SAS® Scoring Accelerator

High-performance model scoring and deployment with faster time to results

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Organizations today want answers fast, with automated processes and complete accuracy. Unfortunately, most companies simply can't aggregate, analyze and process large volumes of data quickly enough to support critical decisions that must be made in hours, minutes or seconds. The problem is further compounded by the presence of redundant data marts used to support analytical processes.

Today, many analysts and modelers are manually coding models in SQL for scoring purposes and must revalidate that code against original results. Along with the resource-intensive steps of moving models into a production environment, the entire deployment process becomes time consuming, costly and prone to errors.

Analytics can provide insights into questions such as: "Is a customer a good candidate for a marketing campaign?" and "Does a credit card transaction appear fraudulent?" However, as data volumes required to answer these questions continue to grow, in some cases doubling in size, organizations are challenged to create and deploy scoring models in a timelier manner. These organizations want to manage their growing data problem and accelerate their analytic cycle to get quick answers that decision makers can have confidence in.

SAS® In-Database processing addresses these challenges by moving relevant analytic tasks closer to the data and improving the integration between SAS and the databases. SAS Scoring Accelerator combines the statistical transformation and modeling methods available in SAS Enterprise Miner with the scalability and processing speed offered through the database system. The combination provides an integrated analytical environment for the massively parallel deployment of SAS Analytics inside the data warehouse database.

Key Benefits

- **Achieve higher model-scoring performance and faster time to results.** By leveraging in-database processing, SAS Scoring Accelerator eliminates the need to move data between SAS models and the database for scoring purposes, further reducing the cost, complexity and latency of the scoring process. The performance of the entire modeling process is improved, enabling faster predictive results and competitive advantage.

- **Improve the productivity of your data mining and IT groups.** Rather than using manual transformation and scoring steps, SAS Scoring Accelerator enables IT to automate model deployment processes. Faster deployment frees the analytics team to begin new projects and carry the value of analytics to other areas of the organization. Organizations incur fewer labor costs by avoiding manual scoring, and reduce the revalidation of code for scoring purposes.

- **Reduce data movement and latency.** In-database scoring improves the accuracy of data analysis and reduces data movement and replication to streamline analytics processing. This helps organizations deliver analytics quickly while maintaining data reliability and integrity.

- **Improve accuracy and effectiveness of analytic models.** In-database scoring allows analysts and modelers to handle more independent variables, increase the complexity of models under development and provide accurate results.

- **Better management, provisioning and governance of data.** Reducing data movement and consolidating data in a data warehouse addresses data governance and helps ensure regulatory compliance. The common security, auditing and administration features of the database help ensure that regulated data is not accessed improperly. In addition, by running mode-scoring steps inside the database, programs can be executed in such a way that detail data can be summarized and analyzed without crossing the regulatory boundary created in the database.
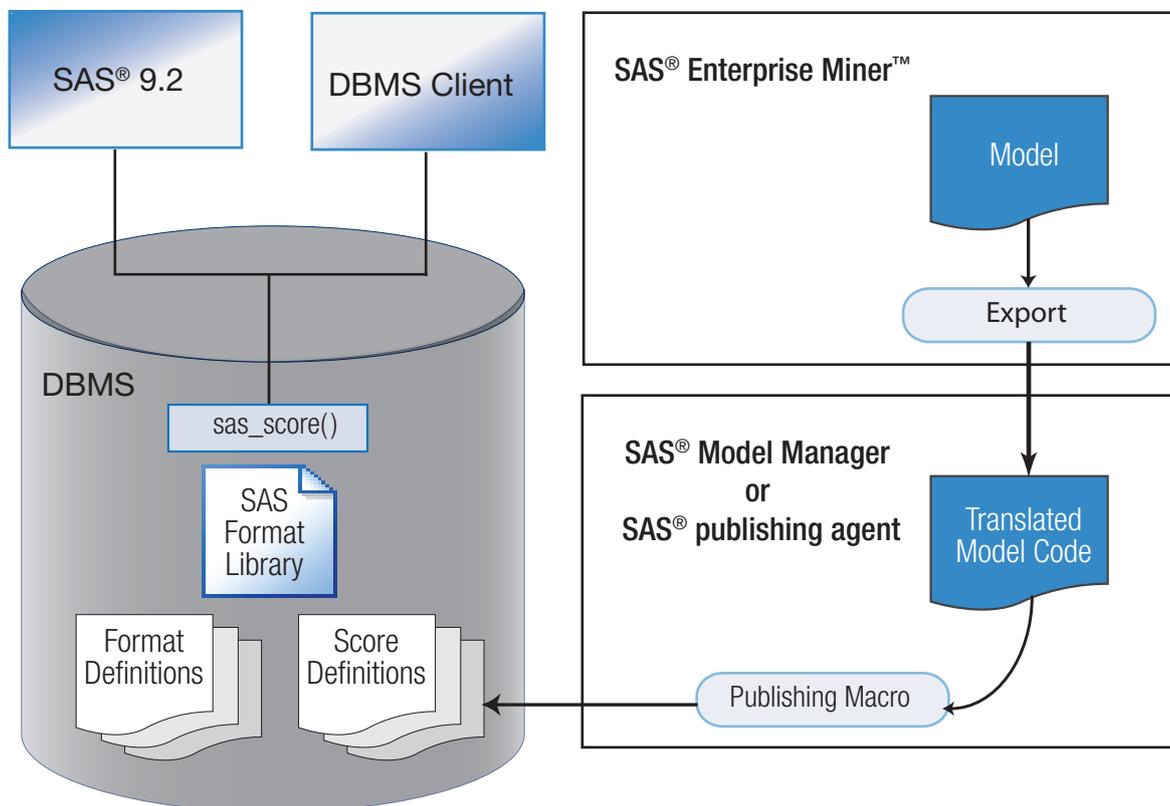
- **Efficient utilization of IT resources and reduced costs.** Leveraging investments in existing platforms, software and processes means that more consistent and reliable information is delivered to decision makers in a timely manner. The result is increased operational efficiency that yields faster time-to-value and reduced cost of ownership for analytic solutions.

Product Overview

SAS Scoring Accelerator takes models that have been developed in SAS Enterprise Miner and translates them into scoring functions that can be deployed inside the database. Using SAS Scoring Accelerator, the scoring process is performed within the database environment and thus does not require manual transfer of data. SAS Scoring Accelerator interfaces for the following relational databases are currently available: Teradata, Netezza and IBM DB2.

The Export node in SAS Enterprise Miner 6.1 is used to export the model as SAS DATA step code into files that

SAS Scoring Accelerator translates model scoring logic, the associated property file that contains model inputs and outputs, and a catalog of user-defined formats, and deploys them inside the database.

are translated to User Defined Functions (UDFs). SAS Scoring Accelerator takes the scoring model code, the associated property file that contains model inputs and outputs and a catalog of user-defined formats, and deploys (or publishes) them within the data warehouse database. By moving the scoring function to the database, any security "envelope" used by the database is honored. This requires less movement of data, increases utilization of the enterprise data warehouse stored in the database and reduces overall costs.

SAS Scoring Accelerator has three key components:

- The SAS format library is a file that is deployed once to the database system.

- The Score Export node functions as a plug-in to SAS Enterprise Miner. It exports the model-scoring logic, including metadata about the required input and output variables.

- The publishing client pushes the scoring function into the database. SAS 9.2 translates the exported files into a SAS function definition and registers the function inside the database for use in any SQL expression.

In addition, SAS Model Manager is available as an add-on to SAS Scoring Accelerator. It provides an analytic model management and deployment environment that is fully integrated with SAS Scoring Accelerator to further streamline the registration and validation of SAS models in the database.

Key Features

SAS® format library

- File that is deployed once to the database system.

SAS® Enterprise Miner™ Score Export node

- Automatically included in your SAS Enterprise Miner installation for adding to your process flow diagram analyses.
- Exports the model-scoring logic, including metadata about the required input and output variables.
- Generates sample training and scoring data set for testing.

SAS® Scoring Accelerator publishing client

- Automatically translates and publishes the model as a scoring function inside the database.
- Generates a script of database commands for registering the scoring function inside the database.
- Scoring functions are available for use in any SQL expression wherever database-specific built-in functions are typically used.
- Publishes model as protected or unprotected.
- Supports SAS intrinsic and user-defined formats.
- Optimally supports a robust class of SAS Enterprise Miner predictive and descriptive models, including the preliminary transformation layer (such as data imputations).
- Variable binning and reduction.

Integrated environment for tracking and monitoring model performance over time

- Fully integrated with SAS Model Manager, an analytic model management and deployment environment, to further streamline the registration and validation of SAS models in the database.

Databases supported

- Teradata Enterprise Data Warehouse (EDW).
- Netezza Performance Server (NPS).
- IBM DB2.

SAS® Scoring Accelerator for Teradata, SAS® Scoring Accelerator for Netezza, SAS® Scoring Accelerator for DB2 System Requirements

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

In addition, for more information and system requirements for SAS Enterprise Miner, SAS/ACCESS interfaces or other SAS products, please visit our product and solution Web pages at www.sas.com/products/index.html.

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