What's New in SAS® Software for Release 8.1

The Power to Know™

SAS Publishing

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What's New in SAS® Software for Release 8.1

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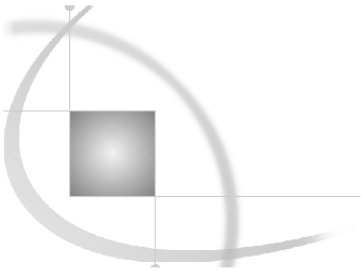

Important Information About This Book

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Where to Find More Information About New and Enhanced Features

This book gives you a quick, convenient overview of features that have been added or enhanced in base SAS software and in 17 other SAS software products for Release 8.1.

For additional details, see the SAS Help System for Release 8.1 and the following books:

- *SAS/ETS Software: Changes and Enhancements, Release 8.1*
- *SAS/IML Software: Changes and Enhancements, Release 8.1*
- *SAS/OR Software: Changes and Enhancements, Release 8.1*
- *SAS/QC Software: Changes and Enhancements, Release 8.1*
- *SAS/STAT Software: Changes and Enhancements, Release 8.1*

Note that the SAS/IML and SAS/QC documentation is available only as PDF files. See the SAS Publishing Web site (www.sas.com/pubs) for more information.

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To stay up-to-date, you can subscribe to NEWDOCNEWS, a monthly electronic newsletter. This newsletter provides SAS software users with information about new books that were published during the previous month, notice of new Observations articles on our Web page, announcements of online documentation, notice of documentation updates, and general news items about SAS documentation.

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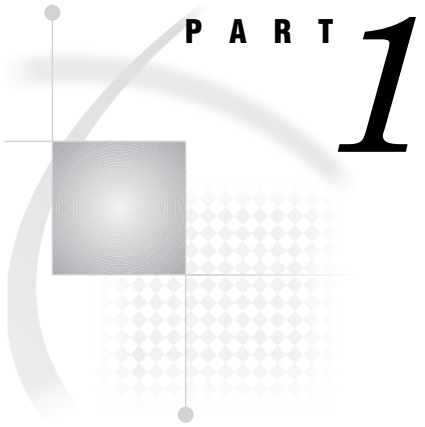

PART 1

Base SAS Software

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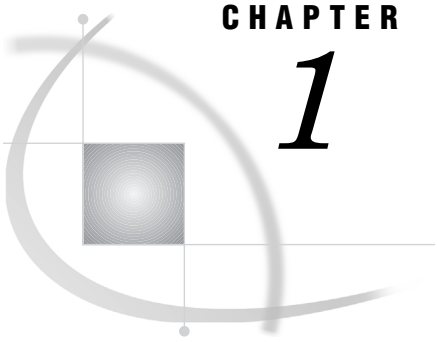

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Base SAS Software: General Features and Language Elements

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SAS Output: Output Delivery System

- Two new ODS statements are now available:

  ODS RTF
  opens, manages, or closes the RTF destination. If the destination is open, you can create SAS output for Microsoft Word.

  ODS PROCTITLE
  specifies whether to suppress the title that indicates which procedure produced the results.

- Aliases have been added to the following ODS statements:

Statement	Alias
ODS VERIFY ON	ODS VERIFY
ODS VERIFY OFF	ODS NOVERIFY
ODS EXCLUDE ALL	ODS EXCLUDE DEFAULT
ODS SELECT ALL	ODS SELECT DEFAULT

- The ODS PRINTER statement supports the following new options:

ANCHOR=
specifies the base name for the HTML anchor tag that identifies each output object in the current file.

AUTHOR=
writes the name that you specify to the header of an HTML file.

BASE=
specifies a string to use as the first part of all links and references that ODS creates in the HTML file.

KEYWORDS="*item(s)*"
enables your program to produce output based on the value of *item*.

PDFMARK
enables a program to insert special tags into a PostScript file.

PDFNOTE
enables you to add comments to a PDF file.

SUBJECT=
writes the subject that you specify to the header of an RTF file.

TITLE=
writes the title that you specify to the header of an RTF file.

- The ODS HTML statement supports a new option called STYLESHEET, which specifies the use of cascading style sheets.
- The SOURCE statement in PROC TEMPLATE supports a new option called NOFOLLOW, which specifies that the program not resolve links in the PARENT= option.
- The Results window now supports the EXPAND ALL and COLLAPSE ALL commands.

SAS I/O: Holding a SAS Data Set in Memory

The new global SASFILE statement requests that a SAS data set be opened and that enough buffers be allocated to hold the entire data set in memory. Once read, data is held in memory, where it is available to subsequent DATA and PROC steps until a second SASFILE statement closes it and frees the buffers. The SASFILE statement can improve performance by taking advantage of large amounts of memory.

SAS I/O: Generating and Processing XML Documents

The new XML engine generates and processes an XML document, which is an application- and machine-independent file. You invoke the engine by specifying the engine name XML in the LIBNAME statement.

SAS I/O: Improving I/O Performance for Access Methods with the BUFSIZE= Option

To optimize the sequential access method, SAS now sets the default value for the BUFSIZE= system option and the BUFSIZE= data set option based on the operating environment.

SAS I/O: Applying OBS= and FIRSTOBS= to WHERE Processing

SAS can now process a segment of data that is conditionally selected with a WHERE expression by applying OBS= and FIRSTOBS= processing. Processing only a segment of the subset of data can improve performance substantially.

SAS I/O: New Referential Action and Message Options for Integrity Constraints

- A new referential action for foreign key integrity constraints, CASCADE, enables the data values in a primary key integrity constraint to be updated, and also updates matching values in the foreign key data file to the same values.
- The MESSAGE= option, which was introduced for the PROC DATASETS IC CREATE statement in Version 8, is now supported in PROC SQL. The MESSAGE= option enables you to associate a user-defined message with the SAS error message that is displayed for an integrity constraint.
- When you use the MESSAGE= option, a new MSGTYPE= option enables you to control the format of the integrity-constraint error message.

SAS I/O: Locking a SAS File

You can issue the new LOCK statement to acquire an exclusive lock on an existing SAS file.

Universal Printing

Universal Printing functionality is a new way of providing consistent printing support for all operating environments. It enables you to print or preview the contents of an active SAS window. You can produce output in either PostScript or PCL format.

Universal Printing is the default printing mechanism in the UNIX and OpenVMS operating environments. You can use the UNIVERSALPRINT system option to specify Universal Printing in other operating environments.

Windowing Environment: My Favorite Folders Window Commands

You can use the following new commands to work with files in the My Favorite Folders window:

- COPYITEM copies files that appear in the My Favorite Folders window.
- MOVEITEM moves files that appear in the My Favorite Folders window.
- DELETEITEM deletes files that appear in the My Favorite Folders window.
- RENAMEITEM renames files that appear in the My Favorite Folders window.

Windowing Environment: File Shortcut Assignment Window

The new File Shortcut Assignment window enables you to assign file shortcuts (filerefs) graphically. You can also use this window to make file shortcuts permanent, meaning that they will be reassigned during SAS startup until they are deassigned. The file shortcuts that you create with this window are added to the File Shortcuts folder of the SAS Explorer window.

To access this window, issue the DMFILEASSIGN command.

Windowing Environment: Import/Export Wizard

Depending on the operating environment, the Import/Export Wizard supports the following additional external data sources:

- Microsoft Access 2000 table
- Microsoft Excel Version 2000 spreadsheet.

For details, see the online Help that is available from the Wizard. To access the Wizard, select **`File`**, then either **`Import Data`** or **`Export Data`**.

Data Set Options

- The default value for the BUFSIZE= data set option is now set by the operating environment to optimize sequential access.
- The OBS= and FIRSTOBS= data set options can now be used with a WHERE expression, which is supported for the WHERE statement, the WHERE= data set option, and the WHERE clause in the SQL procedure.

Formats

- The new DTDATE*w*. format produces the same output as DATE*w*., but accepts a datetime value as input.

Functions and CALL Routines

The following new functions and CALL routines have been implemented:

- The CALL SLEEP routine and the SLEEP function suspend the execution of a SAS DATA step for a specified period of time and return a value.
- The CALL STREAMINIT routine (Experimental) specifies a seed value to use for subsequent random number generation by the RAND function.
- The RAND function (Experimental) generates random numbers from a specified distribution.

Statements

- The new SASFILE global statement requests that a SAS data set be opened and that enough buffers be allocated to hold the entire data set in memory.
- The WHERE statement can now be used with OBS= and/or FIRSTOBS= processing.
- The new LOCK statement acquires an exclusive lock on an existing SAS file.

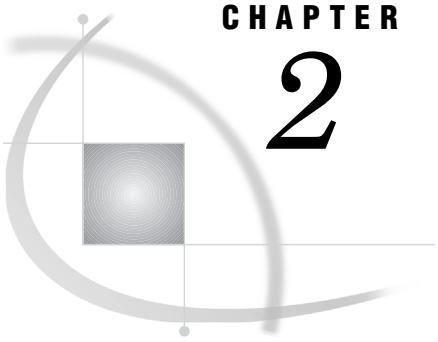
System Options

The following SAS system options have been added:

- The new EMAILHOST= system option specifies the Simple Mail Transport Protocol (SMTP) server that supports email access for your site.
- The new EMAILPORT= system option specifies the port to which the Simple Mail Transport Protocol (SMTP) server is attached.
- The new UNIVERSALPRINT system option (Experimental in CMS, MVS, OS/2, and Windows operating environments), turns Universal Printing on for an operating environment.

The following SAS sytem options have been enhanced:

- The default value for the BUFSIZE= system option is now set by the operating environment to optimize sequential access.
- The OBS= and FIRSTOBS= system options can now be used with a WHERE expression, which is supported for the WHERE statement, the WHERE= data set option, and the WHERE clause in the SQL procedure.



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Base SAS Software: Procedures

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The CIMPORT Procedure

The new DATECOPY option copies the date and time that a SAS file was created and the date and time a SAS file was last modified when importing the file from transport format.

The COPY Procedure

The new DATECOPY option copies the date and time that a SAS file was created and the date and time a SAS file was last modified when creating a copy of the file.

The CPORT Procedure

The new DATECOPY option copies the date and time that a SAS file was created and the date and time a SAS file was last modified when exporting the file to transport format.

The DATASETS Procedure

- The IC CREATE statement supports a new referential action for foreign key integrity constraints, CASCADE, which enables the values in a primary key

integrity constraint to be updated and also updates matching values in the foreign key data file.

- IC CREATE also supports a new MSGTYPE= option, which enables you to control the format of integrity-constraint error messages.
- The AUDIT statement now supports the GENNUM= data set option.
- The new DATECOPY option on the COPY statement copies the date and time a SAS file was created as well as the date and time the file was last modified when a copy of the file is created.
- The new DTC= option on the MODIFY statement enables you to specify the date and time you want to show that a SAS file was created.

The EXPORT Procedure

Depending on the operating environment, the EXPORT procedure now supports the following additional external data sources:

- Microsoft Access 2000 table
- Microsoft Excel 2000 spreadsheet.

The FREQ Procedure

The TABLES statement supports the following new options:

- CONTENTS= specifies the text for the links in the HTML contents file to the crosstabulation tables produced by the TABLES statement.
- FORMAT= specifies a format for the following crosstabulation table cell values: frequency, expected frequency, and deviation. PROC FREQ also uses this format to display the total row and column frequencies for crosstabulation tables. You can use any standard SAS numeric format or a numeric format that was defined with the FORMAT procedure.
- OUTCUM includes the cumulative frequency and the cumulative percent for one-way tables in the output data set when you specify the OUT= option. The variable CUM_FREQ contains the cumulative frequency for each level of the analysis variable, and the variable CUM_PCT contains the cumulative percent for each level.

The IMPORT Procedure

Depending on the operating environment, the IMPORT procedure now supports the following additional external data sources:

- Microsoft Access 2000 table
- Microsoft Excel 2000 spreadsheet.

The PRINT Procedure

- The CONTENTS= option on the PROC PRINT statement now enables you to customize the HTML contents link to the output.

The REPORT Procedure

- The CONTENTS= option on the PROC REPORT statement now enables you to customize the HTML contents link to the output.

The SORT Procedure

- The new DATECOPY option copies the date and time that a SAS data set was created as well as the date and time that a SAS data set was last modified to the resulting sorted data set.
- The EQUALS option is now disabled when a very large number of observations are sorted.

The SQL Procedure

- The constraint-specification argument of the CREATE TABLE and ALTER TABLE statements supports a new referential action for foreign key integrity constraints, CASCADE.
- The CREATE TABLE and ALTER TABLE constraint specifications also support two new options, MESSAGE= and MSGTYPE=, which enable you to customize integrity-constraint error messages.

The UNIVARIATE Procedure

The PROBPLOT statement supports the following new options:

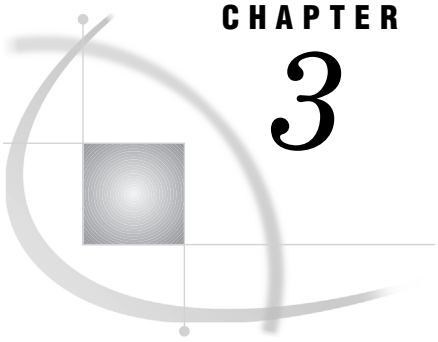
- CFRAMESIDE= specifies the color to fill the frame area for the row labels that are displayed along the left side of the comparative probability plot. This color also fills the frame area for the label of the corresponding class variable (if you associate a label with the variable).
- CFRAMETOP= specifies the color to fill the frame area for the column labels that are displayed across the top of the comparative probability plot. This color also fills the frame area for the label of the corresponding class variable (if you associate a label with the variable).
- INTERTILE= specifies the distance in horizontal percentage screen units between the framed areas, which are called *tiles*.
- NCOLS= specifies the number of columns in the comparative probability plot.
- NROWS= specifies the number of rows in the comparative probability plot.

The QQPLOT statement supports the following new options:

- CFRAMESIDE= specifies the color to fill the frame area for the row labels that are displayed along the left side of the comparative probability plot. This color also fills the frame area for the label of the corresponding class variable (if you associate a label with the variable).
- CFRAMETOP= specifies the color to fill the frame area for the column labels that are displayed across the top of the comparative probability plot. This color also

fills the frame area for the label of the corresponding class variable (if you associate a label with the variable).

- INTERTILE= specifies the distance in horizontal percentage screen units between the framed areas, which are called *tiles*.
- NCOLS= specifies the number of columns in the comparative probability plot.
- NROWS= specifies the number of rows in the comparative probability plot.



CHAPTER

3

SAS Software in the CMS Environment

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Statements

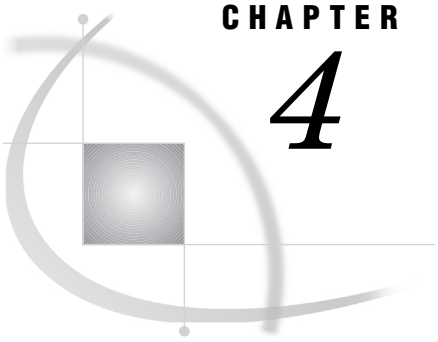
The FILENAME statement for the EMAIL device type has the following new e-mail options:

- The FROM= option enables you to customize the e-mail address that appears in the FROM line of the e-mail message. The default is the user ID and host name of the user who is running SAS.
- The ATTACH= option has the following new suboptions:
  - TYPE= enables you to specify a MIME content type for an attachment.
  - EXTENSION= enables you to specify an extension other than the CMS file type for an attachment.
  - NAME= enables you to specify a name other than the CMS filename for an attachment.

System Options

The following SAS system options are new or enhanced:

- EMAILSYS= accepts a new value, SMTP, for Simple Mail Transport Protocol. You can now choose between a BSMTP (spool) e-mail interface and an SMTP (socket) e-mail interface.
- EMAILHOST= identifies the e-mail server to use.
- EMAILPORT= identifies the e-mail port number.
- HELPCASE controls how text is displayed in the help browser.
- LOADMEMSIZE= specifies how much memory SAS uses to load executables.



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Graphical User Interface

New GUI features include:

- The Program Editor can be suppressed when SAS starts.
- Multiple files can be opened in the Enhanced Editor by using the Open dialog box.
- You can open Help for a SAS procedure by pressing F1 in the Enhanced Editor when the cursor is placed within the procedure name.
- The contents of all Enhanced Editor windows can be automatically saved.
- The Results Viewer displays RTF output from the Output Delivery System.

Application Integration

- SCL multidimensional arrays can now be passed to and received by the OLE automation server.

SAS Language Elements

Functions and CALL Routines

- The new SLEEP function suspends the execution of the DATA step for a specified amount of time.

Macros

- The SASCC automatic macro variable now returns values for Windows 2000 operating environments.

Commands

The following SAS commands have been added:

- FILEOPEN opens the Enhanced Editor Open dialog box.
- WNEXTEDIT moves the active window among all open Enhanced Editor windows.

The following SAS commands have been enhanced:

- WAUTOSAVE now accepts arguments to automatically save Enhanced Editor windows.
- WNEWTITLE now opens an Enhanced Editor window when the active window is an Enhanced Editor window.
- WSTATUSLN now displays the Enhanced Editor cursor position for the active Enhanced Editor window.

System Options

The following SAS system options have been added:

- APPEND appends a pathname to the existing value of a specified system option.
- SMTP (Simple Mail Transport Protocol) is a new option for the EMAILSYS= system option.
- INSERT adds a pathname to the beginning of the value of a specified system option.
- LOADMEMSIZE specifies how much memory SAS uses to load executable programs.
- MAXMEMQUERY specifies the limit on the maximum amount of memory that is allocated for certain procedures.

The following SAS system option has been enhanced:

- AWSMENUMERGE is now set to NOAWSMENUMERGE in batch mode.

Note that specifying the NLOG system option does not suppress messages to the SAS log. The NOTERMINAL system option is necessary to suppress messages.

Enhancements for Running SAS under Windows NT and Windows 2000

- SAS can now be started as a service under Windows NT and Windows 2000.

CHAPTER 5

SAS Software in the OpenVMS Environment

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Transport Files

The default record attribute for SAS transport files has been changed to NONE.

SAS Language Elements

Commands

The following SAS commands are new or enhanced:

- Multiple instances of the X command no longer result in separate DECTERM windows.
- The new TPU command invokes the TPU editor.

Data Set Options

You can use the new OUTREP= data set option to transport files between OpenVMS Alpha and OpenVMS VAX.

System Options

The following SAS system option has been added:

- The EMAILSYS= system option specifies which e-mail interface to use for sending electronic mail from within the SAS System.

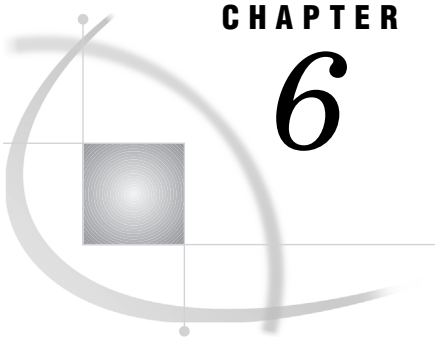
The following SAS system options have been enhanced:

- The BLKSIZE= system option is no longer supported.
- The name of the CACHESIZE= system option has been changed from CACHESIZ=, and it now accepts values that are larger than 65024.

- The DBCSTYPE= system option has new valid values.
- The new default for the SORTPGM= system option is BEST.
- The UNIVERSALPRINT system option is the default for Universal Printing from OpenVMS.
- The name of the WORKCACHE= system option has been changed from WRKCACHE=, and its maximum values are different on OpenVMS VAX and OpenVMS Alpha.

SAS Session Manager

The new SAS Session Manager enables you to control your SAS sessions.



CHAPTER

6

SAS Software in the OS/2 Environment

Functions and CALL Routines **19**
System Options **19**

Functions and CALL Routines

- The new SLEEP function suspends the execution of the DATA step for a specified amount of time.

System Options

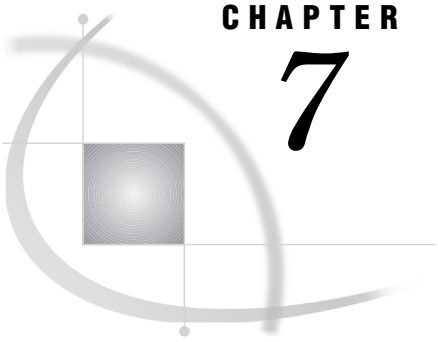
The following SAS system options have been added:

- APPEND appends a pathname to the existing value of a specified system option.
- SMTP (Simple Mail Transport Protocol) is a new option for the EMAILSYS= system option.
- INSERT adds a pathname to the beginning of the value of a specified system option.
- LOADMEMSIZE specifies how much memory SAS uses to load executable programs.
- MAXMEMQUERY specifies the limit on the maximum amount of memory that is allocated for certain procedures.

The following SAS system option has been enhanced:

- AWSMENUMERGE is now set to NOAWSMENUMERGE in batch mode.

Note that specifying the NLOG system option does not suppress messages to the SAS log. The NOTERMINAL system option is necessary to suppress messages.



CHAPTER 7

SAS Software in the OS/390 Environment

Statements **21**
System Options **21**

Statements

The following statements have been enhanced:

- The FILENAME statement supports the EMAIL device type, which enables you to send electronic mail from within the SAS System.
- The FILE and INFILE statements support an MVS argument to indicate that a file is not an HFS file when an ambiguous physical filename is specified.

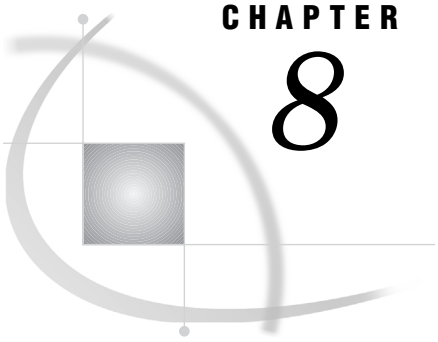
System Options

The following SAS system options have been added:

- CTRANSLOC= enables you to allocate the C Transient Library for SAS/CONNECT and SAS/SHARE software from within SAS.
- EMAILHOST= identifies the e-mail server.
- EMAILPORT= identifies the e-mail port number.
- EMAILSYS= specifies which e-mail interface to use for sending electronic mail from within the SAS system.
- HELPCASE controls how text is displayed in the help browser.

The following SAS system options have been enhanced:

- ASYNCHIO is now the default for both TSO and non-TSO sessions.
- AUTOEXEC= now has a default value of null.
- SEQENGINE= now has a default value of TAPE and no longer supports values in the form SASV*n*SEQ.



CHAPTER 8

SAS Software in UNIX Environments

Call Routines **23**
Commands **23**
System Options **23**

Call Routines

- The new CALL SLEEP routine suspends the execution of the DATA step for a specified amount of time.

Commands

- The SAS command no longer assumes a **.sas** filename extension when you do not specify an extension on input filenames.

System Options

- The new LOADMEMSIZE system option specifies how much memory SAS uses to load executable programs.
- The default settings for the MEMSIZE and SORTSIZE system options have been increased.

PART 2

Other SAS Software Products

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Chapter ***10*** . . . . . **SAS/AF Software** *31*

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CHAPTER

9

SAS/ACCESS Software

All SAS/ACCESS Relational Interfaces **27**
SAS/ACCESS Interface to DB2 under UNIX and PC Hosts **27**
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SAS/ACCESS Software for PC File Formats **29**
SAS/ACCESS Interface to Baan **29**
SAS/ACCESS Interface to R/3 **29**

All SAS/ACCESS Relational Interfaces

- The data set options DBCREATE_TABLE_OPTS and DBCOMMIT are now LIBNAME options as well.

SAS/ACCESS Interface to DB2 under UNIX and PC Hosts

- Bulk loading, which improves performance when data is loaded into a DBMS table, is now supported.

SAS/ACCESS Interface to DB2 under VM (formerly SQL/DS)

- The SAS/ACCESS LIBNAME statement is now supported.

SAS/ACCESS Interface to Microsoft SQL Server

- This new SAS/ACCESS interface provides LIBNAME, SQL Procedure Pass-Through Facility, and DBLOAD access to SQL Server on UNIX platforms.

SAS/ACCESS Interface to Oracle Rdb

- The SAS/ACCESS LIBNAME statement is now supported for Rdb version 7 and later.

SAS/ACCESS Interface to ODBC

- A new LIBNAME and data set option, INSERT_SQL, determines which method is used to insert rows into a data source.
- PROC DATASETS now returns all tables in the current schema, including system tables if they are present.

SAS/ACCESS Interface to OLE DB

- Three new bulk loading options have been added:
  - BL_KEEPIDENTITY determines how the identity column is populated.
  - BL_KEEPNULLS indicates how null values are handled during bulk loading.
  - BL_OPTIONS passes options that affect how data is loaded and processed.
- A new LIBNAME option, QUALIFY_ROWS, uniquely qualifies all member values in a result set.
- A new LIBNAME and data set option, INSERT_SQL, determines which method is used to insert rows into a data source.
- You can now specify a maximum of 5 axis dimensions for OLAP. In Version 8, this interface supported a maximum of 2 axes.

SAS/ACCESS Interface to ORACLE

- Bulk loading, which improves performance when data is loaded into a DBMS table, is now supported on OS/390 (and on all other platforms except CMS).
- A new data set option, BL_PRESERVE_BLANKS, enables you to specify how blank values are inserted into columns that are defined as NOT NULL when the bulk loading facility is used.

SAS/ACCESS Interface to Teradata

- The Fastload bulk loading facility, which improves performance when data is loaded into an empty Teradata table, is now supported.
- COMMIT statements are now required for PROC SQL Pass-Through Data Definition Language (DDL) statements and to complete transactions. If you do not add the necessary COMMIT statements, your changes are not saved to the database.

SAS/ACCESS Interface to ADABAS (available on OS/390)

- The interface view engine now supports:
  - the ADABAS multifetch feature. When reading large amounts of data sequentially, this can significantly reduce the number of system commands needed to complete ADABAS calls.
  - ADABAS Version 6 new features, including 2-byte database identifiers (DBIDs), 2-byte file numbers, and 4-byte internal sequence numbers (ISNs).
  - periodic groups with up to 191 occurrences.
- Five new data set options enable you to maintain ADABAS buffer lengths: ADBFMTL, ADBRECL, ADBSCHL, ADBVALL, and ADBISNL.

SAS/ACCESS Interface to CA-DATACOM/DB (available on OS/390)

- The interface view engine now supports 5-byte database identifiers.
- A new data set option, DDBCOMIT=, enables you to specify how often to commit updates when database logging is in effect.
- The interface view engine no longer recognizes special user-defined URT names (US*tttnnn* and UW*tttnnn*) as a method for loading the User Requirements Table.

SAS/ACCESS Software for PC File Formats

- SAS/ACCESS Software for PC File Formats enables you to read and load Excel 4 and 5 files. Under Windows in Release 8.1, you use the Import/Export Facility to read or load these Excel files, as well as Excel 7 (Excel 95), Excel 97, and Excel 2000 files. The Import/Export Facility also enables you to read or load Microsoft Access files, including Access 97 and Access 2000 files. These same files can be used in the IMPORT and EXPORT procedures as well.

SAS/ACCESS Interface to Baan

- The SAS/ACCESS Interface to Baan enables you to read Baan data into SAS. Help is available from the interface windows. In Release 8.1, the online Help contains additional index entries.

SAS/ACCESS Interface to R/3

Four new SAS macros and three new SAS macro variables are now supported:

- The %CALLRFC macro enables you to call a specified R/3 function.
- The SR3DLM macro variable enables you to specify the delimiter for output files that are created when you use the %CALLRFC macro.
- The RFC_LOGON_INFO macro variable enables you to you to specify the logon information and connection parameters that are used in the %CALLRFC macro.

- The CALLRFC_EXE macro variable enables you to specify the location of the CALLRFC executable.
- The %R3CONNB macro enables you to use a profile to log on to the R/3 System for batch processing.
- The %R3CONNC macro enables you to log on to the R/3 System when performing batch processing.
- The %R3CONNE macro enables you to log off of the R/3 System when performing batch processing.

In addition, Release 8.1 provides online Help for the Wizard to Load Metadata in the SAS/ACCESS Interface to R/3.

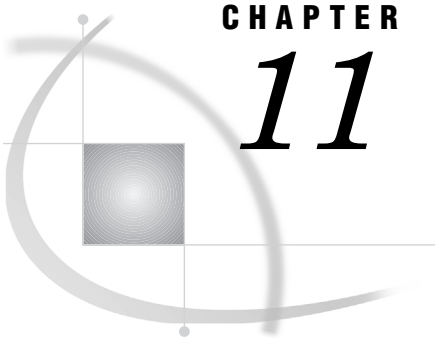
CHAPTER
10

SAS/AF Software

New Classes **31**

New Classes

- The Catalog Entry Viewer class provides a control for viewing catalog entries within a frame.
- The Column Properties class can be used in conjunction with the SAS Data Set class and the SCL List Model class to provide information about table columns.
- The Data Model class is an abstract class that you can subclass in order to implement your own data model.
- The Data Set Column Properties class can be used in conjunction with the SAS Data Set class to provide information about table columns.
- The External File Viewer class provides a control from which you can view external system files.
- The Form Viewer class provides a control that can help you interact with a single row of data from a particular data model.
- The Image Viewer class provides a control that displays a bitmapped image.
- The Progress Bar class provides horizontal or vertical progress-bar controls on a frame. Progress bars keep users informed as to the progress of a specific process.
- The SAS Data Set Model class provides a model that can be attached to specific controls to create objects that provide functionality that was previously available through data tables and data forms.
- The SCL Exception class is a utility component that helps implement the throw-catch exception-handling mechanism of the SAS Component Language (SCL).
- The SCL List Model class enables you to create SCL lists.
- The SCL Throwable class is a utility component that helps implement the throw-catch exception-handling mechanism of the SAS Component Language (SCL). You can use an SCL Exception child class to make error recovery a natural part of your application development efforts.
- The Table Viewer class provides a control that enables you to display, print, and interact with tabular data.



CHAPTER

11

SAS Component Language

New Functions **33**
Enhanced Functions **33**

New Functions

The following functions are new:

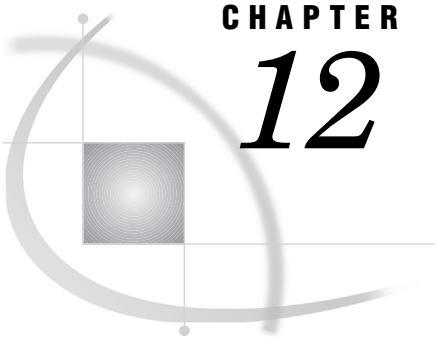
- The ICDESCRIBE function obtains the attributes for all existing integrity constraints within a SAS table.
- The REDIMPORT function enables you to mark an array as implicitly growable.

Enhanced Functions

The following functions have been enhanced:

- The ATTRC function has a new attribute, **DATAREP**, which enables you to determine whether a file is a native file or a foreign file.
- The ICCREATE function supports a new referential action, **CASCADE**, which updates all matching foreign key values whenever a primary key value is modified. Also, with the new *message* and *message-type* arguments, you can now specify your own messages to be displayed when a data value fails to comply with a constraint.
- The FILEDIALOG function supports a new dialog type, **SAVEASNOAPPEND**, which lists the files to which a user can write but cannot append.
- The MESSAGEBOX function supports two new sets of command buttons:

YYNC	Yes, Yes to all, No, Cancel
RAC	Replace, Append, Cancel



CHAPTER

12

SAS/CONNECT Software

Firewall Configuration **35**
System Options **35**

Firewall Configuration

SAS/CONNECT software now permits TCP/IP connections between clients outside a firewall and spawners that run on hosts inside the firewall.

System Options

- AUTOSIGNON=

  Note that in order to activate the auto-sign-on feature of the RSUBMIT statement, the AUTOSIGNON= system option must be explicitly set to YES.

- CTRANSLOC=

  The new CTRANSLOC= system option can be used on OS/390 hosts for connections with the TCP/IP access method to allocate the SAS/C Transient Library for SAS execution.

- SASCMD=

  For OS/390 hosts that use MP CONNECT by means of the XMS access method, the new SASCMD= system option is used for specifying options and values that are passed to a dynamically created DMR session.

CHAPTER
13

SAS/EIS Software

General Functionality **37**

General Functionality

- The NUNIQUE statistic, provided by SAS/MDDB Server software, is now supported by SAS/EIS software. The SAS/EIS multidimensional data model (SASHELP.MDDB.EMDDB_M.CLASS), SAS/EIS multidimensional reports, and the metabase have been updated to support NUNIQUE columns. A new interface enables you to define NUNIQUE column registrations. You can also define NUNIQUE columns at run time, and you can use the Save and Save as features.
- Class values from an MDDB can now be displayed using a different format than the one that was used to create the MDDB. By default, class values are stored as formatted character values on the MDDB. The formatted class values are displayed in all reports that are produced from the MDDB. In some cases, users want to store an unformatted value on the MDDB, and to apply the formats when the reports are displayed.
- Performance options have been added to the Incremental MDDB Update object. The options for setting block size for data swapping (PKTSIZE) and for setting memory size (VMEMSIZE), provided by SAS/MDDB Server software, are now available in the Incremental MDDB Update object.
- The METABASE command enables you to access the Metabase interface from a SAS command line without invoking SAS/EIS software.
- Repositories are now write accessible from more than one repository manager. Prior to Release 8.1, a repository was write accessible only from the repository manager in which it was first registered.

CHAPTER
14

SAS/ETS Software

Investment Analysis System **39**
SASECRSP Engine **39**
QLIM Procedure **39**
VARMAX Procedure **40**
X12 Procedure **40**
For Additional Information **40**

Investment Analysis System

The new Investment Analysis system provides time-value-of-money analysis for a variety of investments. Various analyses are provided for the value analysis of alternative investments: time value, periodic equivalent, internal rate of return, benefit-cost ratio, and breakeven analysis. These analyses can help answer numerous questions, including: Which option is more profitable or less costly? How much is legally deductible? Is this a reasonable price? Is it better to buy or rent? The current version offers interfaces for the following investment types: loans, savings, depreciations, bonds, and generic cashflows.

SASECRSP Engine

A new SAS/ETS interface engine to the CRSPAccess database (SASECRSP) is now available as an experimental release.

QLIM Procedure

The new QLIM (Qualitative and LIMited dependent variable Model) procedure is an experimental procedure that analyzes models where dependent variables take discrete values or where dependent variables are observed only over a limited range of values. This procedure includes logit, probit, tobit, Poisson regression, and general simultaneous equation models. The simultaneous equations model consists of discrete choice and limited endogenous variables as well as continuous endogenous variables. Univariate models use the maximum likelihood method, whereas simultaneous equations models are estimated using a two-stage estimation method.

VARMAX Procedure

Often, economic or financial variables are not only contemporaneously correlated to each other, they are also correlated to each other's past values. The new VARMAX procedure can be used to model these types of time-related relationships and to estimate the associated Vector AutoRegressive and Moving-Average with exogenous regressors (VARMAX) models. There are features to aid in order selection, model checking, residual analysis, and forecasting. Tests can be performed for stationarity, cointegration, and Granger-causality.

The VARMAX procedure provides for both Vector AutoRegressive (VAR) and Bayesian Vector AutoRegressive (BVAR) models. To cope with the problem of high dimensionality in the parameters of the VAR model, the VARMAX procedure provides both the Vector Error Correction Model (VECM) and Bayesian Vector Error Correction Model (BVECM). Bayesian models are used when prior information about the model parameters is available.

X12 Procedure

The new X12 procedure, an adaptation of the U.S. Bureau of the Census X-12-ARIMA Seasonal Adjustment program, seasonally adjusts monthly or quarterly time series. The procedure makes additive or multiplicative adjustments and creates an output data set that contains the adjusted time series and intermediate calculations.

For Additional Information

For additional information about these features, refer to *SAS/ETS Software: Changes and Enhancements, Release 8.1*.

CHAPTER

15

SAS/GIS Software

New Tutorial **41**
PROC GIS Statement **41**
Displayed Maps **41**
Data Administration Window **42**

New Tutorial

Getting Started with SAS/GIS Software
is a step-by-step, high-level tutorial for SAS/GIS software. In this scenario-based tutorial, you learn to use SAS/GIS to import spatial data and create a map, to modify the map using the GIS procedure, to geocode addresses and add points to the map, and to link attribute data and spatial data. You also learn to work with map layers, actions, and selections.

You can access this new tutorial from the Web at http://www.sas.com/software/tutorialsv8/gis/.

PROC GIS Statement

- The ON and OFF arguments on the PROC GIS LAYER statement have been replaced with the ONSCALE and OFFSCALE arguments. The arguments enable you to set a scale at which a layer is turned on or off. The syntax for the arguments now enables you to specify units for the scale and to turn the scale off after it has been specified.
- The PROC GIS MAP statement now includes the arguments SELECTABLE and UNSELECTABLE. These arguments enable you to specify one or more map layers as either selectable or unselectable.

Displayed Maps

You can now remove chains from the spatial data of a displayed map. With a map displayed in edit mode and with one or more chains selected, select

Edit ▶ Remove Current Selection

to remove the currently selected chain or select

Edit ▶ Remove All Selections

to remove all selected chains.

Data Administration Window

The Data Administration window is no longer marked as "Experimental." The menu selection to display the window has been changed from

Tools ▶ Data Administration

to

Edit ▶ Data Administration

CHAPTER
16

SAS/GRAPH Software

Using Image Files in SAS/GRAPH 43
FONTLIST Command 43
All Procedures 43
GCHART Procedure 43
GPLOT Procedure 44
GRADAR Procedure 44
SYMBOL Statement 44

Using Image Files in SAS/GRAPH

SAS/GRAPH software now enables you to display images as part of your graph. For example, you can use your company logo in the graph. You can place the image in the graph's background area, on the frame of graphs that support frames, or on the bars of two-dimensional bar charts. You can also display images at graph coordinate positions by using the Annotate facility or the DATA Step Graphics Interface (DSGI).

FONTLIST Command

The new FONTLIST command displays a list of the software fonts that are available to your SAS session in your operating environment.

All Procedures

The DESCRIPTION= option on all procedures now supports descriptions of up to 256 characters. Previously, descriptions were limited to 40 characters.

GCHART Procedure

Several options on the HBAR and HBAR3D statements now support a new keyword, NONE, which suppresses the labels that are displayed for that option. For example, SUMLABEL=NONE suppresses the labels for the SUM statistic. Each of the following HBAR and HBAR3D options can specify the keyword NONE:

- FREQLABEL=

- CFREQLABEL=
- PERCENTLABEL=
- CPERCENTLABEL=
- MEANLABEL=
- SUMLABEL=

GPLOT Procedure

Because the PLOT2 statement now supports the HTML= and HTML_LEGEND= options, you can produce graphs with drill-down capabilities on the second plot line, which is plotted on the graph's right vertical axis. Previous SAS versions only supported drill-down capabilities on the first plot line that is generated from the PLOT statement.

GRADAR Procedure

The new GRADAR procedure creates radar charts that show the relative frequency of data measures in quality control data or market research data. Radar charts display statistics along spokes that radiate from the center of the chart. Multiple charts are often stacked on top of one another, and circular reference lines can be displayed to show the relative magnitude of the statistical values that are represented in each chart. Stacking charts around a center point reveals the interrelationships among data measures and facilitates data comparisons. For example, radar charts are useful for comparing the same measures across different test cases, or for evaluating the results of market research studies.

SYMBOL Statement

The POINTLABEL= option now honors the format that is assigned to the variable whose values are used to label the plot points.

CHAPTER
17

SAS/IML Software

Financial Functions **45**
Robust Regression **45**
Multivariate Time Series Analysis **45**

Financial Functions

Functions that compute information about financial quantities have been added:

- The CONVEXIT function calculates the convexity of a non-contingent cash flow.
- The DURATION function computes the modified duration of a non-contingent cash flow.
- The FORWARD function computes a vector of forward rates.
- The PV function computes the present value of cash flows based on the specified frequency and rates.
- The RATES function returns a vector of interest rates converted from one base to another.
- The SPOT function returns a vector of spot rates.
- The YIELD function computes the yield-to-maturity of a cash-flow stream based on a specified frequency and value.

Robust Regression

New algorithms for robust regression have been added:

- The LTS call performs robust regression.
- The MCD call finds the minimum covariance determinant estimator.

Multivariate Time Series Analysis

New functions for creating and analyzing multivariate time series have been added:

- The VARMACOV call computes the theoretical cross-covariance matrices for a stationary VARMA(p,q) model.
- The VARMALIK call computes the log-likelihood function for a VARMA(p,q) model.
- The VARMASIM call generates a VARMA(p,q) series.
- The VNORMAL call generates multivariate normal random series.
- The VTSROOT call calculates the characteristic roots of a VARMA model from AR and MA characteristic functions.

CHAPTER
18

SAS/INSIGHT Software

Graphical Enhancements **47**
Distribution Analyses **47**
Fit Analyses **47**
Multivariate Analyses **47**

Graphical Enhancements

SAS/INSIGHT software now includes surface plots, contour plots, response surfaces, comparison of means circles in the box plots, and color blending of up to five colors. Several methods for surface fitting are provided, including linear interpolation, thin-plate spline, kernel estimation, and using a parametric model.

Distribution Analyses

The distribution window now includes the following statistics:

- basic confidence intervals of mean, standard deviation, and variance
- robust measures of scale
- tests for normality.

Fit Analyses

When there are two explanatory variables in the model, a parametric response surface plot is created by default. You can also generate a nonparametric kernel or thin-plate smoothing spline response surface plot.

With more than two explanatory variables in the model, you can create a parametric profile of a response surface plot with the first two explanatory variables. The values of the remaining explanatory variables are set to their corresponding means in the plot. You can use sliders to change the values of the remaining explanatory variables.

Multivariate Analyses

When performing pairwise correlations, SAS/INSIGHT software now drops an observation from all calculations if the observation has a missing value for any variable that is used in the analysis.

You can now display *biplots*, a joint display of two sets of variables in which the data points are displayed in a scatter plot of principal components.

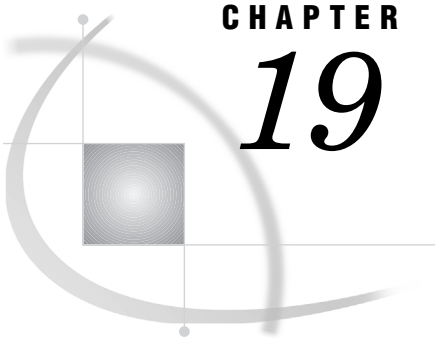
The following multivariate analyses have been added:

- canonical correlation analyses
- maximum redundancy analysis
- canonical discriminant analysis.

The following multivariate analysis has been enhanced:

- principal component analysis

  You can now create tables that display statistical relationships between the Y variables and the rotated principal components.



CHAPTER

19

SAS Integration Technologies

New Features **49**
For Additional Information **49**

New Features

- Workspace pooling for Java clients improves efficiency by enabling multiple clients to reuse server workspaces. This feature is particularly useful for Web-enabled applications.
- The SAS Package Retriever application enables you to retrieve packages of information that have been published to available archives and message queues.
- Stored process paths can now be managed from the IT Administrator application.
- The message queue library of SAS CALL routines has now been expanded to enable you to configure and access Geneva message queues in SAS stored processes. (Experimental)
- The WebDAV transport method enables you to publish packages as collections of resources, as specified by the HTTP Extensions for Web Distributed Authoring and Versioning. (Experimental)

For Additional Information

Additional information about the software is available on the SAS Integration Technologies Web site at http://www.sas.com/rnd/itech/intro.html.

CHAPTER
20

SAS/IntrNet Software

New Features and Enhancements in Application Dispatcher **51**
New Features and Enhancements for SAS Java Tools **51**

New Features and Enhancements in Application Dispatcher

- New Application Server communication access method

  With the new access method, the Application Server can now return results using the request connection. A new Broker configuration directive (FullDuplex) enables communication between the Broker and the Application Server through one socket. This feature eliminates the need for the fwproxy when a firewall is between the Broker and the Application Server. It also reduces the number of TCP/IP connections made by the Application Server.
- STATISTICS command

  The new STATISTICS command enables you to capture request statistics and to store them in a SAS data set. You can then use the data set to analyze Application Server usage and performance.
- Automatic header generation

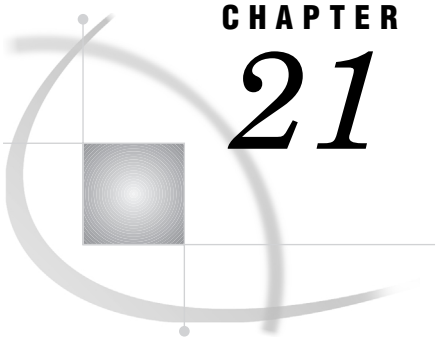
  The Application Server now automatically generates a set of default HTTP headers for requests. The default headers include Content-type and Set-Cookie, if applicable.
- Encryption

  All data that is sent between the Broker and the Application Server can now be encrypted. SAS proprietary fixed-encoding encryption is available to all SAS/IntrNet users. SAS/SECURE software adds support for RC2, RC4, DES, and other encryption standards. In addition, a new Broker configuration directive (Encrypt) enables encryption for a service.
- Improved administration of multi-server services

  Administrative programs such as PING, STATUS, and STOP are now being sent to all Application Servers that run the specified service (for example, pool, launch, or socket service).

New Features and Enhancements for SAS Java Tools

- Both the SAS/CONNECT Driver for Java and the SAS/SHARE Driver for JDBC have been enhanced to support the encryption features of the Release 8.1 SAS servers. The encryption support that was available for earlier SAS servers is still provided.



CHAPTER
21

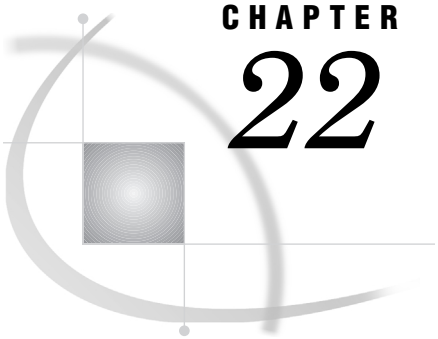
SAS OLAP Server Software

Product Features **53**

Product Features

SAS OLAP Server software includes the following components:

- SAS/MDDB Server software, which enables users to create and manage MDDBs. MDDBs provide fast and easy data access to tools such as multidimensional viewers.
- Access Control, which enables administrators to set up and maintain group access to data and applications in OLAP environments.
- Metadata Registration Facilities, which enable users to define metadata for their OLAP cubes.
- HOLAP (Hybrid OLAP) Registration Facilities, which enable users to define metadata for data that is spread across different data sources.
- OLAP Model Coordination Facilities, which enable multiple concurrent applications to share a synchronized view of the data.



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22

SAS/OR Software

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BOM Procedure

The BOM procedure is a new experimental procedure for performing bill-of-material processing. It composes a series of single-level bills of material into a multilevel tree-structured bill of material, determines the level of each part in the bill, and represents the multilevel bill of material structure in the form of an indented bill of material. PROC BOM can also output a summarized bill of material.

CPM Procedure

- The MULTIPLEALTERNATES option has been added to the RESOURCE statement. It enables multiple alternate resources to be used simultaneously for a single resource.
- The CPM procedure now allows the use of alternate resources for resources that drive an activity's duration.
- Auxiliary resources can now be specified for any resource.

DTREE Procedure

Two new options, NOPAGENUM and PAGENUM, enable you to specify whether or not to display the page number in the top right corner of each page of a multipage decision-tree diagram.

GANTT Procedure

The NOPAGENUM option has been added to the CHART statement.

INTPOINT Procedure

The INTPOINT procedure is a new experimental procedure for performing optimization using the Interior Point algorithm. Using PROC INTPOINT is essentially the same as using PROC NETFLOW with its Interior Point algorithm. In the future, PROC INTPOINT will exploit parallel processing.

NETDRAW Procedure

- The PAGENUMBER option has been added to the ACTNET statement.
- The ROTATE option has been added to the ACTNET statement for displaying a hierarchical tree in a top-down format.

NETFLOW Procedure

You can now see the Interior Point algorithm's progress to the optimum by specifying the PRINTLEVEL2 option. The NETFLOW procedure produces a table in the SAS log. A row of the table is generated during each iteration. Each row consists of values that are useful for gauging how well the optimization is converging to the optimum.

Several new options have been added that give you greater control over when the Interior Point algorithm should stop.

PM Procedure

A new dialog window has been added to the Gantt view that provides activity, precedence, and resource information for each task. With this window you can also change the activity duration. You activate the Task Information dialog window from the schedule bar pop-up menu in the Gantt View.

For Additional Information

For additional information, refer to *SAS/OR Software: Changes and Enhancements, Release 8.1*.

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SAS/QC Software

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Split-plot Designs **57**
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Box Plot **58**

SHEWHART Procedure

- The BOXSTYLE=POINTSSCHEMATIC option specifies a new box style that combines the POINTS and SCHEMATIC box styles.
- The MRRESTART option enables the moving range computation on the IRCHART to be restarted when a missing value is encountered.
- The TESTRESET= and TEST2RESET= options enable you to reset tests for special causes.

ADX Interface

Split-plot Designs

The ADX interface can now be used to analyze split-plot data. You first need to create the split-plot design outside ADX and then import the design data into ADX. The analysis is done using PROC MIXED.

Ridge Analysis

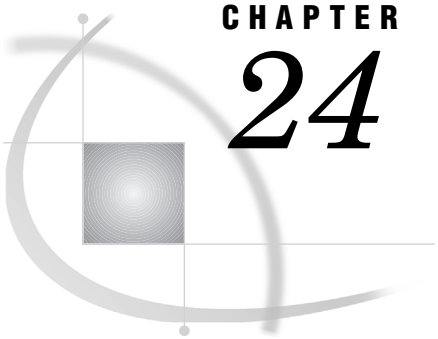
Ridge analysis, which is useful for determining the direction in which further experimentation should be conducted, has been added.

n-Way Effect Plot

The new n-way effect plot enables you to look in detail at potential 3- and 4-way interactions.

Box Plot

Box plots have been added to display the differences in the response distribution between different levels of factors.



CHAPTER

24

SAS/SHARE Software

Cross-Platform Catalog Access **59**
Overlapping I/O **59**
SAS/SHARE Data Provider **59**

Cross-Platform Catalog Access

SAS/SHARE software now enables you to access catalogs that reside on a server that has a different architecture from the one on which your SAS program is running. For example, Windows NT clients can now access catalogs on an HP-UX server.

Overlapping I/O

The performance of sequential read operations has been enhanced for applications that use the remote engine through the use of overlapping I/O.

SAS/SHARE Data Provider

The new SAS/SHARE data provider enables you to use the Microsoft OLE DB and Active Data Objects (ADO) interfaces to read and modify data sets on a SAS/SHARE server.

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25

SAS/STAT Software

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CATMOD Procedure

The CATMOD procedure now supports the iterative proportional fitting (IPF) algorithm for fitting hierarchical log-linear models with no independent variables and no population variables. The advantage of the IPF algorithm is that you can obtain the log likelihood, G^2, and the predicted cell counts without performing expensive parameter estimation and covariance computations. To request IPF fitting, you specify the ML=IPF option. Several options for controlling the convergence criterion are available, as well as options for controlling how degrees of freedom for G^2 are computed.

The new MISSING= option specifies whether a missing cell is treated as a sampling or structural zero. The new ZEROES= option specifies whether a non-missing cell with zero weight is treated as a sampling or structural zero.

FACTOR Procedure

The generalized Crawford-Ferguson family of orthogonal and oblique rotations (Jennrich 1973) is now available through the ROTATE= option, which performs these new rotations. The family includes the direct oblimin (Harman 1976) and the Crawford-Ferguson family (Crawford and Ferguson 1970) as special cases.

The ROTATE= option performs these new rotations and many other specific rotations such as biquartimax, factor parsimax, (direct) quartimin, biquartimin, and covarimin.

You can also control the convergence properties of the rotation by using the RCONVERGE= and the RITER= options. The RCONVERGE= option defines the convergence criterion, and the RITER= option sets the maximum number of cycles for factor rotations.

When METHOD=ML (maximum likelihood), the new SE option requests standard error estimates for the unrotated factor loadings, the rotated factor loadings, the factor correlations, and the factor structure loadings. The standard error estimates are available for the generalized Crawford-Ferguson family of rotations but not for the promax and Harris-Kaiser rotations. The new CI option requests the confidence intervals for the factor loadings. You can control the coverage percentage of the confidence intervals with the ALPHA= option.

FREQ Procedure

The new FORMAT= option specifies a format for the following crosstabulation table cell values: frequency, expected frequency, and deviation. PROC FREQ also uses this format to display the total row and column frequencies for crosstabulation tables.

The new OUTCUM keyword includes the cumulative frequency and the cumulative percentage for one-way tables in the output data set when you specify the OUT= option.

GAM Procedure

The new GAM procedure, which is experimental in Release 8.1, fits generalized additive models. Generalized additive models were proposed by Hastie and Tibshirani (1990) as a way of extending the additive model to a broader range of distributional families. The additive model estimates an additive approximation to the multivariate regression function.

GAM models enable the mean of the dependent variable to depend on an additive predictor through a nonlinear link function. Many widely used statistical models belong to this class: they include additive models for Gaussian data, nonparametric logistic models for binary data, and nonparametric log-linear models for Poisson data. Besides giving the user the flexibility of nonparametric regression, generalized additive models also have the advantage of easy interpretability, which comes from modeling the regression surface as a sum of smooth terms.

LOESS Procedure

The LOESS procedure now does automatic smoothing parameter selection by default. You can use the SELECT= option to specify the criterion among AICC, AICC1, or GCV. In that case, PROC LOESS uses a smoothing parameter value that yields a local minimum of the specified criterion. In addition, if you specify the SMOOTH=*value-list* option, then PROC LOESS selects the largest value in this list that yields the global minimum of the specified criterion. PROC LOESS now also supports higher-order blending methods, which you specify with the INTERP= option.

LOGISTIC Procedure

The new ALPHA= option in the PROC LOGISTIC statement enables you to specify a default level of significance for computing confidence intervals for the MODEL, EXACT, CONTRAST, and OUTPUT statements.

The new EXACT statement enables you to perform exact conditional logistic regression for binary (dichotomous) response variables. Inference on the parameters of the specified effects (possibly including the intercept) is performed by conditioning on the sufficient statistics of all the other model parameters.

The analysis provides two tests for the null hypothesis that the parameters for the effects specified are zero: the exact probability test and the exact conditional scores test. You obtain the test statistics, the exact p-value, and a mid p-value, which adjusts for the discreteness of the distribution.

In addition, you can produce, for each parameter, a point estimate, a confidence interval, and a p-value for a two-sided test that the parameter is zero. You can also estimate the odds ratio. A joint test for multiple effects can be requested, and you can also output the derived distributions and summary statistics.

MI Procedure

Multiple imputation is a strategy for dealing with data sets that contain missing values. You replace each missing value with a set of plausible values that represent the uncertainty about the right value to impute. You create multiply imputed data sets, analyze them with standard analyses, and then combine the results. You produce valid statistical inferences that properly reflect the uncertainty due to the missing values.

The new MI procedure, which is experimental in Release 8.1, creates multiply imputed data sets for incomplete p-dimensional multivariate data. It offers three methods for creating the imputed data sets: the regression method, the propensity score method, and the Markov Chain Monte Carlo (MCMC) method. The procedure creates an output data set that contains m imputed versions of the original data. In each version, the missing values are replaced with imputed values. For the MCMC method, you can specify whether you want a single chain for all m imputations or a separate chain for each imputation. You can also specify the initial estimates for the MCMC method.

After analyzing your imputed data with standard procedures, you use the MIANALYZE procedure to combine the results.

MIANALYZE Procedure

The new MIANALYZE procedure, which is experimental in Release 8.1, combines the results of the analyses of m imputations and generates valid statistical inferences. The procedure uses as input either a specially structured SAS data set that contains the parameter estimates and the associated covariance matrix from each imputed data set, or a pair of specially structured SAS data sets that contain the parameter estimates and the covariance matrices of the parameter estimates, respectively.

MIXED Procedure

PROC MIXED now prints AIC and BIC in smaller-is-better forms in the "Fit Statistics" table. A finite-sample corrected version of AIC (AICC) is also included. When you specify METHOD=ML, these criteria now incorporate the effective number of fixed-effects parameters (the rank of the X matrix) in addition to the number of estimated covariance parameters. Refer to Burnham and Anderson (1998) for additional details.

MODECLUS Procedure

The MODECLUS procedure now includes a default smoothing parameter.

MULTTEST Procedure

Two new p-value adjustment methods are available: Fisher combination and Hommel. You can obtain these adjustments by specifying the FISHER_C and HOMMEL option, respectively, in the PROC MULTTEST statement. The FISHER_C option requests adjusted p-values using closed tests, based on the idea of Fisher's combination test. Hommel's (1988) method is a closed testing procedure that is based on Simes' (1986) test.

The new WEIGHT= option for the STRATA statement specifies the type of strata weighting to use when computing the Freeman-Tukey and t-tests for the mean. Valid values for the WEIGHT= option in the STRATA statement are SAMPLESIZE, HARMONIC, and EQUAL. SAMPLESIZE is the default method. It requests weights that are proportional to the within-stratum sample sizes. HARMONIC sets up weights that are equal to the harmonic mean of the non-missing within-stratum CLASS sizes; it is similar to a Type II analysis in PROC GLM. EQUAL specifies equal weights; it is similar to a Type III analysis in PROC GLM.

NLMIXED Procedure

The gamma and negative binomial distributions are now available in the MODEL statement. They are specified as *gamma(a,b)* and *negbin(n,p)*.

Only the smaller-is-better forms of AIC and BIC are now printed in the "Fit Statistics" table. A finite-sample corrected version of AIC (AICC) is also included.

PHREG Procedure

The new COVSANDWICH option in the PROC PHREG statement produces the Lin and Wei (1989) robust sandwich estimate of the covariance matrix. The specification COVSANDWICH(AGGREGATE) enables you to sum the score residuals within each ID pattern in the computation of this covariance estimate.

The cumulative hazard (intensity) function is also available when there are time-dependent explanatory variables.

SURVEYMEANS Procedure

The new DOMAIN statement requests analysis for subpopulations, or domains, in addition to analysis for the entire study population.

For Additional Information

For additional information, refer to *SAS/STAT Software: Changes and Enhancements, Release 8.1*. Syntax changes for the production procedures are also included in the SAS Help system.

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CHAPTER
26
SAS/Warehouse Administrator Software

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Faster Loading of DBMS Tables **67**
User Interface Enhancements **67**
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Experimental Software: LDAP Security Interface **69**

New Tutorial

A new *Getting Started with SAS/Warehouse Administrator Software* tutorial is now available. This tutorial shows you how to add a new Environment to your Warehouse Administrator desktop and guides you through the process of creating a sample data warehouse.

To create the data and view the tutorial, first access SAS/Warehouse Administrator by selecting the following menu path from any SAS window:

Solutions ► Development and Programming ► Warehouse Administrator

. From the SAS/Warehouse Administrator desktop, select the **`Getting Started`** icon and follow the directions.

Faster Loading of DBMS Tables

SAS/Warehouse Administrator can now generate code that supports bulk loading of DBMS tables. On the Options tab of the DBMS Table Properties window, you can specify options to the PROC APPEND statement, such as the SAS/ACCESS LIBNAME data set option BULKLOAD=.

User Interface Enhancements

- The Columns tab on the Properties window for all data stores now enables you to
  - select multiple columns for removal.
  - add an ordinal position attribute to a metadata column, to control which column appears first, second, third, and so on in the target data store.
  - sort column metadata by attribute, such as **`Name`** or **`Type`**, by clicking on the attribute label (You can also select a column and move it by clicking on the up/down arrows.)

- use the pop-up menu on the **OLAP Roles** organization chart to
  - create all possible crossings in SAS/Warehouse Administrator; the resulting table is similar to the table produced by PROC SUMMARY.
  - create all dimensional crossings and subcrossings.
- The functionality of the Columns tab has also been enhanced in the following ways:
  - When you import column metadata, you can easily skip multiple columns that have duplicate names, and you can cancel the importation of duplicate column names.
  - When you import column metadata from a source, the column order that is specified in the source is preserved. (Metadata columns that are imported from ODDs are no longer automatically sorted in alphabetic order in the target data store.)
  - When you select individual columns for import, the columns will be imported in the order that they are added to the Selected Columns list.
- You have more ways to organize data stores in the SAS/Warehouse Administrator Explorer. You can now
  - add Subjects and OLAP Groups to Data Groups.
  - add ODD Groups within other ODD Groups.
- In the SAS/Warehouse Administrator Explorer, you can now copy and paste OLAP Groups, Tables, and MDDBs. In the Explorer and the Process Editor, you can cut and paste these items.

Metadata API Enhancements

The topics in this section supersede the documentation for the corresponding metadata types in *SAS/Warehouse Administrator Metadata API Reference, Release 2.0*.

- The TABLE OPTIONS property of the WHDBMSST type has a new sublist: the APPEND sublist. The APPEND sublist contains any SAS/ACCESS LIBNAME data set options that were used to create or load the table, such as BULKLOAD=**yes**.
- Load-process options for warehouse tables, such as GENERATION LEVEL and DROP INDEXES, are now surfaced through the WHPRCLDR type and all of its subtypes. For example, you can write a SAS/Warehouse Administrator add-in that reads the load options that are specified in a table's load process and uses these options to load the corresponding table. The affected metadata types are
  - WHPRCLDR
  - WHLDRDAT
  - WHLDRDLT
  - WHLDREXT
  - WHLDRIMF
  - WHLDRINF
  - WHLDRLDT
  - WHLDRMDB
  - WHLDRODD
  - WHLDRODT
  - WHLDRSUM
  - WHLDOTBL

  - WHLDOMDD
  - WHLDOPRX
- You can use the new WHOST property to determine the operating system and version of the SAS System that are associated with a particular host. For example, you can write a SAS/Warehouse Administrator add-in that first reads the host metadata that is associated with a given data store, then uses these values to generate code that is appropriate for the operating system and the version of SAS.
- You can now write OLAP objects through the Metadata API. The following metadata types have been updated:
  - WHMDDSTR
  - WHOLPSTC
  - WHGRPOLP
  - WHOLPTBL
  - WHOLPMDD
  - WHCOLOLP
  - WHOLPDIM
  - WHOLPHIR
  - WHOLPCRS
  - WHOLPCUB.
- Metadata for columns that are selected via point and click in the Expression Builder (to be used in either a WHERE clause or a row selector) is now surfaced through the WHSUBSET and WHROWSEL types. For example, you can write a SAS/Warehouse Administrator add-in that reads the column metadata that is associated with a WHERE clause or a row selector and uses this metadata to generate the appropriate code.
- You can now update the EXTENDED ATTRIBUTES property and other properties in the WHCOLTIM type. For example, you can use an add-tool to add data mining attributes to a _LOADTM column, export the metadata for the table to Enterprise Miner software, and analyze the _LOADTM column in Enterprise Miner.
- The RUN COMMAND property in the WHJOB type has been changed from a list type to a character type to make it easier to return this property for a Job object.
- The documentation for the DBMS LIBNAME and OPTIONS properties in the WHLIBRY type has been corrected.

Experimental Software: LDAP Security Interface

The new experimental LDAP security interface enables you to define a security hierarchy for the data stores in a data warehouse. This hierarchy can be used to control access to warehouse data stores in much the same way that an operating system uses Access Control Lists (ACLs) to control access to files.

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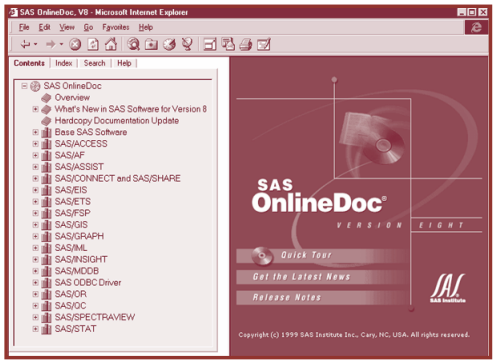

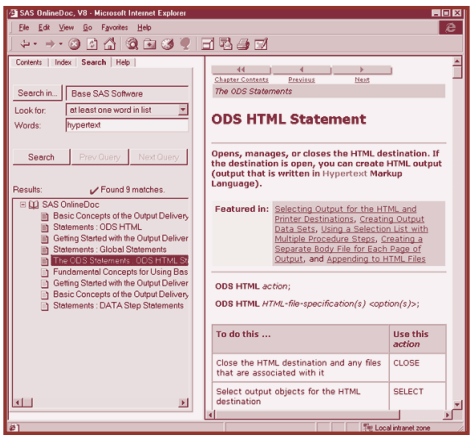

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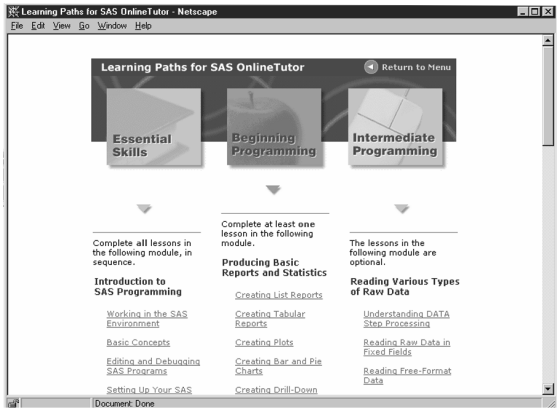

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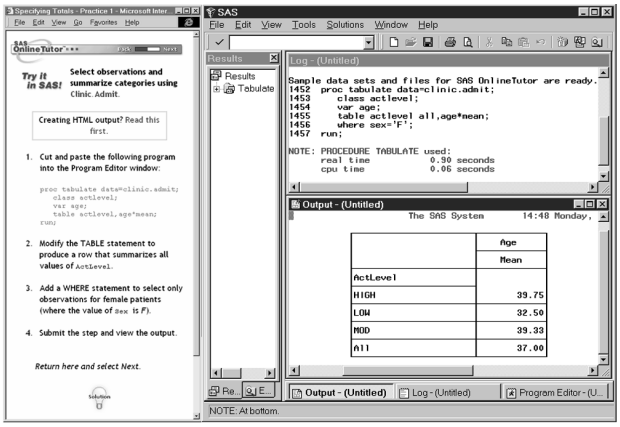

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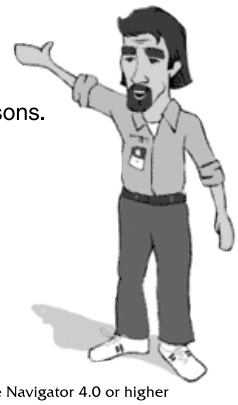

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