What’s New in SAS 9.3

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Big Data, Big Analytics, Data Governance
For the users interacting daily with SAS software

- SAS 9.3 delivers:
  - Thousands of new capabilities with many surfaced through improved user interfaces
  - Enhancements to existing working methods improving **productivity** and allowing reduction in backlog and more responsiveness
  - Extended and new capabilities that **enable** you to tackle problems previously difficult/impossible to attack in a timely manner
For the IT department supporting SAS deployments

- SAS 9.3 delivers:
  - Significant feature enhancements for better deployment, configuration, monitoring and general administration of the SAS environment
  - Extensive **scalability** and high **performance** capability, ready for expansion for the next complex set of business opportunities
  - An agile environment to handle Big Data and Big Analytics
  - A continued evolution on the huge strides taken with 9.2 and a direct path from 9.1.3 and 9.2 to the most modern SAS environment
  - An environment ready for the next wave of SAS Business Solutions
Scalability & Performance

Grid
- Enhanced management and monitoring
- Increased support for high availability
- Better workload management (Stored Process, OLAP and Pooled Workspace server processes can be executed and managed on the SAS Grid)

In-Database
- More Native SQL generation and pushdown
- Updated Scoring Accelerators
- Analytics Accelerator

High Performance Analytics
- Execute complex analytical computations and data in a parallel, shared in-memory environment
- Teradata and EMC (Greenplum)

Product Enhancements
- Better utilization of native math libraries on many platforms delivers superior performance
- Enhancements made to many products e.g:
  - OR solvers, BI Dashboard
Enablement

Data Management
- Greater native integration into RDBMS / Appliances
- New Transformations: Compare Tables, Type 1 SCD etc
- Versioning and automated job deployment support

Analytics
- Some Highlights
  - New analytic algorithms
  - Rate Making and Survival Analysis
  - Ensemble/Combination Modeling
  - More Languages in Text Analytics

Environment Management
- Metadata search capabilities and favorites “bookmarks” within SAS Management Console.
- Metadata promotion supports technical metadata, such as SAS servers, users, groups/roles, and ACTs.
- Support for additional Unix authentication methods, such as Kerberos
SAS 9.3 - Data Management

Expanded SAS DI Studio support for MPP databases: Greenplum, AsterData nCluster, Sybase IQ
- Enables more ELT pushdown and add supports for bulk load utilities

In-Database Processing (ELT SQL Pushdown) - Optimized SQL
Set Operator Transform – Supports UNION, UNION ALL, INTERSECT, EXCEPT, OUTER UNION
- Easier to use and understand when combining data from multiple sources
- Results in better SQL performance in database

New Oracle Bulk Table Loader
- Supports Oracle specific load functions: Direct Path, Load to Partition, Oracle Hints
  Generates passthru SQL
- Disable/renable constraints; Drop/Rebuild indices; Gather table statistics

Expression builder enhanced to list more native DBMS functions, including:
- Teradata 13, Oracle, DB2UDB 8.1, SQL Server, MySQL, and ODBC

New wizard enables you to extend the function list with your own User Defined Functions

- Better utilize database capabilities
- More flexibility and agility to choose between ETL and ELT
- Reduced data movement, and faster process times using existing investments
SAS 9.3 - Data Management

Version Control Integration
- Integration with Subversion and CVS with common version control features like archival, differencing, and rollback

Reporting on Batch Execution
- Ability to capture and analyze information on deployed jobs such as: Jobs, Steps, Warnings, Errors, and Job Statistics
- Including CPU, Memory, I/O, # of records processed, etc in a historical view

Automated of the Job Deployment Process
- Use common scripting languages to deploy DI Studio jobs. Allows deployment of jobs to be automated
- Includes the ability to deploy multiple objects and includes command line scheduling options

Enhanced SAS Code Importer
- Support for expansion of SAS macros, analyze only feature, ability to detect collisions plus improved logging and error checking

New Transformations
- New SCD Type 1 Loader, supports both MERGE and HASH techniques
- New Compare Tables transform compares two data sources and detect changes in data.

Metadata and Manageability
- Metadata Search tool
- Column Metadata Standardization Wizard

- Improved manageability of the Data Management environment
- Increased transparency into the Data Management environment
9.3 Data Management - Selected Screenshots

Versioning

Compare Tables Transform

Command line driven job deployment delivers automated job deployment

```
C:\>deploySASJobs -metaserver CONF11140 -deploymentdir c:\jobs_to_deploy
```
SAS 9.3 - Data Management

Latest DataFlux Data Quality
- DataFlux Data Management Platform 2.1 capabilities part of SAS (Enterprise) Data Integration Server with SAS 9.3

Lifecycle for MDM starts here:
- Latest Data Quality technologies from DataFlux enable the starting of MDM initiatives
- DataFlux Data Management Platform 2.2, coming Q4 2011, delivers an MDM foundation capability*
- The use of the DataFlux Data Management Platform provides an easy upgrade path to the full enterprise MDM offering, qMDM from DataFlux, to deliver MDM to the enterprise

MDM from SAS/DataFlux offers:
- Support for master hub of trusted entity data
- Data Quality driven approach for mastering key business entities

- Better data governance and reduced risk associated with data
- More trustworthy information and less time reconciling differences

* The DataFlux Data Management Platform 2.2 will likely not be part of the (enterprise) Data Integration Server Bundle from SAS until 2012
SAS 9.3 – Analytics

- Rolling Simulations
  - Forecast Server

- Model Retraining
  - Model Manager

- Rate Making
  - Enterprise Miner

- Survival Data Mining
  - Enterprise Miner

- Relativity Plots
  - Subset: CAR_TYPE

- Histogram of Premiums

- Percent Survived against Tenure (months)
SAS 9.3 – Analytics

SAS Enterprise Miner 7.1
- Survival data mining for time dependent outcomes
- Rate making in Insurance (claims, severity, and pure premium)
- Optimal binning with constraints for credit score carding
- In-database expansions for statistical transformations and modeling
- Time series data mining tools (Experimental)
- Support for Support Vector Machines (Experimental)

SAS Model Manager 3.1
- Workflow to replace lifecycle templates and enable automated and collaborative model import, comparison, validation, scoring, monitoring and retraining
- Model retraining in MM
- Model management for additional types of models including R models

SAS Forecast Server 4.1 / High Performance Forecasting 4.1
- Enhancements to filtering and modeling functionality
- Support for combination/ensemble models
- Support for rolling simulations
- Addition of custom time intervals
- PROC HPFTEMPRECON for temporal reconciliation (“benchmarking”) of multiple time series
- Support for roles in SAS Forecast Studio

- Enables new business capabilities
- Provides governance processes for model management
- Brings industry best practices to the hands of the practitioners
SAS 9.3 – Analytics

SAS/STAT 9.3
• New FMM procedure (experimental) for finite mixture modeling
• Shared frailty models in PHREG
• Expanded capabilities for Bayesian analysis including the addition of a RANDOM statement and multivariate priors in MCMC
• Production SURVEYPHREG procedure
• New model diagnostics in NLIN
• GRAPH license no longer required for ODS Graphics

SAS/ETS 9.3
• New procedure for fitting copula distributions
• New procedure for statespace modeling
• Automatic variable selection for COUNTREG procedure
• The SEVERITY procedure is now production and ships with added features and changes to the syntax
• Additional / improved ODS Graphics plots

SAS/OR 9.3
• Optimization
  • New network simplex linear programming algorithm
  • Crossover feature for interior-point linear programming solver (experimental)
  • Improvements to nonlinear solvers and introduction of a multi-start method for nonlinear programming
  • Performance improvements for mixed integer programming solver
• Simulation
  • Using data to drive models – empirical distributions, nonhomogeneous Poisson processes
  • Improved usability to simplify navigation of large models
  • Support for Windows 64 and remote SAS servers
  • Automatic input distribution fitting using JMP for Simulation Studio

• Continued investment in core analytical technologies
SAS 9.3 – Text Analytics

SAS Text Miner
• Enhanced Language Support – Now supporting 28 languages
• New Text Import capabilities for sourcing file system and web data
• Reuse Synonym data sets and other usability enhancements

SAS Enterprise Content Categorization
• Wikipedia Integration to support the generation of taxonomies
• Pre-Built out of the box industry taxonomies
• New graphical reports for precision and recall

SAS Sentiment Analysis
• Enhanced language support – Now supporting 28 languages
• Enhanced rule building, editing, verification and operators
• Interactively add new concepts by subject matter experts
SAS 9.3 – Environment Management
Web Application Server Support Matrix
(Sun-derived JRE support only)

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<th>Operating Systems</th>
<th>OS Bitness</th>
<th>JRE Bitness* (for Sun-derived JREs only)</th>
<th>JBoss EAP 4.3 (4.2.3 Community edition)</th>
<th>Oracle WebLogic (WLS) 10.3.x</th>
<th>IBM WebSphere (WAS) 7</th>
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SAS 9.3 – What about BASE SAS?

High Quality Graphics now included in BASE SAS
- ODS Statistical Graphics
- The SG Family of Procedures
- The GTL (Graphical Template Language)
- The ODS Graphics Designer
- The ODS Graphics Editor.

SAS Windowing Environment defaults to HTML output and ODS Graphics:
- ODS Graphics is enabled by default
- HTML is default destination (vs LISTING)
- Graphs are integrated with tables, and all output is displayed in the same HTML file
  - By default, deliver polished, high-quality graphics.
  - For compatibility, provide simple path for choosing “Pre-9.3” graphics options.

PROC GROOVY enables SAS code to execute Groovy code on the Java Virtual Machine.

```sas
/*------------------------------ PROC Groovy example: This example shows how to export values from Groovy as SAS macros. -------------------------------*/
proc groovy classpath=cp:
  eval "exports.fname = "Darren";"
  eval "binding.exports.lname = "Key";"
  eval "exports.put('state', 'NC');"
quit;

data _NULL_; run;
```
SAS 9.3 – What about SAS/GRAPH?

- Lots of new capabilities driven by customer requests
- Still a major development focus
- A few examples:

  - Alpha Transparency on charts
    - production quality graphics
  - Discrete GTile colors
    - instead of a continuous range
  - Radar Chart Axes can now be controlled for easier comparison
  - Anti-Aliased Lines – smoother plot lines
    - production quality graphics
ODS Graphics and HTML by Default

Change Notice
In SAS 9.3, SAS output is sent to the HTML destination by default and is viewed with a browser. In addition, ODS Graphics is enabled by default. Click on 'Output Changes' for more information.

Getting Started with SAS
New to SAS programming? Try our quick-start guide to explore SAS programming, the SAS interface, and sample programs. Or see our resource guide for new features and online support by clicking 'Start Guides'.

Don't show this dialog box again

Start Guides

Close

SAS Output

The SAS System

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<td>84.5</td>
</tr>
</tbody>
</table>
Improved Support For Web Services
New System Processing Controls

You Were Here
Thanks