



SAS/ACCESS® Software

Read, write and update data regardless of its native database or platform

What does SAS/ACCESS® software do?

SAS/ACCESS software interfaces are out-of-the-box solutions that provide integration between SAS and third-party databases. These interfaces enable your SAS solutions to read, write and update data regardless of its native database or platform. Because the data appears native to SAS, there is no need to learn Structured Query Language (SQL) or any other database-specific query languages.

Why is SAS/ACCESS® software important?

By integrating all available data across the enterprise, SAS supports your mission-critical business decisions by giving you access to complete, up-to-date and accurate data.

For whom is SAS/ACCESS® software designed?

Those typically responsible for accessing enterprise data fall within IT and are responsible for making data available to business units across the organization. Business users whose jobs may require them to manage data to perform specific tasks also may be interested in this technology.

The SAS/ACCESS family of interface products provides seamless and transparent access to more of your data stored in the most popular platforms on the market, including PCs, UNIX and mainframe systems. By integrating data across the enterprise with all of the other available data sources, SAS® enables organizations to use data from across the entire organization as part of a 360-degree view. This ensures the maximum use of information held in these stores for competitive advantage.

SAS/ACCESS products bring together the resources you need for effective information delivery and let you put these resources to work in all SAS environments. With these out-of-the-box solutions, you get the power and flexibility of SAS to analyze and present data directly from your data source.

Data integrity is not at risk because SAS/ACCESS interfaces fully support existing security features of the data sources. Access can be provided to as many, or as few, users as necessary.

SAS/ACCESS easily reads third-party data just as if it were in a SAS data file. Rest assured that you are using the most current data by reading data directly from the source into your SAS application. Alternatively, you can avoid additional source table access overhead by using temporary files, either in the source database or in SAS. You can also use SQL to update, delete or insert data in the database files you have described to SAS. You can combine data from different databases with each other and with SAS data files to form a single view of data. And, you can extract data directly from a database table and place it in a SAS file.

Key Benefits

- **Access more data sources on more platforms.** Seamless and transparent read/write/update access is provided to more than 60 data sources, including relational and nonrelational databases, Hadoop Distributed File System (HDFS), PC files and data warehouse appliances. Also, SAS Data Surveyor software provide specialized engines and interfaces for accessing enterprise applications.
- **Direct, easy and secure access with native interfaces.** SQL (or other query language) expertise or custom coding is not required. You get a high degree of control over data security because the native security of the target data source is honored. SAS enables a transparent approach by making data sources appear as though they are a native SAS data type, which facilitates interaction with SAS procedures, the SAS DATA step and SAS solutions. Users are also able to interact directly with the data using native data source capabilities.
- **Fast performance and reduced network traffic.** The ability to pass database queries, joins and many functions to a target data source for processing reduces network traffic and speeds data access. You also gain faster load times with support for native bulk-load utilities.
- **Support for integration through standards, including ODBC, JDBC and OLE DB.** SAS/ACCESS interfaces are tightly integrated and used by all SAS products and solutions for third-party data integration.
- **Designed to support both technical and business users.** These out-of-the-box access solutions require minimal training and knowledge transfer.



SAS/ACCESS® Product Overview

Seamless and transparent data integration

With SAS/ACCESS interfaces, you can access the most popular databases on the most popular platforms without detailed knowledge of the database or SQL. The interfaces allow you to treat data as a generally available resource that can be viewed and used by SAS regardless of its format.

SQL support

SAS/ACCESS engines support two means of integration: the LIBNAME engine and the Pass-Through Facility. The LIBNAME engine provides a seamless and transparent way to surface data and requires minimal knowledge of the data or the SQL required for surfacing it. The Pass-Through Facility provides greater flexibility, offering users the option to use their own custom SQL statements or to modify/keep automatically generated SQL (when available, for example, in SAS applications such as SAS Data Integration Studio), which will be passed directly to their database server. In all cases, by mapping SAS statements or functions to database-specific statements or functions, all appropriate SQL statements can be processed directly inside the database, providing the best possible performance.

Bulk loading and other performance features

SAS/ACCESS supports multiple loading options for moving data from SAS into third-party data stores. Bulk loading can significantly enhance performance. Other performance enhancements are provided by a multithreaded read interface, support for automatic partitioning, the ability to pass functionality to the database and the ability to directly control processing.

Temporary table support

You can create a temporary table that can be accessed by multiple SAS processes. This provides performance gains when the same data is required for different steps in a session. Using temporary tables for heterogeneous joins can also improve performance.

Metadata integration

DBMS metadata can be accurately maintained within the SAS Metadata Repository.

Data integrity and security

SAS/ACCESS engines can accept encoded DBMS passwords so they do not appear as clear text in SAS programs. The software also uses the authentication and log-in information stored within the SAS Metadata Repository or uses the requirements provided by each database system.

SAS/ACCESS® Software for Relational Databases

With SAS/ACCESS interfaces to relational databases, you reference database objects directly in a DATA step or SAS procedure using the SAS LIBNAME statement. You can also use the New Library window to associate a library reference with relational DBMS objects or a SAS data library. SAS then reads the data values just as if they were in a SAS data file.

Supported relational databases

- SAS/ACCESS Interface to DB2.
- SAS/ACCESS Interface to INFORMIX.
- SAS/ACCESS Interface to ODBC.
- SAS/ACCESS Interface to OLE DB.
- SAS/ACCESS Interface to Oracle.
- SAS/ACCESS Interface to Microsoft SQL.
- SAS/ACCESS Interface to SYBASE.
- SAS/ACCESS Interface to MySQL.

SAS/ACCESS® Software for Data Warehouse Appliances

Data warehouse appliances are designed to integrate the database, server and storage into one unit. They remove the complexity of installation, configuration, initialization and administration of the hardware, operating system and appliance software, all while processing terabytes of data with claims of extreme scalability.

Supported data warehouse appliances

- SAS/ACCESS Interface to Aster *n*Cluster.
- SAS/ACCESS Interface to Greenplum.
- SAS/ACCESS Interface to Netezza.
- SAS/ACCESS Interface to ODBC (for ParAccel, Vertica, Microsoft Parallel Data Warehouse and more).
- SAS/ACCESS Interface to Oracle (for Sun Oracle Database Machine [Exadata]).
- SAS/ACCESS Interface to Sybase IQ.
- SAS/ACCESS Interface to Teradata.

SAS/ACCESS® Software for Nonrelational Databases

With SAS/ACCESS for nonrelational databases, you create a view to describe the specific data you would like to access. Then, create an access descriptor telling SAS the essential information you want to access and a view descriptor to let SAS know which subsets of data to use as input. SAS reads the data values as if they were in a SAS data file.

Supported nonrelational databases

- SAS/ACCESS Interface to ADABAS.
- SAS/ACCESS Interface to DATACOM/DB.
- SAS/ACCESS Interface to CA IDMS™.
- SAS/ACCESS Interface to IMS-DL/I.
- SAS/ACCESS Interface to SYSTEM 2000.

SAS/ACCESS® Software for Distributed File Systems

SAS/ACCESS modules for distributed file systems enable you to easily access and integrate data stored in these systems. Data stored in the distributed file system will appear as a native SAS data set, enabling the data to be easily integrated and used with other enterprise data sources in SAS applications and solutions. The SAS/ACCESS engine also uses the distributed processing capabilities of these systems for faster processing.

Supported distributed file systems

- SAS/ACCESS Interface to Hadoop™.

SAS/ACCESS® Software for PC Files

With SAS/ACCESS Interface to PC Files, everyone authorized in your organization can gain access to up-to-date data quickly and easily, without having to know code or the internal structure of the PC files. SAS/ACCESS Interface to PC Files enables you to read data from PC files so that you can use the data in SAS reports or applications. You can also create PC files in various formats without leaving your SAS session. The interface includes the following features:

- LIBNAME statement.
- Pass-Through Facility.
- Import/export wizard and procedures.
- DBF and DIF procedures.
- ACCESS procedure.
- DBLOAD procedure.

SAS/ACCESS Interface to PC Files currently includes access to .DBF, .DIF, .WK1, .WK3, .WK4 and .XLS under Windows, as well as .DBF and .DIF under UNIX.

Key Features

General

- Interfaces let you treat data as a generally available resource regardless of source or format.
- Generates appropriate SQL and passes it to the databases.
- Seamless and easy integration. Access the most popular databases on the most popular platforms without detailed knowledge of the database or SQL.
- Implicit SQL support generates DBMS-specific SQL.
- Explicit SQL support and the Pass-Through Facility enables more SQL functions to run in the DBMS.
- Bulk-loading capabilities.
- Multithreaded read interface.
- Metadata integration into the SAS Metadata Repository.
- Encoded DBMS passwords.
- Temporary table support.
- Data virtualization and data federation enable you to create seamless, federated views across heterogeneous data sources, including relational databases.
- Federated queries and views are surfaced as database objects that can be used with all SAS solutions and client applications.

Relational databases

- SAS/ACCESS Interface to DB2:
 - Communicates with the DB2 database via its client-side libraries.
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to INFORMIX:
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to ODBC:
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to OLE DB:
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to Oracle:
 - Communicates with the Oracle database via its client-side libraries.
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to Microsoft SQL:
 - Provides connectivity between SAS on UNIX and Microsoft SQL databases on Windows for data access and update.
 - Communicates through a Microsoft SQL ODBC driver from DataDirect Technologies.
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to SYBASE:
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to MySQL:
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.

Data warehouse appliances

- SAS/ACCESS Interface to Aster nCluster:
 - Communicates with Aster nCluster via a direct ODBC connection and uses its utility capabilities for optimized extracts and loads.
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to Greenplum:
 - Communicates with Greenplum via a direct ODBC connection and uses its utility capabilities for optimized extracts and loads.
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to Netezza:
 - Communicates with Netezza via a direct ODBC connection and uses its utility capabilities for optimized extracts and loads.
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.

Continued on reverse

Key Features (continued)

- SAS/ACCESS Interface to ODBC (for ParAccel, Vertica, Microsoft Parallel Data Warehouse and more):
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to Oracle (for Sun Oracle Database Machine [Exadata]):
 - Communicates with the Oracle database via its client-side libraries.
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to Sybase IQ:
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.
- SAS/ACCESS Interface to Teradata:
 - Communicates with the Teradata database via its client-side libraries.
 - Supports two means of integration: the LIBNAME engine and the Pass-Through Facility.

Nonrelational databases

- SAS/ACCESS Interface to ADABAS; SAS/ACCESS to CA IDMS™;
SAS/ACCESS Interface to DATACOM/DB; SAS/ACCESS Interface to IMS-DL/I; and
SAS/ACCESS Interface to SYSTEM 2000.

Distributed File Systems

- SAS/ACCESS Interface to Hadoop™:
 - Communicates with Hadoop via Hive (HiveQL). Hive tables appear as a native SAS data set.
 - Make use of Hadoop's distributed processing capabilities for optimized extracts and loads.

SAS/ACCESS® Interface to PC Files

- Includes interfaces for Microsoft Excel, Microsoft Access, dBase, Lotus, SPSS, JMP and Stata.

SAS/ACCESS® System Requirements

To learn more about SAS/ACCESS system requirements, download white papers, view screenshots and see other related material, please visit sas.com/sasaccess.