationships between objects. It is used as a stand-alone lineage and relationship viewer that can be accessed by SAS database management and business intelligence applications. The component has two modes: first, a network diagram displays all relationships. Second, two left-to-right dependency diagrams are available: one that displays data governance

information (governance) and another that displays parent and child relationships only (impact analysis). The relationship information displayed in these diagrams is drawn from the Relationship database that is a part of the Web Infrastructure Platform Data Server.

SAS MDM 4.1

SAS MDM is a product that integrates master data management technologies with those in SAS 9.4. SAS MDM is a web-based application that provides a single, accurate, and unified view of corporate data, integrating information from various data sources into one master record. SAS enables you to develop master data management processes, and it provides the technology required to analyze existing data resources, build a unified view of that information, and manage that master view of data over time. The latest release features performance enhancements and integration with SAS metadata.

SAS MDM works in conjunction with SAS Data Remediation, SAS Task Manager, SAS Visual Process Orchestration, and other SAS data management products.

The most current release is the first maintenance release for SAS MDM 4.1.

For more information, see the product documentation page for [SAS MDM](#).

SAS Scalable Performance Data Server 5.1

SAS 9.4 includes a new SAS Scalable Performance Data Server engine that can connect with the SPD Server. This enhances the SPD Server experience and offers expanded support for regulatory, IT, and end-user features, such as the following:

- enhanced (AES-256) encryption for data at rest
- support for the Windows 64-bit Server
- SQL performance enhancements

- new SPD Server cluster features, including online cluster management and distributed cluster tables

For more information, see the software product page for [SAS Scalable Performance Data Server](#).

SAS Task Manager 2.1

SAS Task Manager is a complementary application to others, such as SAS MDM, that integrates with SAS Workflow technologies. It gives users direct access to a workflow that might have been initiated from another SAS application. Users can start, stop, and transition workflows that have been uploaded to the SAS Workflow server environment.

The most current release is the first maintenance release for SAS Task Manager 2.1.

For more information, see the product documentation page for [SAS MDM](#).

SAS Visual Process Orchestration 2.1

SAS Visual Process Orchestration is a web authoring environment that is launched from SAS Data Management Console. The authoring environment provides nodes that can be used to build orchestration jobs, which are process jobs that run other jobs.

An orchestration job can integrate executable files from various systems into a single process flow. A single orchestration job can run one or more executable files, such as SAS Data Integration Studio jobs, DataFlux Data Management Studio jobs, SAS code files, third-party programs, scripts, and web services. SAS Visual Process Orchestration can execute referenced jobs in parallel; apply control logic such as looping and IF/THEN/ELSE handling; and handle events, error-checking, and run-time statistics for each node in the orchestration job.

SAS Visual Process Orchestration Server provides a Design Server and a Runtime Server to coordinate enterprise development and execution of orchestration jobs. The Design Server supports the development of orchestration jobs by using separate

threads, file locking, and test execution. The Runtime Server triggers the execution of orchestration jobs in response to requests that are submitted by authorized SOAP/ HTTP clients.

For more information, see the product documentation page for [SAS Visual Process Orchestration](#).

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SAS Financial Management

SAS Financial Management 5.4 101

SAS Financial Management 5.4

SAS Financial Management 5.4 introduces process management support, data validation, and enhanced data entry and reporting options.

The new and enhanced functionality in SAS Financial Management 5.4 includes the following:

- Process Management is a new SAS Financial Management framework that enables administrators and users to perform these tasks:
 - define and manage company-specific business processes
 - automate key Financial Management tasks
 - view the status of processes and tasks, and identify and resolve delays and other problems

Process management also includes user notification at the business process and task levels, commenting, and audit history.

- Data Validation rules can be set at a model or formset level to ensure that data is in line with management expectations. Data is validated upon submission of forms, or on demand.
- In reports and data-entry tables, users can now filter, rank, and sort data.

- System filters (now called Visibility Rules) have been re-written to provide additional capabilities. Visibility rules can still be loaded via Data Integration jobs, but now these rules can also be entered at a model or formset level. Additional dimensional relationships can now be specified as well.
- A new Custom Analytics wizard enables users to select and run customized stored processes that can read from, and write to, the SAS Financial Management database.
- Information maps with dynamic hierarchies (updated when the information map or report is opened) are now supported.

For more information, see the software product page for [SAS Financial Management](#).

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SAS Fraud and Compliance Products

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SAS Anti-Money Laundering

SAS Anti-Money Laundering 6.1

SAS Anti-Money Laundering 6.1 runs on SAS 9.4 and has these new features:

- streamlined user interface to provide consistent user experience throughout the portfolio and improved integration among the applications.
- scenario promotion that enables the user to export and import scenarios and associated headers, to download .spk (SAS package) files to a local machine, and to import to a separate system.
- configurable workflow that displays a task list with available transitions and a visual diagram of the workflow states and transitions. The workflow also provides task lists that are shown on the Investigator and Manager Home screens and a completion report that indicates which rules were updated and created.

- Related Entities Visualization that enables additional regulatory reporting support for select forms within the FinCEN, FinTRAC, and AUSTRAC regulatory agencies.
- integration with the SAS Customer Due Diligence solution. This feature provides transparency between an institution's SAS Anti-Money Laundering and Customer Due Diligence activities.

SAS Anti-Money Laundering 6.2

SAS Anti-Money Laundering 6.2 has these new features:

- new sample scenarios for Correspondent Banking to take advantage of the enhancements to the SAS Anti-Money Laundering data model
- a new relationship grid to quickly assess details about parties that are associated with the Correspondent Banking behavior

For more information, see the software product page for [SAS Anti-Money Laundering](#).

SAS Customer Due Diligence 6.1

SAS Customer Due Diligence enables you to understand a customer's profile and to establish an expectation about the customer's behavior. SAS Customer Due Diligence collects data and performs risk rating and profiling on customers who are at risk to be involved in fraud, money laundering, or other illegal activities. Risk rating helps financial institutions meet the compliance requirements that are set by government and regulatory organizations.

SAS Peer Group Analysis 6.1

SAS Peer Group Analysis compares an entity's (account or party) current behavior with that of its historical behavior and also its peers' behavior. SAS Peer Group Analysis provides a process to build a prep data set, which can be used by SAS Peer Group Analysis headers and scenarios. Alerts that are generated by SAS Peer Group Analysis

scenarios can be displayed in the user interface and can include fields that are specific to SAS Peer Group Analysis in the alert details screen.

SAS Peer Group Analysis is an add-on to SAS High-Performance Anti-Money Laundering.

For more information, see the software product page for [SAS Anti-Money Laundering](#).

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SAS In-Database Products

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SAS 9.4 In-Database Products

Beginning with SAS 9.4, in-database processing has been enhanced by the addition of the SAS In-Database Code Accelerator. The SAS In-Database Code Accelerator enables you to publish a DS2 thread program to the database and execute the thread program in parallel inside the database.

In-database scoring for Netezza has been enhanced by the addition of the SAS Embedded Process. The SAS Embedded Process is a SAS server process that runs within Netezza to read and write data.

In the July 2013 release, in-database scoring is supported for the SAS Scalable Performance Data Server.

In the September 2013 release, in-database processing for Hadoop was enhanced by the addition of the SAS Scoring Accelerator for Hadoop. Also, in the September 2013 release, the autocall macros that initialized the publishing macros are no longer needed for any DBMS. However, the autocall macros are still supported.

In the December 2013 release, the SAS In-Database Code Accelerator for Teradata now can run the DS2 data program as well as the thread program inside the database. Also, for the SAS In-Database Code Accelerator, the default behavior has changed from the 9.4 release. DS2 code no longer executes inside the database by default. The DS2ACCEL system option and the PROC DS2 DS2ACCEL option control this behavior.

DATA step processing in Hadoop is now preproduction, so limited DATA step programs can be run inside Hadoop for scoring.

In the August 2014 release, the SAS Scoring Accelerator for SAP HANA is now available, and running limited DATA step scoring programs in Hadoop is now production. Also, numerous changes were made to the installation and configuration script for the SAS Embedded Process for Hadoop.

For more information, see [What's New in the SAS 9.4 In-Database Products](#) in *SAS In-Database Products: User's Guide*.

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SAS Integration Technologies

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SAS 9.4 Integration Technologies

SAS Integration Technologies includes the following enhancements:

- SAS Stored Processes introduces new features for the STP procedure and the SAS Stored Process Web Application, as well as general enhancements.
- SAS BI Web Services includes an update for RESTful web services.
- SAS Publishing Framework has added support for circular integrity constraints and extended attributes. If you are publishing to SharePoint or WebDAV, SSL setup can be done using TKESL. In addition, event publishing is obsolete, and the event publishing documentation has been removed.
- Directory Services includes new TLS_MODE_ON and TLS_MODE_OFF options for the LDAPS_OPEN CALL routine.

In the first maintenance release for SAS 9.4 Integration Technologies, the new PagedResults argument for the LDAPS_SEARCH CALL routine can be used to specify the number of results on a page of output.

- Application messaging provides a new ACTIVEMQ file access method and two new arguments for the CLOSEQUEUE CALL routine.

- In SAS Foundation Services, the Event Broker Service is no longer available.

For more information, see the software product page for [SAS Integration Technologies](#).

SAS Workflow Studio 1.3

SAS Workflow Studio 1.3 has the following enhancements:

- support for SAS Web Infrastructure Platform privileges and roles and for web-layer permissions. Run-time access control is no longer dependent on SAS metadata and has been updated to support more granular privileges.
- a new dialog box that enables workflow template owners to specify permissions for individual templates.
- improved workflow template validation, such as verification of mandatory policy properties.
- a new dialog box that displays the workflow tree for two versions of a template side-by-side. This dialog box enables you to easily evaluate the differences between the two versions of the template.
- a new policy, Submit a JES Job, that enables you to execute code that has been registered with the SAS Job Execution Service.
- a new policy action, Invoke REST Web Service.
- two new properties, Error Code and Error Message, for the Invoke Web Service policy, which supports business logic based on potential error conditions.
- support for Date data objects in timer expressions. Using Date data objects allows the dynamic use of datetime values at run time. Also, with Date data objects, you can now enter negative relative offsets, which trigger actions prior to the date that was specified by the data object.
- support for a new TODAY function in decision gateway expressions. This function retrieves the current datetime system value, which enables you to specify a specific date offset from the current date.



SAS Intelligence Platform

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SAS Environment Manager

SAS Environment Manager 2.3

SAS Environment Manager provides the capability to create and update the access control templates (ACTs). ACTs enable you to avoid repeatedly adding the same explicit controls for the same identities on multiple objects. When you apply an ACT to an object, the pattern settings in an ACT are added to the direct controls of an object.

For more information, see [What's New in SAS Environment Manager 2.3](#) in *SAS Environment Manager: User's Guide*.

SAS Environment Manager 2.4

SAS Environment Manager 2.4 now includes the SAS Environment Manager Service Management Architecture, which provides functions and capabilities that enable SAS Environment Manager to fit into a service-oriented architecture (SOA). These functions include SAS Environment Manager Extended Monitoring, Audit, Performance, and Measurement (APM) ETL; Agent-Collected Metric (ACM) ETL; and a solution kit framework. SAS Environment Manager provides services that enable you to import and export event data. Environment Snapshot contains a comprehensive list of the system information in the SAS Environment Manager database. This snapshot provides you with valuable information about your system. SAS Environment Manager 2.4 also includes a facility that enables you to manage user definitions in SAS metadata. The user administration features in SAS Environment Manager enable you to create and maintain users, groups, and roles. You can also manage memberships, logins, and internal accounts.

For more information, see [What's New in SAS Environment Manager 2.4](#) in *SAS Environment Manager: User's Guide*.

SAS 9.4 Intelligence Platform

The SAS Intelligence Platform includes the following enhancements and changes for SAS 9.4:

- SAS Environment Manager is a new monitoring and management system for SAS deployments. Features include automatic resource discovery, monitoring of remote systems, personal and role-based dashboards, alerting, and visualization. The application provides web-based management, operation, and proactive monitoring of servers on both the middle tier and the SAS server tier. SAS Environment Manager incorporates some of VMware's Hyperic technology in order to offer enterprise-class operational features.
- In the first maintenance release for SAS 9.4, SAS Environment Manager includes the ability to manage folders and to view and change authorization settings in SAS

metadata. In the second maintenance release for SAS 9.4, SAS Environment Manager includes the ability to create and update access control templates (ACTs). SAS Environment Manager 2.4 shipped in October 2014. In this release, user administration features enable you to create and maintain users, groups, and roles. You can also manage memberships, logins, and internal accounts.

- SAS Environment Manager 2.4 includes the SAS Environment Manager Service Management Architecture, which provides functions and capabilities that enable SAS Environment Manager to fit into a service-oriented architecture (SOA). These functions include SAS Environment Manager Extended Monitoring, Audit, Performance, and Measurement (APM) ETL; Agent-Collected Metric (ACM) ETL; and a solution kit framework.
- The middle-tier software includes SAS Web Server for use as an HTTP server and SAS Web Application Server, so that a third-party web application server is no longer needed. SAS Web Application Server is a lightweight server that provides enterprise-class features for running SAS web applications. The SAS deployment tools can configure these servers automatically. The tools simplify the configuration of vertical and horizontal clustering as well as HTTP load balancing.
- The new metadata server clustering feature provides redundancy and high availability of the metadata server, which is a core component of the SAS infrastructure. Clustering ensures that the server continues to operate if a server host machine fails.

Effective with the second maintenance release for SAS 9.4, metadata server clustering is supported on z/OS. In previous SAS 9.4 releases, it is supported only on UNIX and Windows.

- The new Deployment Backup and Recovery tool provides an integrated method for backing up and recovering SAS content across multiple tiers and machines.
- The first maintenance release for SAS 9.4 includes new batch tools for relationship reporting. You can use these tools to identify relationships among the content objects in the SAS Folder tree.
- The second maintenance release for SAS 9.4 includes a new batch command that you can use to run the metadata analyze and repair tools that are available in SAS Management Console.

- SAS has fully integrated the DataFlux suite of data quality, data integration, data governance, and master data management solutions. The newly branded SAS DataFlux products help you build a more integrated information management approach. SAS DataFlux products are now being combined into software offerings that include other SAS products as well. These new offerings replace the current SAS Enterprise Data Integration Server offering and enable customers to choose from a broader array of data management products.
- You can now use either SAS Management Console or the AUTHLIB procedure to bind SAS data to metadata. All access from SAS to metadata-bound data is subject to metadata-layer permissions.
- The first maintenance release for SAS 9.4 provides the ability to put a SAS server in a locked-down state, ensuring that the process can access only designated resources in the host operating environment.
- In the second maintenance release for SAS 9.4, Integrated Windows Authentication on Linux systems no longer requires the use of Quest Authentication Services. SAS can leverage the libraries that are shipped with the supported operating system or that are provided in most third-party authentication solutions.
- In SAS 9.4, users can view some SAS Web Report Studio relational reports on mobile devices with SAS Mobile BI. In addition, users can manage mobile access permissions through the use of whitelisting and blacklisting devices.
- In the first maintenance release for SAS 9.4, a feature has been added that identifies those versions of SAS offerings that are unable to be migrated directly to SAS 9.4 with the SAS Migration Utility. The Migration Utility Analysis Report identifies which products to update in order to prepare them for migration.
- In the second maintenance release for SAS 9.4, the SAS Deployment Wizard enables you to specify the size of your web application based on the number of users and workload. In addition, the SAS Deployment Wizard provides an option to install only the newly released documentation.
- Beginning in October 2014, new roles and capabilities are available for the SAS Add-In 7.1 for Microsoft Office and SAS Enterprise Guide 7.1.

For more information, see these What's New topics:

- [What's New in Installation and Configuration for the SAS 9.4 Intelligence Platform](#) in the *SAS Intelligence Platform: Installation and Configuration Guide*
- [What's New in Migration for the SAS 9.4 Intelligence Platform](#) in the *SAS Intelligence Platform: Migration Guide*
- [What's New in Application Server Administration for the SAS 9.4 Intelligence Platform](#) in the *SAS Intelligence Platform: Application Server Administration Guide*
- [What's New in System Administration for the SAS 9.4 Intelligence Platform](#) in the *SAS Intelligence Platform: System Administration Guide*
- [What's New in Desktop Application Administration for the SAS 9.4 Intelligence Platform](#) in the *SAS Intelligence Platform: Desktop Application Administration Guide*
- [What's New in Security Administration for the SAS 9.4 Intelligence Platform](#) in the *SAS Intelligence Platform: Security Administration Guide*
- [What's New in Middle-Tier Administration for the SAS 9.4 Intelligence Platform](#) in the *SAS Intelligence Platform: Middle-Tier Administration Guide*
- [What's New in Data Administration for the SAS 9.4 Intelligence Platform](#) in the *SAS Intelligence Platform: Data Administration Guide*
- [What's New in Web Application Administration for the SAS 9.4 Intelligence Platform](#) in the *SAS Intelligence Platform: Web Application Administration Guide*

SAS Information Retrieval Studio 1.53

SAS Information Retrieval Studio 1.53 provides SSL support for search.

For more information, see “Updates to SAS Information Retrieval Studio for SSL” in *SAS Intelligence Platform: Middle-Tier Administration Guide*.

SAS Theme Designer for Flex

SAS Theme Designer 4.1 for Flex

For SAS Theme Designer 4.1 for Flex, the SAS Corporate theme is now the default theme, which has been updated with a new color palette that is based on a navy blue palette.

You can now access SAS Theme Designer for Flex from the SAS Visual Analytics Hub to create custom themes. In addition, report themes are now automatically created when a custom application theme is created in SAS Theme Designer for Flex. These custom report themes can then be used in SAS Visual Analytics reports.

SAS Theme Designer 4.2 for Flex

The **User Interface Components** pane and the **Properties** pane have been combined into a single pane for SAS Theme Designer 4.2 for Flex. The **User Interface Components** pane now contains all components to create or modify a theme. In addition, you can now customize the font style for a theme. In the **User Interface Components** pane, the **Global Settings** option now contains a setting for **Font**.

The name for a theme is now assigned when you are saving or saving and deploying a theme. And, when a theme is deployed, undeployed, or deleted in SAS Theme Designer 4.2 for Flex, the list of available themes is immediately updated in applications that use Flex themes.

For more information, see [What's New in SAS Theme Designer 4.2 for Flex](#) in *SAS Theme Designer for Flex: User's Guide*.

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SAS IT Resource Management

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SAS IT Resource Management

SAS IT Resource Management 3.4

SAS IT Resource Management 3.4 became available in December 2013. In this release, you can use exception analysis processing to define, evaluate, detect, and report on exceptional conditions in IT data marts. Also new in this release is the ITRM Report Center web application used to view, organize, filter, and share SAS IT Resource Management performance and exception reports. Integration with SAS Visual Analytics was added through macros that enable you to load and update ITRM tables into the SAS LASR Analytic Server. There is a new wizard to add domain categories to an existing staging transformation. As is true for all releases, there are also multiple adapter updates.

SAS IT Resource Management 3.5

SAS IT Resource Management 3.5 is the latest release of this solution and became available in September 2014. In this release, upon request, SAS Visual Analytics and the in-memory SAS LASR Analytic Server can be included with the solution. Reference documentation about installing and configuring SAS IT Resource Management without

the SAS middle tier is available in *Guide to Operating SAS IT Resource Management 3.5 without a Middle Tier*. Version updates as well as enhanced support capabilities are provided for multiple adapters with this release. As is true for all releases, there are also multiple adapter updates.

For more information, see *What's New in SAS IT Resource Management* from the product documentation page for [SAS IT Resource Management](#).

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SAS Risk Management

SAS Enterprise GRC 6.1 119

SAS Enterprise GRC 6.1

SAS shipped SAS Enterprise GRC 6.1 in October 2014.

This release has added several new features, which include, but are not limited to the following:

- The procedure to install SAS Enterprise GRC and its dependent products has been simplified.
- SAS Enterprise GRC 6.1 now integrates with SAS Visual Analytics. Users can now shift between the SAS Enterprise GRC and SAS Visual Analytics user interfaces for managing and running reports. In addition, two new SAS Visual Analytics reports are provided by default.
- New security features have been added to protect the server from malicious web traffic.
- Attachments can now be filtered by name and file type.
- Updates have been made to screen definitions and workflows to improve usability and performance.
- Several new data loaders have been added.

For more information, see the software product page for [SAS Enterprise GRC](#).

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SAS Strategy Management

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SAS Strategy Management

SAS Strategy Management 5.5

SAS Strategy Management 5.5 provides these features and other improvements:

- The SAS Strategy Management installation now includes the SAS Visual Analytics home page. From the home page, you can navigate to the SAS Strategy Management Builder or to a specific SAS Strategy Management project located in the Builder.
- A new element details link type provides another way to customize the information to display to your users. More options for the SAS Strategy Management project link type let you specify detailed information about the project so that a user can navigate to the expected view in the SAS Strategy Management Builder.
- SAS Strategy Management provides new ways to link information from diagram nodes and shapes as well as to restrict navigation for security reasons. Also, the Adobe SVG Viewer is no longer required in order to view diagrams that use the SVG format.

- User names are alphabetized in the Data-entry user and Approver lists so that you can easily find the right person. You can reorder approver names in the selection list by dragging and dropping the approver names into the preferred order. Also, the rejection workflow behavior has been updated. When a form is rejected but has been approved by some approvers, the form is sent to all approvers again so that they are aware of updates to the form.
- SAS Strategy Management expands its browser options with support for the Chrome web browser.

SAS Strategy Management 5.6

SAS Strategy Management 5.6 provides improved integration with the SAS Visual Analytics home page. From the SAS Visual Analytics home page, you can now select a data-entry form and open its portlet in order to work with the form. You can also make mobile reports available on the home page.

SAS Strategy Management provides a new way to create reports that you can view in Microsoft Office when SAS Add-In for Microsoft Office is installed.

The Import wizard provides a new configuration feature that imports elements, their non-metric attributes, and their period types.

For more information, see the software product page for [SAS Strategy Management](#).

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SAS Visual Analytics

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SAS Visual Analytics

SAS Visual Analytics 6.2

SAS Visual Analytics is a web-based product that uses SAS high-performance analytic technologies to explore huge volumes of data quickly in order to see patterns and trends. Here are some of the updates in SAS Visual Analytics 6.2:

- The SAS Visual Analytics home page now displays tables, and the search has been enhanced to include any registered SAS types, not only reports, explorations, and stored processes.
- SAS Visual Data Builder now supports input tables from the SAS LASR Analytic Server and has improved performance with the Greenplum Data Computing Appliance.
- In SAS Visual Analytics Explorer, forecasting has been enhanced to support underlying factors and scenario analysis. You can now create aggregated measures

and perform decision tree analysis. You can also rank your data based on the greatest and least aggregated values.

- SAS Visual Analytics Designer has been enhanced to give you the ability to create new aggregated calculated items for tables and graphs, filter or rank your data based on the top or bottom values, and change the report theme. You can add links to a specific section in a target report or add links from a report object, text, or image to another report. You can group more than five gauges in a report.
- Using SAS Visual Analytics Administrator, you can define permission conditions in an interactive editor. You can use either blacklisting or whitelisting to manage mobile devices. You can register tables.

For more information, see [What's New in SAS Visual Analytics 6.2](#) in the *SAS Visual Analytics: User's Guide*.

SAS Visual Analytics 6.3

SAS Visual Analytics 6.3 contains many new features, including the following:

- Simplified self-service capabilities enable users to quickly and easily load their own data, whether the users are exploring data or designing a report.
- You can use Esri mapping technology when exploring data and designing reports.
- Network diagrams enable you to see the relationships and contributions between elements with nodes on a chart and across a geo map.
- Alerts that are based on expressions notify report subscribers when metrics reach specific values.
- You can create custom graph templates for reports.
- Guest access, which does not require a login ID or password, is available for viewing explorations, reports, and dashboards.
- New text analysis capabilities enable you to understand the most common terms and topics discussed in your Twitter streams or other text fields such as "customer comments."

Integration with SAS Office Analytics enables customers to display SAS Visual Analytics content in Microsoft Excel, PowerPoint, Word, Outlook, and SharePoint.

For more information, see [What's New in SAS Visual Analytics 6.3](#) in the *SAS Visual Analytics: User's Guide*.

SAS Visual Analytics 6.4

SAS Visual Analytics 6.4 contains many updates, including the following:

- You can now import data from these third-party vendor database servers:
 - Aster
 - BigInsights
 - Cloudera
 - DB2
 - Greenplum
 - Hortonworks
 - MySQL
 - Netezza
 - ODBC
 - Oracle
 - PostgreSQL
 - Salesforce
 - SAP HANA
 - SQL Server
 - Teradata
 - Vertica
- Importing data from massively parallel processing databases has been enhanced.

- Working with visualizations usability is improved.
- Designing reports usability is improved.

For more information, see [What's New in SAS Visual Analytics 6.4](#) in the *SAS Visual Analytics: User's Guide*.

SAS Visual Analytics 7.1

SAS Visual Analytics 7.1 contains many updates, including the following:

- Importing data from Pivotal HD and Cloudera Impala is supported.
- A new Sankey diagram visualization enables you to perform path analytics. Path analytics displays flows of data from one event (value) to another as a series of paths.
- With goal seeking, you can specify a target value for the forecast measure, and then determine the values of the underlying factors that would be required to achieve the target value.
- Text analytics in a word cloud visualization enables you to analyze the sentiment of documents in your document collection. It also enables you to explore a selection of specific documents as a new visualization.
- Parameters are supported for report controls, and can be used in calculations, filters, ranks, and display rules.
- New options for printing to PDF are available for reports. You can use category data items, calculated items that are categories, and custom categories in custom sorts. You can distribute reports to other users based on a schedule. Report designers can localize (or translate) the labels, tooltips, and other descriptive text that are part of reports.
- A predefined report provides insight into how your site uses SAS Visual Analytics. The report is populated after you enable auditing, and is visible only to administrators.

For more information, see [What's New in SAS Visual Analytics 7.1](#) in *SAS Visual Analytics: User's Guide*.

Appendix 1

Additional Product Updates in SAS 9.4

These products were also released during the SAS 9.4 life cycle. However, because the changes were minor, they do not need a full What's New topic. They are listed here for completeness.

- DataFlux Authentication Server 3.2
- SAS/ACCESS 9.4 Interface to Aster
- SAS/ACCESS 9.4 Interface to DB2
- SAS/ACCESS 9.4 Interface to Greenplum
- SAS/ACCESS 9.4 Interface to Hadoop
- SAS/ACCESS 9.4 Interface to Netezza
- SAS/ACCESS 9.4 Interface to Oracle
- SAS/ACCESS 9.4 Interface to Teradata
- SAS AppDev Studio 4.4
- SAS/ASSIST 9.4
- SAS Data Surveyor for SAP
- SAS/EIS 9.4
- SAS Forecasting for Desktop 12.3
- SAS Fraud Management 4.1

- SAS High-Performance Computing Management Console 2.5
- SAS High-Performance Risk 3.2M1
- SAS Information Studio 4.4
- SAS Inventory Optimization 2.3
- SAS Simulation Studio 12.3
- SAS Strategy Management 5.5

For more information about any SAS product, contact your SAS account representative.

Appendix 2

Documentation Enhancements

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Overview

The What's New documentation is cumulative and is updated whenever there is an update to a SAS product. The following topics will help you determine what changes were made after the initial release of SAS 9.4, which shipped in July 2013.

November 2014 (SAS 9.4, Rev. 940_14w47)

These products are new:

- “SAS Business Data Network 3.1” on page 91
- “SAS Lineage 3.1” on page 97

These products shipped a new release:

- “DataFlux Data Management Server 2.6” on page 86
- “SAS Event Stream Processing Engine 2.3” on page 44
- “SAS High-Performance Analytics Infrastructure 2.91” on page 70
- “SAS High-Performance Risk 3.3” on page 52
- “SAS LASR Analytic Server 2.5” on page 72
- “SAS Quality Knowledge Base for Contact Information 24” on page 90
- “SAS Quality Knowledge Base for Product Data 5” on page 90

October 2014 (SAS 9.4, Rev. 940_14w41)

These products shipped a new release:

- [“DataFlux Data Management Studio 2.6” on page 87](#)
- [“SAS Add-In 7.1 for Microsoft Office” on page 76](#)
- [“SAS Enterprise GRC 6.1” on page 119](#)
- [“SAS Enterprise Guide 7.1” on page 78](#)
- [“SAS Environment Manager 2.4” on page 112](#)
- [“SAS Information Retrieval Studio 1.53” on page 115](#)
- [“SAS Visual Analytics 7.1” on page 126](#)

September 2014 (SAS 9.4, Rev. 940_14w36)

SAS IT Resource Management 3.5 is a new release. For more information, see [“SAS IT Resource Management 3.5” on page 117](#).

August 2014 (SAS 9.4, Rev. 940_14w32)

These products shipped a new release:

- [“SAS Contextual Analysis 13.2” on page 38](#)
- [“SAS Business Rules Manager 2.2” on page 37](#)

- “SAS Data Integration Studio 4.9” on page 92
- “SAS Decision Manager 2.2” on page 39
- “SAS Environment Manager” on page 111
- “SAS Enterprise Miner 13.2” on page 43
- “SAS/ETS 13.2” on page 47
- “SAS/IML 13.2” on page 53
- “SAS Model Manager 13.1” on page 55
- “SAS/OR 13.2” on page 57
- “SAS/QC 13.2” on page 60
- “SAS/STAT 13.2” on page 62
- “SAS Studio 3.2” on page 33
- “SAS Text Miner 13.2” on page 65

These products are new:

- SAS/ACCESS Interface to Impala
- SAS/ACCESS Interface to the PI System

These products shipped as part of the second maintenance release for SAS 9.4:

- “Base SAS 9.4” on page 10
- “SAS/ACCESS 9.4 Interface to Hadoop” on page 25
- “SAS/ACCESS 9.4 Interface to Oracle” on page 25
- “SAS/ACCESS 9.4 Interface to PC Files” on page 25
- “SAS/CONNECT 9.4” on page 27
- “SAS/GRAPH 9.4” on page 28
- “SAS Grid Manager 9.4” on page 31
- “SAS 9.4 Integration Technologies” on page 109

- “SAS 9.4 Intelligence Platform” on page 112
- “SAS 9.4 OLAP Server” on page 79

June 2014 (SAS 9.4, Rev. 940_14w23)

These products shipped a new release:

- “SAS OpRisk VaR 6.1” on page 56
- “SAS Quality Knowledge Base for Contact Information 23” on page 89

May 2014 (SAS 9.4, Rev. 940_14w19)

These products shipped a new release:

- “DataFlux Authentication Server 4.1” on page 85
- “SAS Federation Server 4.1” on page 96

SAS DataFlux Secure 2.5 was updated. For more information, see “DataFlux Secure 2.5” on page 88.

April 2014 (SAS 9.4, Rev. 940_14w14)

These products shipped a new release:

- “SAS Anti-Money Laundering 6.2” on page 104
- “SAS Data Quality Accelerator 2.5 for Teradata” on page 94

These products shipped a maintenance release:

- “SAS Data Remediation 2.1” on page 95

- [“SAS MDM 4.1” on page 98](#)
- [“SAS Task Manager 2.1” on page 99](#)

March 2014 (SAS 9.4, Rev. 940_14w11)

These products are new:

- [“SAS In-Memory Statistics for Hadoop” on page 67](#)
- [“SAS Studio 3.1” on page 32](#)

These products shipped a new release:

- [“SAS LASR Analytic Server 2.3” on page 71](#)
- [“SAS Strategy Management 5.6” on page 122](#)
- [“SAS Visual Analytics 6.4” on page 125](#)

The documentation was updated for SAS Data Surveyor 5.1 for SAP. For more information, see [“SAS Data Surveyor 5.1 for SAP” on page 95](#).

December 2013 (SAS 9.4, Rev. 940_13w51)

The first maintenance release for SAS 9.4 shipped in December 2013. Several products were updated in this maintenance release.

- [“SAS/ACCESS 9.4 Interface to PC Files” on page 25](#)
- [“Base SAS 9.4” on page 10](#)
- [“SAS/CONNECT 9.4” on page 27](#)
- [“SAS 9.4 In-Database Products” on page 107](#)
- [“SAS 9.4 Integration Technologies” on page 109](#)

- [“SAS 9.4 Intelligence Platform” on page 112](#)
- [“SAS 9.4 OLAP Server” on page 79](#)

These products shipped a new release:

- [“SAS Data Integration Studio 4.8” on page 92](#)
- [“SAS Enterprise Miner 13.1” on page 41](#)
- [“SAS/ETS 13.1” on page 45](#)
- [“SAS Financial Management 5.4” on page 101](#)
- [“SAS Forecast Server 13.1” on page 50](#)
- [“SAS High-Performance Computing Management Console 2.4” on page 71](#)
- [“SAS High-Performance Risk 3.2” on page 51](#)
- [“SAS/IML 13.1” on page 52](#)
- [“SAS LASR Analytic Server 2.1 and 2.2” on page 71](#)
- [“SAS/OR” on page 56](#)
- [“SAS/QC” on page 58](#)
- [“SAS/STAT 13.1” on page 61](#)
- [“SAS Theme Designer 4.2 for Flex” on page 116](#)
- [“SAS Text Miner 13.1” on page 64](#)
- [“SAS Visual Analytics 6.3” on page 124](#)

These products shipped a maintenance release:

- The first maintenance release for SAS Add-In 6.1 for Microsoft Office is available. For more information, see [“SAS Add-In 6.1 for Microsoft Office” on page 75](#).
- The first maintenance release for SAS Enterprise Guide 6.1 is available. For more information, see [“SAS Enterprise Guide 7.1” on page 78](#).

November 2013 (SAS 9.4, Rev. 940_13w45)

These products shipped a new release:

- “SAS Anti-Money Laundering 6.1” on page 103
- “SAS Quality Knowledge Base for Contact Information 22” on page 88

These products are new:

- “SAS Customer Due Diligence 6.1” on page 104
- “SAS Peer Group Analysis 6.1” on page 104

October 2013 (SAS 9.4, Rev. 940_13w40)

These products are new:

- “DataFlux Data Management Server 2.5” on page 85
- “DataFlux Data Management Studio 2.5” on page 87
- “SAS Contextual Analysis 12.3” on page 38
- “SAS Data Management Console” on page 93
- “SAS Data Remediation 2.1” on page 95
- “SAS Job Monitor 2.1” on page 97
- “SAS MDM 4.1” on page 98
- “SAS Visual Process Orchestration 2.1” on page 99

These products shipped a new release.

- [“DataFlux Authentication Server 3.2” on page 85](#)
- [“DataFlux Secure 2.5” on page 88](#)
- [“SAS Data Quality Accelerator 2.4 for Teradata” on page 93](#)

September 2013 (SAS 9.4, Rev. 940_13w36)

SAS Data Quality Accelerator for Teradata 2.4 is a new product. For more information, see [“SAS Data Quality Accelerator 2.4 for Teradata” on page 93](#).

July 2013 (SAS 9.4, Rev. 940_13w30)

These products shipped a new release:

- [“SAS Business Rules Manager 2.1” on page 37](#)
- [“SAS Decision Manager 2.1” on page 39](#)

The In-Database products were updated. For more information, see [“SAS 9.4 In-Database Products” on page 107](#).

Recommended Reading

For more information about the new features or enhancements for a specific product, see the What's New topic in the product documentation. The product documentation is available in the following locations:

- the product documentation page at <http://support.sas.com/documentation>
- the Help that is available within the product

Note: Your site might not license all of the products that are listed in this book. Therefore, you might not be able to access the Help for all SAS products.

Round out your SAS knowledge with these recommended books, which include real-world examples from expert users:

- [The Little SAS Book: A Primer](http://go.sas.com/read001) at <http://go.sas.com/read001>
- [The Little SAS Book for SAS Enterprise Guide](http://go.sas.com/read002) at <http://go.sas.com/read002>
- [Output Delivery System: The Basics and Beyond](http://go.sas.com/read003) at <http://go.sas.com/read003>
- [Custom Tasks for SAS Enterprise Guide Using Microsoft .NET](http://go.sas.com/read004) at <http://go.sas.com/read004>
- [Data Quality for Analytics Using SAS](http://go.sas.com/read005) at <http://go.sas.com/read005>
- [Statistical Graphics Procedures by Example: Effective Graphs Using SAS](http://go.sas.com/read006) at <http://go.sas.com/read006>
- [Decision Trees for Analytics Using SAS Enterprise Miner](http://go.sas.com/read007) at <http://go.sas.com/read007>

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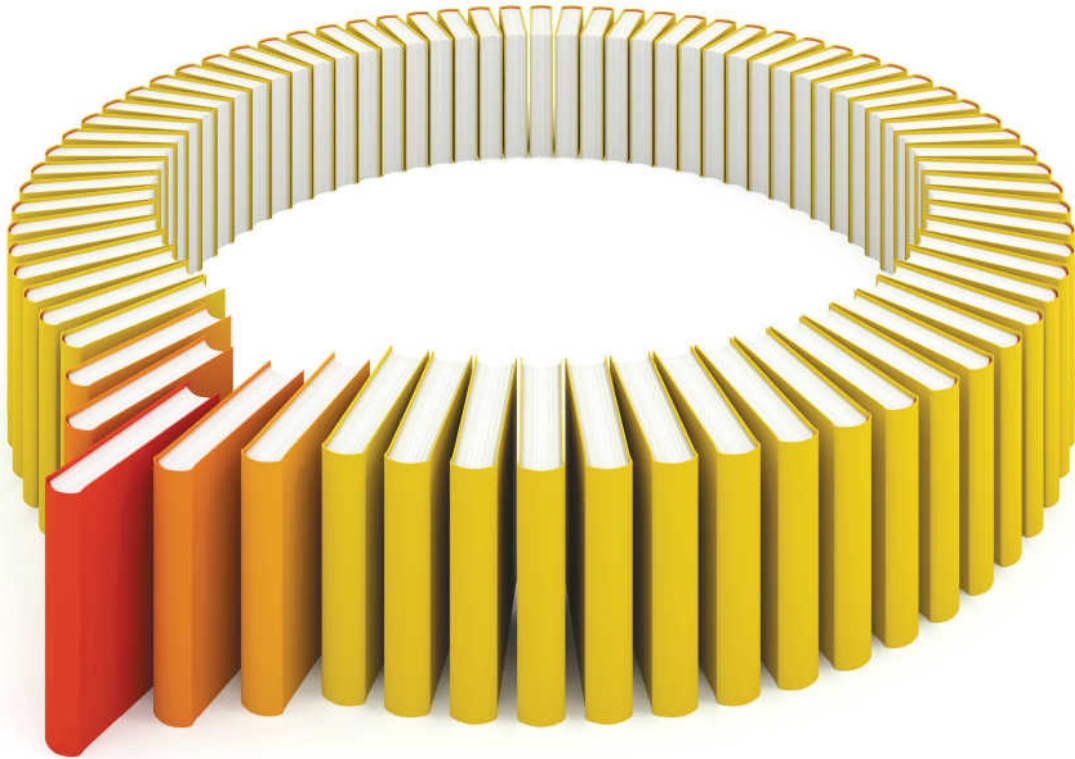
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