

# Brief Description of SAS Products

**The SAS SYSTEM provides modular applications that are fully integrated and that are built around the four primary data-driven tasks common to any application: data access, data management, data analysis and data presentation.**

**SAS/IntrNet** integrates the SAS System and the World Wide Web. It provides both Common Gateway Interface (CGI) and Java technologies for building dynamic Web applications and data and compute services that allow users to access and execute remote SAS programs and perform sophisticated analysis and decision support – all from the Web. Users can share reports with anyone inside or outside the organization through a Web browser, and application developers can streamline software maintenance and distribution.

**AppDev Studio** lets the user control Enterprise Application Development within a complete stand-alone environment for building Java applications/applets and other Web-based applications -- even those that communicate with wireless devices. It is a way to customize information delivery according to user needs -- all from a flexible environment--developing and testing applications from a laptop computer.

**SAS/Warehouse**, with its graphical interface, brings together the components in SAS software which are key to setting up and managing a SAS data warehouse -- through the three phases of data warehouse management, organization and exploitation. To meet their business objectives, many organizations are setting up multiple-hierarchy data warehouses and localized data marts. SAS/Warehouse Administrator software greatly reduces the complexity of building and managing the data warehouse and helps to automate day-to-day processes.

**Enterprise Miner** is the first and only data mining solution that addresses the entire data mining process -- all through an intuitive point-and-click graphical user interface (GUI). Combined with SAS data warehousing and OLAP technologies, it creates a synergistic, end-to-end solution that addresses the full spectrum of knowledge discovery.

Enterprise Miner takes the first step by helping generate questions that might never have been asked. The resulting models can complement other analytical query and reporting tools. Enterprise Miner's exclusive "Sample, Explore, Modify, Model, Assess" (SEMMA) approach provides users with a logical, organized framework for conducting data mining. Beginning with a statistically representative sample of data, this methodology makes it easy to apply exploratory statistical and visualization techniques, select and transform the most significant predictive variables, model the variables to predict outcomes, and confirm a model's accuracy.

Unlike many data mining solutions that offer single algorithm capabilities, Enterprise Miner gives a full range of integrated models and algorithms -- including decision trees, neural networks and regression.

**SAS:SPDS** (Scalable Performance Data Server) utilizes the latest parallel process and data server capabilities. It delivers a fully integrated and seamless way to access large volumes of data and serves large numbers of concurrent users. An open data server--it enables extremely efficient data access for hundreds of network clients across multiple processors.

**SAS/MDDB** (multidimensional data structures) provides OLAP capabilities within an integrated data warehouse environment. Also known as data "slicing and dicing," OLAP offers high-performance access to large amounts of summarized data for complex analysis and easy reporting. The multidimensional database server enables warehouse data to be packaged into MDDBs, which deliver data to OLAP client software.

A MDDB is a specialized data storage facility that stores summarized data for fast and easy access. Users can quickly view large amounts of data as a value at any cross-section of business dimensions. A business dimension can be any logical vision of the data -- time, geography, or product, for example. Once an MDDB is created, it can be copied or transported to any platform. In addition, regardless of where the MDDB resides, it is accessible to requesting applications on any supported platform anywhere on the network, including the Web.

**SAS/SECURE:** SAS Institute now provides encryption services to increase the security of transmissions across a network. SAS/SECURE software makes use of the cryptographic services provided by RSA's Bsafe and Microsoft's CryptoAPI ciphers and is subject to export regulations. Alternatively, a form of fixed encoding is delivered with Base SAS software with no export restrictions.

**IT Service Vision** from SAS is an enterprise-wide approach to IT service reporting. This solution enables IT to "speak" to business by aligning IT direction with the corporate bottom line, while bridging organizational gaps. And IT Service Vision handles more than 1,000 sources of unique service components.

An IT performance management solution that addresses the entire spectrum of services -- systems, networks, Web servers and phone systems. One that has everything needed to warehouse and analyze data. Especially valuable for e-marketers who need to track Web site visitors, assess traffic flow through a Web site, and use that information to enhance the Web experience for customers. Web optimization using IT Service Vision combines performance reports and capacity planning forecasts to help businesses plan capacity requirements and eliminate downtime for their e-business pages.

**Enterprise Guide** is an easy to use, task based, Microsoft familiar graphical user interface. This Windows client connects to any Version 8 SAS System Server and allows users to access any data types supported by the SAS system, utilize the execution power of that machine to run any SAS processes, and return professional reports and graphics to the user's PC.

**Enterprise** software provides an interface designed with a Microsoft Office look and feel. With a familiar palette for report design, users can paint, preview and publish reports, while the system takes care of the data.

Integration with SAS/Warehouse Administrator software provides an end-to-end warehouse solution by giving the administrator a tool for documenting the contents of the data warehouse. Enterprise Reporter is the users' window to the warehouse fulfilling their information needs for creating reports on paper, or the Web.

**SAS/Access** interfaces enable SAS solutions to read, write, and update data regardless of its native DBMS or platform. SAS/ACCESS software currently provides direct and transparent access from SAS to the following databases and Enterprise Resource Planning (ERP) systems:

- SAS/ACCESS Interface to ADABAS
- SAS/ACCESS Interface to Baan
- SAS/ACCESS Interface to CA-DATACOM/DB
- SAS/ACCESS Interface to CA/IDMS
- SAS/ACCESS Interface to CA-OpenIngres
- SAS/ACCESS Interface to IMS-DL/I
- SAS/ACCESS Interface to Informix
- SAS/ACCESS Interface to PC File Formats
- SAS/ACCESS Interface to R/3
- SAS/ACCESS Interface to SYSTEM 2000 software
- SAS/ACCESS Interface to Relational Databases

The SAS/ACCESS products are data access engines that translate read and write requests from SAS into the appropriate call for the specific DBMS or file structure. The result of these calls is to surface data in one of the following forms: logical views to the native data source and extracts of native data into SAS data set form.

The SAS/ACCESS interfaces leverage the SAS Multiple Engine Architecture to represent all external data as if it is native to the SAS System.

**Base SAS:** Base SAS software provides tools for data access, management, analysis and presentation. Base SAS software brings all of an organization's data -- and application needs -- into a single system.

**SAS/AF** (Interactive Applications Development) software can be used to create user-friendly interactive windowing applications that give users quick, easy access to current information. And, since the SAS System is portable across hardware platforms, applications developers need only create an application once. All the development work can be done on one platform and then ported to other environments with little or no modification.

SAS/AF software offers an object-oriented applications development environment. It includes a programming language designed to facilitate the development of interactive applications. SAS Screen Control Language (SCL) provides the power and flexibility to build all types of applications, from simple programs that automate an end user's workload to sophisticated systems that integrate features of multiple procedures and components.

Applications developers can use SCL to: Create data entry applications, display tables, menus, and selection lists, generate SAS source code and submit it to the SAS System for execution, and generate code for execution by the host operating system's command processor.

**SAS/ASSIST** software provides templates for help getting started, and also offers a cross-functional approach to task completion--all within a client/server enabled environment.

The menu screens within SAS/ASSIST software are powered by common sense keywords. The software aids in the completion of tasks with features such as identification of required fields and selection lists to prevent user error. In the background, documented SAS code is being generated automatically and can be saved. SAS/ASSIST software provides tools for code management tasks such as editing and executing code interactively or in batch

The software has extensive report writing capabilities with templates to popular report types. A report builder environment enables the user to interactively build and shape a report (e.g. changing a report from a listing to a summary report with group subtotals, creating new variables as needed, adding and deleting columns). The software provides graphics templates and the graphics editor to further enhance output.

SAS/ASSIST software includes tools which allows the user to generate Structured Query Language (SQL) queries and reports with minimal effort and little or no knowledge of SQL or SAS System syntax

SAS/ASSIST software's integrated tools, task-oriented visual interface, and ease of use bring the world's leading information delivery system to the user's desk. A myriad of ready-to-use tools enable a person to access, manage, analyze, and present business-critical information in a timely manner.

**SAS/CONNECT** provides the essential tools for sharing data, applications and applications intelligence across multiple computing environments. It actually gives the user control over where and how to execute each part of an application.

Enterprise data access. Middleware provides transparent access to enterprise-wide data in virtually any format or location. Local clients can simultaneously connect to multiple data sources on different platforms and can combine diverse data sources from different platforms. Data can be extracted for local processing or accessed interactively on a remote platform.

Applications partitioning. Remote Computing Services provide dynamic relocation of applications logic so applications developed on one system can be moved easily or even divided for execution on multiple systems. Because SAS's MultiVendor Architecture ensures the same robust functionality across all computing platforms, the same capabilities available on a client system are also available on any server.

Peer-to-peer communications. Program-to-program communications on all platforms let PCs, workstations and mainframes act as clients and servers, removing the hierarchical distinction between desktop and host computing resources. With support for the most advanced communications protocols, including APPC, TCP/IP, DECnet, and NETBIOS -- and terminal-oriented interfaces such as HLLAPI, TELNET and SYNC, the user's assured of efficient remote processing and data access.

**SAS/EIS** is an Object-Oriented Environment for Developing Enterprise Information Systems. It provides a syntax-free environment for building user-friendly enterprise information systems

The software provides such EIS "basics" as point-and-click menus with pull-down windows...access to native host applications such as EMAIL...data-sensitive drill down, what-if analyses, exception reporting, and multidimensional data viewing and analysis, and graphical display of critical success factors and grouped bar charts.

SAS/EIS software takes advantage of object-oriented applications development (OOAD) technology by allowing the use of blocks of already existing code to build new, customized applications. Ready-made objects that represent complete parts of applications can be assembled into complete systems without the need for programming.

In addition to business reporting objects, SAS/EIS has an additional 30+ pre written objects enabling the user to front-end the rest of the SAS System with SAS/EIS software.

**SAS/ETS:** Integrated capabilities for time series analysis and forecasting, econometrics and systems modeling, financial analysis and reporting, and access to financial databases

With the SAS/ETS software, the user can analyze or predict processes that take place over time. The software can be used to access commercial time series databases, forecast future values of time series, perform time series regression and analysis, analyze and compare different kinds of cash flows, model complex dynamic systems, and much more.

It is easy to access commercially available economic and financial time series data with SAS/ETS software. Data can be extracted directly from files supplied by government and commercial data vendors and then converted to SAS data sets. The user can use the SAS System to extract time series data from commercial data vendors such as FAME, DRI (CITIBASE), Standard & Poor's (COMPUSTAT), and Haver Analytics (HAVER); government data from U.S. agencies including the Bureau of Economic Analysis (BEA) and Bureau of Labor Statistics (BLS); data from international agencies such as the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD); and data from organizations such as the Center for Research in Security Prices (CRSP).

**SAS/FSP** (Full-Screen Information Processing) is an interactive facility for information processing.

It lets the user interact with his data using integrated tools for data entry, computation, query, editing, validation, display, and retrieval

The user can access up-to-date data from within SAS data sets, external files, or database management systems; then enter, update, and verify data in a customized, common-sense environment

The software works hand-in-hand with SAS/AF to provide a set of predefined objects for designing customized full-screen applications.

Also included with the software is SAS Screen Control Language (SCL), an advanced language that provides the flexibility to build applications, from programs that perform simple calculations to sophisticated systems that integrate capabilities from across the SAS System. SCL programs can combine information obtained from program statements with interactive input from users, providing two-way communication between applications and users.

**SAS/GIS** (Geographic Information System) is a tool that allows the user to organize and analyze data that can be referenced spatially--that is, data that can be tied to a physical location. Many types of data have a spatial aspect, including demographics, marketing surveys, and epidemiological studies.

SAS/GIS software uses two basic types of data:

1. Spatial data - containing the coordinates and identifying information describing the map itself
2. Attribute data - containing information that can be linked to the spatial data--for example, matching addresses or coordinates in the spatial data

**SAS/Graph** is the high-resolution graphics component of the SAS System. SAS/GRAPH software provides information and presentation color graphics capabilities to produce a wide variety of business charts, plots, and maps in many colors and patterns. Graphics components can be created, stored in catalogs, retrieved as needed, and combined with other graphics. The software also includes extended capabilities for building multimedia applications - graphics editing, image capture and playback, video editing and compositing, and batch processing of high-volume graphics.

The graphics editor is an interactive application for modifying graphs produced with SAS/GRAPH software or imported from other graphics software. It allows the user to change graphics objects already displayed in a graph--such as text, lines, and boxes, save the graph to a catalog and print it on an output device.

**SAS/IML** software provides a powerful and flexible matrix programming language in a dynamic, interactive environment for programmers, statisticians, and researchers.

SAS/IML software can be applied to problems ranging from simple matrix manipulations to estimation techniques and linear programming to nonlinear optimization. An extensive set of mathematical and matrix operators make the possibilities endless. Graphics routines provide access to data visualization tools from within the SAS/IML environment.

SAS/IML software is a complete programming language. The user can construct programs using control structures such as conditional and iterative statements, and access a wide range of built-in subroutines to make the programming more efficient. Data can be transferred to and from SAS data sets and external files with data management commands. SAS/IML software automatically performs the bookkeeping of memory management and matrix sizing. The type, dimension, and size of variables can change with each use.

The software includes built-in functions for computing determinants, eigenvalues, eigenvectors, and generalized inverses; generating design matrices and plotting data; and solving systems of linear equations and ordinary differential equations. In addition, you can compute roots of polynomials, perform numerical integration, and solve both linear and nonlinear programming problems.

All SAS/IML applications can be run both interactively and non interactively; perform exploratory analyses interactively while running production jobs in batch mode.

**SAS/INSIGHT** software is a dynamic tool for exploring and analyzing users' data. The user can examine univariate distributions, visualize multivariate data, and fit models using regression, analysis of variance, and the generalized linear model.

With SAS/INSIGHT software, all graphs and analyses are dynamic and linked. The software displays SAS data sets in tabular form and has powerful modeling facilities.

**SAS/LAB** software provides guided data analysis for meeting the day-to-day analytical and data presentation needs of engineers and scientists. The software includes specific capabilities for engineers and scientists. Commonly required capabilities for analysis of variance, analysis of covariance, and regression analysis are closely linked with graphical tools that produce scatter plots, histograms, box-and-whisker plots, and contour plots. An on-line journal facility allows the user to store text and graphical output, software-generated analysis interpretation, and personal comments.

**SAS/OR** software, a set of powerful management science tools, is an integral decision support component of the SAS System. The software includes tools for mathematical programming, scheduling, decision analysis, and drawing Gantt charts and network diagrams.

With this comprehensive toolkit the user can schedule projects; manage resources; solve multiperiod planning problems; model transportation, distribution, and production networks; and plan and manage investments and financial programs. SAS/OR software turns the data the user already has into decision-support information you need.

**SAS/QC** (Statistical Quality) brings a wide range of specialized tools to a user's total quality improvement effort, from designing experiments and understanding processes to control charting and assessing product reliability.

The dynamic graphics environment in SAS/QC software makes it easy to create and modify Ishikawa diagrams. With the click of a button, you can move, copy, delete, swap, reorient, and highlight the branches, stems, and

leaves. Business process reengineering requires an understanding of existing processes as well as new process design. Process flow and modeling tools are helpful in graphically portraying existing processes vs. proposed implementations. To help with this, the SAS System provides a point-and-click graphical user interface for creating process flow diagrams (PFD). The PFD object is available in SAS/AF software.

**SAS/SHARE** is a data server that allows multiple users to gain simultaneous access to SAS files. Working hand-in-hand with other SAS components, SAS/SHARE anticipates the many combinations of hardware that might be needed to access a user's data at any given moment, then locates and delivers the data to meet these multiple requests. And it's all transparent to the user.

SAS/SHARE is ideal for applications that require constant data updates and are accessed by many different users. It supports the same SAS security features, as well as additional security for server operations, including native host security and password verification. And SAS/SHARE safeguards data integrity by filtering out requests that conflict with ongoing activities.

**SAS/SPECTRAVIEW** software, the SAS System's data visualization and analysis tool, allows a user to create, analyze, and modify geometric images representing multidimensional data. This software is useful for a variety of applications, including medical imaging, oil exploration, environmental sciences, chemical analysis, pharmaceutical studies, and financial analysis.

With SAS/SPECTRAVIEW software, a user can concurrently view several models using four display windows. He can rotate and zoom each view, either independently or collectively, to change his viewing perspective and to aid in data analysis. In addition, he can modify many image attributes, such as color, text, axis attributes, and more.

**SAS/STAT** provides extensive statistical capabilities with tools for both specialized and enterprise-wide analytical needs. Ready-to-use procedures handle a wide range of statistical analyses, including analysis of variance, regression, categorical data analysis, multivariate analysis, survival analysis, psychometric analysis, cluster analysis, and nonparametric analysis