



SAS® Tech Report

JANUARY 15, 2008

Happy New Year! 2008 is shaping up to be a big year for SAS...and for me. During the first quarter of the year, SAS will unveil SAS® 9.2, a product many of you have been anxiously awaiting.

As for me, I'm moving on to another job within SAS. At the end of January, I will join SAS Publishing. My job will involve recruiting authors and helping them with their book proposals. It's an exciting role, and one I'm sure will keep me in touch with the Tech Report readers. In fact, be sure to [send me a note](#) if you have ideas for books, particularly from an industry standpoint.

It's been a pleasure writing this newsletter and I hope I helped answer some questions and provide some knowledge to help in your everyday work. And don't worry, the newsletter isn't going away. A new editor will be appointed in the coming months, and you won't miss a single article or tip!

Shelley Sessoms

Editor

SAS News

SAS® Macro to Wrap Text

Sometimes it is desirable or even necessary to reformat long lines of text or code into fewer columns than the original document or program contained.

For example, suppose that you have a macro variable that contains 100 long variable names. Since the longest line of SAS program input is 256 columns, you have to break the line length to a more manageable size. For the sake of legibility, you want to restrict the number of variables per line in a SAS program to, say, 80 columns. The %TEXTWRAP macro has been written for this purpose. Instead of guessing how many variables the line will hold you can use the %TEXTWRAP macro to perform the reformatting operation. It reformats space-delimited text into a specified number of characters per line. In another example, you might use SAS as a program generator to create a long line of code that represents a complex computation. Given the input line size constraint of 256 columns, you have to decide how many terms to put on each line in your program. The %TEXTWRAP macro can help in this case, too.

Let us suppose that we have lines of code such as the ones below that must be recast into fewer columns.

```
/* Examples of text wrapping */

ShortExpression = b0 + b1*x1 + b2*x2 + b3*x3 ;

LongExpression = b0 + b1*x1 + b2*x2 + b3*x3 + b4*x4 + b5*x5 + b6*x6
+ b7*x7 + b8*x8 + b9*x9 + b10*x10 ;
```

We want to reformat the text into 60 columns. Let's say that it can be found in the file Expressions.txt. We invoke the macro with the following code:

```
%include 'y:\My SAS Files\9.1\Test\textWrap\textwrap.sas' ;

%let IN = Y:\My SAS Files\9.1\Test\TextWrap\Expressions.txt ;
%let OUT = Y:\My SAS Files\9.1\Test\TextWrap\Expressions
textwrapped.txt ;

%TEXTWRAP( &IN, &OUT, linelen=60 )
```

And we see the resulting wrapped text:

```
/* Example of text wrapping */

ShortExpression = b0 + b1*x1 + b2*x2 + b3*x3 ;

LongExpression = b0 + b1*x1 + b2*x2 + b3*x3 + b4*x4 + b5*x5
```

```
+ b6*x6 + b7*x7 + b8*x8 + b9*x9 + b10*x10 ;
```

We can use the %TEXTWRAP macro within a SAS data step, too, to overcome the line length constraint:

```
Data results ;
    Set inputData ;

    %TEXTWRAP( &IN, &OUT, linelen=60 )
Run ;
```

We can apply the %TEXTWRAP macro to text as easily as to code. Here is an abridged example, provided by Jan Squillace of SAS Technical Support. It is the first verse to the Shaker song, "Simple Gifts," followed by an excerpt from supplementary material.

```
'Tis the gift to be simple, 'tis the gift to be free,
'Tis the gift to come down where we ought to be,
And when we find ourselves in the place just right,
'Twill be in the valley of love and delight.
When true simplicity is gain'd
To bow and to bend we shan't be asham'd,
To turn, turn will be out delight
'Till by turning, turning we come round right.
```

The SIMPLE GIFTS program is underpinned by four settings of the popular Shaker tune "'Tis the gift to be simple": the first drawn from a Shaker manuscript; the second in an arrangement by American musical icon Aaron Copland (1900-1990), who made the tune famous by including it in his ballet score Appalachian Spring

When this text is wrapped into 60 columns, we have the following reformatted result:

```
'Tis the gift to be simple, 'tis the gift to be free,
'Tis the gift to come down where we ought to be,
And when we find ourselves in the place just right,
'Twill be in the valley of love and delight.
When true simplicity is gain'd
To bow and to bend we shan't be asham'd,
To turn, turn will be out delight
'Till by turning, turning we come round right.
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About the author

Ross Bettinger is a SAS user since 1980. He uses SAS for its superior data manipulation facilities, its statistical capabilities, and for data mining in Business Intelligence applications. Ross would like to thank Jan Squillace, SAS Technical Support, for providing a text sample and for testing the %TEXTWRAP macro.

Are you responsible for making forecasts for your business?

SAS Training offers a variety of [forecasting courses](#) for both programmers and nonprogrammers. Scientists, engineers and business analysts within a variety of industries will find both large-scale and one-time training.

What's New in SAS®

This page lists the documentation additions and changes in support of service packs, new product releases, and new or enhanced features.

The "What's New (Arranged by Date)" page lists the documentation additions and changes in support of service packs, new product releases, and new or enhanced features.

SAS documentation has been updated on the Web.

December 2007

The documentation for the following products has been updated:

[SAS/ACCESS Interface to Relational Databases](#)

The SAS/ACCESS Interface for HP Neoview is new.

Two new documentation supplements are now available: *SAS/ACCESS Supplement for Netezza* and *SAS/ACCESS Supplement for HP Neoview*.

[SAS AppDev Studio 3.3 Eclipse Plug-ins](#)

[SAS Enterprise Miner 5.3](#)

[SAS Text Miner 3.2](#)

[SAS High-Performance Forecasting 2.3](#)

August 2007

The documentation for the following products has been updated:

[SAS/ACCESS Interface to Relational Databases](#)

The SAS/ACCESS Interface for Netezza is new.

Teradata is now supported on Linux for Itanium.

[SAS/OR 3.2](#)

In the OPTLP procedure, the TIMETYPE= option enables you to specify the type of time (real time or CPU time) that can be limited via the MAXTIME= option and reported via the _OROPTLP_ macro variable.

[SAS Scalable Performance Data Server 4.4.2](#)

June 2007

The documentation for the following products has been updated:

[SAS AppDev Studio 3.2.2](#)

SAS AppDev Studio 3.2.2 now provides support for multiple versions of the SAS WIK (Web Infrastructure Kit) in the SAS Web Module with WIK facet.

[SAS BI Dashboard 3.1](#)

This new EBI component enables users to deploy dashboards via the SAS Portal. It allows users to monitor key performance indicators that convey how well their organization is performing. Dashboards can include graphics, text, conditional highlighting, and hyperlinks to supporting detail.

SAS Intelligence Platform

The [SAS Intelligence Platform: Web Application Administration Guide](#) now includes documentation about administering the new SAS Business Intelligence Dashboard and tuning the IBM WebSphere Application Server, Version 6.0.2.

[SAS OnlineDoc 9.1.3 for the Web](#)

The *SAS BI Dashboard 3.1: User's Guide* is now available from SAS OnlineDoc 9.1.3 on the Web.

The *SAS Data Integration Studio User's Guide* has been updated for SAS Data Integration Studio 3.4 and has been extensively revised to make the book more task-oriented. The updated book is now available from SAS OnlineDoc 9.1.3 on the Web.

February 2007

The documentation for the following products has been updated:

[SAS AppDev Studio 3.2.1](#)

The main enhancements provided by SAS AppDev Studio 3.2.1 are support for Eclipse 3.2.1 and Eclipse Web Tools 1.5.1, and new cheat sheets for complex tasks.

[SAS/IntrNet: Application Dispatcher](#)

The [Application Dispatcher samples](#) are now part of the samples database.

[SAS/OR 9.1.3, Release 3.1](#)

[SAS OnlineDoc 9.1.3 for the Web](#)

The *SAS Scalable Performance Data Server: Administrator's Guide* and the *SAS Scalable Performance Data Server: User's Guide* are now available from SAS OnlineDoc 9.1.3 on the Web.

November 2006

The documentation for the following products has been updated:

[SAS Integration Technologies](#)

The new *SAS Intelligence Platform: Application Server Administration Guide* provides server administration documentation for the SAS Intelligence Platform. For customers who are not using the SAS Intelligence Platform, server administration information continues to be available in the *SAS Integration Technologies Server Administrator's Guide*.

The *SAS Web Infrastructure Kit Administrator's Guide* is no longer available. Documentation for administering the SAS Web Infrastructure Kit and the SAS Information Delivery Portal is now located in the new *SAS Intelligence Platform: Web Application Administration Guide*.

[SAS Intelligence Platform](#)

The *SAS Intelligence Platform: Administration Guide* has been divided into five documents to address particular audience needs. For example, there are now separate documents for a database administrator and a Web applications administrator.

The *SAS OLAP Server: Administrator's Guide* and the *SAS Web Infrastructure Kit: Administrator's Guide* are now fully integrated into the SAS Intelligence Platform library, and no longer exist as separate documents.

The new *SAS Intelligence Platform: Troubleshooting Your Initial Installation* contains troubleshooting content that was previously in the *SAS Intelligence Platform: Installation Guide*.

[SAS OLAP Server](#)

The *SAS OLAP Server: Administrator's Guide* is no longer available. The administrative documentation for the SAS OLAP Server software has been fully integrated into the SAS Intelligence Platform library. The other SAS OLAP Server documents, the *SAS OLAP Server: User's Guide* and the *SAS OLAP Server: MDX Guide*, remain available.

[SAS Open Metadata Architecture](#)

Administrative documentation for the SAS Metadata Server has moved into the *SAS Intelligence Platform: System Administration Guide*.

[SAS Text Miner 3.1](#)

September 2006

The documentation for the following products has been updated:

[SAS/ACCESS 4.2 Interface to R/3](#)

The new -S RFC server option registers the SAS RFC server at an SAP gateway, enabling it to receive requests for information from the SAS RFC Server Monitor in the SAP Netweaver Portal.

SAS/ACCESS 4.2 Interface to R/3 and later supports Unicode SAP servers on Windows and UNIX.

You can develop alternative authorization schemes for reading R/3 tables by using enhanced authorization checks through the /SAS/AUTH01 Business Add-In (BAI).

[SAS AppDev Studio 3.2](#)

[SAS Data Surveyor 4.2 for SAP](#)

[SAS Management Console](#)

When you create a new library, it is now automatically placed in a folder with the same name as the library. Imported data tables are stored in the folder for the library to which they were imported.

Resource templates for server, library, and schema definitions have been changed.

Metadata bridges, which are used when importing or exporting metadata, are now obtained from your SAS Account Executive or from **support.sas.com**.

[SAS OnlineDoc 9.1.3 for the Web](#)

An alphabetical list of the SAS procedures has been added. Each procedure links to the procedure documentation in SAS OnlineDoc or links to the procedure documentation on **support.sas.com**. In SAS OnlineDoc, the TOC entry for this list is SAS Procedures.

August 2006

The documentation for the following product has been updated:

[SAS High Performance Forecasting 2.2](#)

The new HPFRECONCILE procedure enables you to perform large-scale reconciliation of hierarchical forecasts by using predictions, standard errors, and confidence limits reconciliation.

The HPFSELECT procedure has added two experimental options for external variable mapping (EXMMAP= option) and the external forecast function (EXMFUNC= option).

Several new options were added to the HPFDIAGNOSE and HPFEVENTS procedures.

July 2006

The documentation for the following product has been updated:

[SAS Data Integration Studio 3.4](#)

June 2006

The documentation for the following products has been updated:

[Base SAS Language](#)

The PERCENTN format produces percentages, using a minus sign for negative values.

[SAS Inventory Optimization 1.3](#)

April 2006

The documentation for the following products has been updated:

[SAS Enterprise Miner 5.2](#)

The *Getting Started with Enterprise Miner 5.2* book describes the core functionality of SAS Enterprise Miner 5.2 and how to perform basic data mining tasks. This book is available from the SAS 9.1.3 OnlineDoc on the Web and is available for purchase from the SAS Publications Catalog.

March 2006

The documentation for the following products has been updated:

[SAS/ACCESS Interfaces to Relational Databases](#) (part of Service Pack 4)

HP-UX for the Itanium Processor Family Architecture is available for Teradata.

In the SAS/ACCESS Interface to DB2 under z/OS, the new REMOTE_DBTYPE= option in the LIBNAME statement ensures that the SQL that is used by some SAS procedures to access the DB2 catalog tables is generated properly, based on the database server type.

In the SAS/ACCESS Interface to MySQL, the INSERTBUFF= LIBNAME statement option and the INSERTBUFF= data set option specify the number of rows in a single insert operation.

In the SAS/ACCESS Interface to Teradata, the following functionality is new:

The interface to Teradata supports a bulk-load capability called MultiLoad, which greatly accelerates insertion of data into both empty and existing Teradata tables.

When processing WHERE statements that contain literal values for TIME or TIMESTAMP, the SAS engine passes the values to Teradata exactly as they were entered, without rounding or truncation.

[SAS Add-In for Microsoft Office 2.1](#)

[SAS Data Integration Studio 3.3](#)

[SAS Enterprise Guide 4.1](#)

[SAS Information Delivery Portal](#) (part of Service Pack 4)

A WebDAV content portlet can contain a link to additional detailed information.

Additional enhancements were made to the information map viewer.

[SAS Information Map Studio 3.1](#)

[SAS Integration Technologies](#) (part of Service Pack 4)

SAS BI Web Services for Java can be secured using trusted Web server authentication.

The SAS Web Infrastructure Kit includes modifications to the theme templates and style sheets.

[SAS Intelligence Platform](#)

The *SAS 9.1.3 Intelligence Platform: Planning and Administration Guide* was updated and divided into five documents.

[SAS/IntrNet: Application Dispatcher](#)

You can now use Application Dispatcher to upload one or more files to your Application Server.

[SAS Language Reference](#) (part of Service Pack 4)

For the LIBNAME statement for WebDAV Server Access, the new PROXY= option specifies the Uniform Resource Locator (URL) for the proxy server.

[SAS Metadata LIBNAME Engine](#) (part of Service Pack 4)

With the default behavior of the engine (METAOUT=ALL), you can no longer create or delete tables or their associated metadata.

When METAOUT=DATA is specified for a table, the metadata engine behaves more like the underlying engine that is defined in the metadata.

You are advised to use the METALIB procedure instead of METAOUT=META to create, update, or delete metadata.

SQL implicit pass-through is supported.

[SAS OLAP Server](#)

A Specify Map function has been added to SAS OLAP Cube Studio.

New tuning capabilities for the query thread pool are now available for each of your SAS OLAP Servers.

A tuning Options window has been added to the Manual Tuning function and the Advanced Aggregation Tuning plug-in.

A subquery cache can now be enabled, disabled, and sized for each of your SAS OLAP Servers.

[SAS Open Metadata Architecture](#) (part of Service Pack 4)

SAS Metadata Server documentation has been folded into SAS Intelligence Platform documentation.

The SAS Metadata Server backup macro, %OMABAKUP, supports automated restore of the SAS Metadata Server.

The %OMAOPTMZ autocall macro is retired and replaced by two new ways to analyze and improve memory usage by SAS Metadata Repositories.

[SAS/OR 9.1.3, Release 2](#)

[SAS Output Delivery System](#) (part of Service Pack 4)

The ODS MARKUP statement now has the following options: the EVENT= option, the TEXT= option, and the TITLE= suboption.

The ODS RTF statement now has the following options: BODYTITLE, CONTENTS, TOC_DATA, COLUMNS=, and TEXT= options.

[SAS Procedures](#) (part of Service Pack 4)

The EXPORT procedure now supports export to Microsoft Excel spreadsheets (Version 5.0 and higher), export to SPSS files on Windows, and export to Stata files on Windows.

The new INFOMAPS procedure enables you to create SAS Information Maps programmatically.

The IMPORT procedure now supports the import of Microsoft Excel spreadsheets (Version 5.0 and higher), the import of SPSS files on Windows, and the import of Stata files on Windows.

[SAS Web Report Studio 3.1](#)

December 2005

The documentation for the following product has been updated:

[SAS/STAT](#)

Several procedures are now available via Web download for the Windows platform. They work only with SAS 9.1. PROC GLIMMIX fits generalized linear mixed models. For more information about these procedures and a link to the download site, see <http://www.sas.com/statistics>.

November 2005

The documentation for the following products has been updated:

[SAS Enterprise Miner 5.2](#)

[SAS Text Miner 2.3](#)

[SAS Web Analytics 5.2](#)

September 2005

The documentation for the following products has been updated:

[SAS ETL Studio 3.3](#)

[SAS/Genetics](#)

PROC ALLELE has been enhanced for calculating LD measures, and a new HAPLO=NONEHWD option is now offered.

In PROC CASECONTROL, a STRATA statement for stratified analysis and an OR option to request odds ratios are now available.

PROC FAMILY contains a new XLVAR statement for testing X-linked markers and an OUTQ= option for outputting allelic scores.

In PROC HAPLOTYPE, Bayesian estimation of haplotype frequencies can now be requested with the experimental EST=BAYESIAN and related options.

PROC HTSNP offers an alternative measure for evaluating a set of htSNPs.

In PROC PSMOOTH, the FDR method for adjusting p -values for multiple testing can now be applied.

[SAS Intelligence Platform](#)

The *SAS 9.1.3 Intelligence Platform: Planning and Administration Guide* has been divided into three guides and added to *SAS 9.1.3 OnlineDoc*.

Updates have been made to the topics about establishing connections to data sources, managing SAS libraries, tuning the JVM in your Java application server, and configuring SAS Enterprise Miner for use.

More task-oriented information for security and new chapters about scheduling jobs and grid computing have been added.

The *SAS 9.1.3 Intelligence Platform: Single-User Installation Guide* has been added to *SAS 9.1.3 OnlineDoc*.

[SAS Management Console](#)

Support has been added for a grid computing configuration.

July 2005

The documentation for the following products has been updated:

[Base SAS Language](#) (part of Service Pack 3)

Several formats have been enhanced with default and range values.

[SAS/ACCESS Interfaces to Relational Databases](#) (part of Service Pack 3)

Linux for Intel Architecture is now available for Teradata.

New performance-enhancing data set options are available for Oracle.

[SAS Information Delivery Portal](#) (part of Service Pack 3)

Two new portlet types have been added: WebDAV graph portlets and information map viewer portlets.

Numerous content management features have been added to the user interface.

[SAS/IntrNet: Application Dispatcher](#)

The Application Broker welcome page can be customized.

[SAS Management Console](#)

Flows can be scheduled using operating system scheduling services.

Resource templates have been added for the SAS Grid Server and the Grid Monitoring Server.

[SAS OLAP Server](#) (part of Service Pack 3)

SAS OLAP Servers are now automatically installed as Windows services.

The Define Distinct Count function, Export Cube and Import Cube functions, and the Synchronize Levels function are new.

When creating a cube dimension in SAS OLAP Cube Studio's Cube Designer wizard, a hierarchy for a dimension will automatically be created when no hierarchy has been explicitly defined.

The documentation for SAS OLAP Server has been expanded.

[SAS Open Metadata Architecture](#) (part of Service Pack 3)

The SAS Open Metadata Interface and Java Metadata Interface APIs are enhanced to return more detailed SAS Metadata Model and SAS Metadata Server version information.

The SAS Open Metadata Interface CheckinMetadata method (used by change management processes) is enhanced to remove a character limit on the amount of user-defined text that customers can store to describe metadata changes.

The SAS Metadata Server configuration option, PHYSICAL_DELETE, is deprecated.

A new procedure, PROC METALIB, automates the creation and maintenance of the table metadata defined for a SAS library.

Two additional objectserverparms options, THREADSMIN (TMIN) and THREADSMAX (TMAX), can be set in the SAS Metadata Server start command to improve metadata server performance.

June 2005

The documentation for the following products has been updated:

[SAS/ACCESS Interface to R/3](#)

Two new RFC server options offer enhanced performance and batch compatibility.

Unicode and non-Unicode SAP R/3 servers are supported.

A simplified process for creating an RFC server destination for a small SAP configuration enables you to omit the gateway information.

[SAS Data Surveyor 4.1 for SAP](#)

[SAS Inventory Replenishment Planning](#)

The new ALGORITHM=, QGRID=, and DIST= options for the IRP procedure give the user more control over calculating policies.

The IRP procedure includes new and improved algorithms.

The MIRP procedure is now production instead of experimental. It supports multi-period planning and new policy type and service-level measure options.

The new SAS Inventory Policy Studio solution (preproduction) provides a user-friendly interface to the IRP procedure.

March 2005

The documentation for the following products has been updated:

[Base SAS Language](#) (part of Service Pack 2)

The LIBNAME statement now supports secure access to SAS libraries on a WebDAV server.

[Data Security Technologies in SAS](#) (part of Service Pack 2)

A new SAS/SECURE SSL Add-In Package is required to use the SAS 9.1.3 SSL software.

SAS now supports the tunneling feature of SSH functionality.

[SAS/ACCESS Interfaces for Relational Databases](#) (part of Service Pack 2)

AIX (RS/6000) is available for MySQL.

HP-UX for the Itanium Processor Family Architecture is now available for Sybase.

[SAS Information Delivery Portal](#) (part of Service Pack 2)

A new portlet type, WebDAV content portlets, has been added.

Content administrators can delete shared pages and page templates from the metadata repository.

Extensive enhancements were made to the information map viewing functions.

[SAS Information Map Studio 2.1](#)

[SAS OLAP Server](#) (part of Service Pack 2)

The PROC AGGREGATION statement and SAS OLAP Cube Studio's Manual tuning function have been enhanced for use with cubes that employ aggregated data from other tables or for use with cubes that have no NWAY aggregation.

The Advanced Aggregation Tuning Plugin provides a point-and-click interface that enables you to create and add aggregations to the list of existing aggregations that might already be defined for the cube.

[SAS Open Metadata Architecture](#)

The new REORG= option in the %OMABAKUP metadata server backup macro enables administrators to reclaim unused disk space in SAS metadata repositories.

[SAS Web Report Studio 2.1](#)

December 2004

The documentation for the following products has been updated:

[SAS/ACCESS Interfaces for Relational Databases](#) (part of Service Pack 1)

Linux for Intel Architecture is available for MySQL.

Linux for Itanium-based Systems is available for DB2, Informix, Microsoft SQL Server, MySQL, ODBC, Oracle, and Sybase.

[SAS High-Performance Forecasting 2.1](#)

[SAS OLAP Server](#) (part of Service Pack 1)

the COMPACT_NWAY and IGNORE_MISSING_DIMKEYS options have been added to the PROC OLAP statement

Predictive Modeling with SAS® Enterprise Miner™: Practical Solutions for Business Applications

This book provides an in-depth explanation of the methodology and the theory behind each tool that it covers, and then shows you how the software performs the tasks.

By: Kattamuri Sarma

List price: 64.95 USD

384 pages

ISBN: 978-1-59047-703-8**

ISBN 10: 1-59047-703-0**

Publisher: SAS Press

Copyright Date: February 2007

Description:

Predictive Modeling with SAS Enterprise Miner: Practical Solutions for Business Applications demonstrates how to make the fullest use of SAS Enterprise Miner software. Dr. Sarma provides an in-depth explanation of the methodology and the theory behind each tool that he covers, and then shows you how the software performs the tasks. Step by step, you'll be able to compare manual calculations with the calculations that are performed by SAS Enterprise Miner. Examples from the insurance and banking industries are based on simulated, but realistic, data. The approaches discussed in this book are relevant to any industry.

Here are a few of the topics discussed in detail:

- data collection and data cleaning

- data exploration

- decision trees and regression trees

- logistic regression models

- neural networks

- variable selection and variable transformation

You need this book if you are a graduate student interested in predictive modeling, an expert in data mining who is not familiar with SAS Enterprise Miner, or a business analyst who needs an introduction to predictive modeling using SAS Enterprise Miner. To get the most from this book, you should be familiar with elements of statistical inference and probability, simple algebra, ordinary least squares, logistic regression, and Base SAS software.

Your bonus CD-ROM includes the following: data sets, SAS Enterprise Miner project templates, and SAS code.

SAS Products and Releases: SAS Enterprise Miner: 5.2

Operating Systems: 64-bit Enabled AIX, 64-bit Enabled HP-UX, 64-bit Enabled Solaris, HP-UX IPF, Linux, Linux on Itanium, Microsoft Windows for IPF, Solaris for x64, Tru64 UNIX, Windows

** ISBNs have changed from 10 to 13 digits. To form the 13-digit ISBN, a prefix of "978" is added and the last digit is changed.

Scalability Solution for SAS® Dynamic Cluster Tables

This paper provides an overview of dynamic cluster tables in SAS Scalable Performance Data Server® 4.3 as well as enhancements that have been included in later releases.

<http://support.sas.com/rnd/scalability/papers/TW9593.pdf>

In SAS 9.1, are there easier ways to customize page numbers in RTF output?

Yes, beginning with SAS 9.1, page numbers can be customized in the RTF destination by using an escape character and the {thispage} function, {lastpage} function, {pageof} function, or all three:

```
ods escapechar='^';
ods listing close;
ods rtf file='c:\tests\test.rtf';

data test;
  do i=1 to 50;
    output;
  end;
run;

proc print data=test noobs;
title 'Page ^{thispage} of ^{lastpage}';
footnote '^{\pageof}';
run;

ods listing;
ods rtf close;
```

Operating System and Release Information

| Product Family | Product | System | Reported Release | Fixed Release |
|----------------|----------|--------|------------------|---------------|
| SAS System | Base SAS | All | n/a | |

Events

SAS® Global Forum 2008

<http://support.sas.com/events/sasglobalforum/2008/>

March 16-19
San Antonio

Webcasts

Mining Text for Golden Service

<http://www.bettermanagement.com/seminars/seminar.aspx?l=14536>

On-Demand Webcast

Burning Questions on Data Governance

<http://www.bettermanagement.com/seminars/seminar.aspx?l=14563>

On-Demand Webcast

Predictive Analytics for Insurance

<http://www.sas.com/apps/forms/index.jsp?id=164549>

On-Demand Webcast