

IBM SPSS Statistics Batch Facility User's Guide



Note: Before using this information and the product it supports, read the general information under Notices on p. 31.

This edition applies to IBM® SPSS® Statistics 20 and to all subsequent releases and modifications until otherwise indicated in new editions.

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Overview

The IBM® SPSS® Statistics Batch Facility is a batch processing utility that is included with the SPSS Statistics Server product. This guide describes the Batch Facility and how to use it.

Introduction to the Batch Facility

IBM® SPSS® Statistics Server is client/server based. It distributes client requests for resource-intensive operations to powerful analytic server software. Typically, the client for SPSS Statistics Server is a version of SPSS Statistics running on a desktop computer. The Batch Facility is an alternative way to use the power of SPSS Statistics Server, and it runs on the server computer.

Server provides a powerful statistical analysis and data management system. When an end user works with the SPSS Statistics client, he or she can choose from two alternative interfaces: the graphical user interface of menus and dialog boxes or the command syntax language. In most cases, end users work with the user interface in the SPSS Statistics client application to do **interactive** analysis and report production.

The Batch Facility is intended for **automated production** of statistical reports. Automated production provides the ability to run analyses without user intervention. Automated production is useful if users at your site often run the same set of time-consuming analyses, such as weekly reports. The Batch Facility takes as its input a report request contained in a **command syntax file**. The Batch Facility then automatically produces statistical reports.

The Batch Facility is a streamlined application specifically designed for batch use in a server environment. Although the Batch Facility can be used in a Windows or a UNIX site, it is the only batch processing option available for a UNIX site.

Sites with SPSS Statistics clients can also use the **Production Facility** for automated production. For information about using the Production Facility, consult the *Core System User's Guide* for the SPSS Statistics client application.

This guide is intended for the analysts and IT professionals who will be using the Batch Facility to automate report production. It also contains information for users of earlier versions of SPSS Statistics. All Batch Facility users should read this chapter. Analysts should read Chapter 2. IT professionals should read Chapter 3. Users who upgraded from version 6.1.4 for UNIX should also read Appendix A.

This guide contains sufficient information for an experienced user of the SPSS Statistics command syntax language to build command syntax files for the Batch Facility. If you are new to SPSS Statistics, you may require additional documentation. For more information about SPSS Statistics documentation, please visit our Web site at <http://www.ibm.com/software/analytics/spss/> or contact your sales representative.

Users

Using the Batch Facility typically involves several types of users:

End users. The end user is the information consumer—the person who views the report of statistical results. The end user may also be the person who requested the report. The end user may get the report on paper, as a file on the operating system, or through a Web page.

Analyst. The analyst uses IBM® SPSS® Statistics syntax or the SPSS Statistics client application to create the command file that produces the desired reports. The analyst may also be responsible for distributing the reports.

IT professional. The IT professional is the person who is responsible for production of the reports. This involves scheduling report production for regular intervals, coordinating report production with the data updates, running the command files, and ensuring that the reports are available at an agreed-upon location.

Web administrator. If users at your site want to distribute reports over the Web so that end users can view them with a browser, the Web administrator is the person who creates the Web page, distributes URLs, and maintains the links to the reports.

SPSS Statistics system administrator. The SPSS Statistics administrator is the person who is responsible for installing and maintaining SPSS Statistics Server, which includes the Batch Facility.

Architecture

The Batch Facility is an application that resides in the same location as IBM® SPSS® Statistics Server. It is started from a command prompt at a terminal. It does not have a graphical user interface. It is usually launched with a command syntax file, and it also has a few command line options. (See Chapter 3.)

When the Batch Facility is launched, the following steps occur. The Batch Facility:

- ▶ Parses the command line.
- ▶ Passes the syntax to a controller that passes it to the appropriate computational modules.
- ▶ Opens the data source.
- ▶ Receives output from the computational modules.
- ▶ Formats the output according to command line options.
- ▶ Saves the output, or displays it on the screen.

Modes of Operation

You can submit commands to the Batch Facility in either **batch** or **interactive** mode.

In batch mode, you submit a command syntax file to the Batch Facility for execution. The commands in the file are read and acted upon as a batch. The Batch Facility runs unattended and terminates after executing the last command or encountering an error. You direct the output to a file.

In interactive mode, you type commands one at a time at a command prompt. The commands are executed immediately, and the Batch Facility waits for the next command. The output displays in the window from which you executed the Batch Facility.

Chapter 3 describes how to run the Batch Facility in both modes.

Workflow

Using the Batch Facility typically involves the following steps:

- ▶ **Request a report.** The end user requests a report from an analyst.
- ▶ **Create the syntax.** The analyst creates the command syntax file to produce the report. The file also specifies the data. The analyst may also specify the type of output and other Batch Facility command line options.
- ▶ **Submit the command syntax file.** The analyst submits the command file to IT professional to be run. The analyst may also specify when the report is to be run (to get the latest data) and where to store the output.
- ▶ **Run the syntax.** The IT professional runs the command file and puts output in the agreed-upon place. Usually this is done by writing a shell script or batch program.
- ▶ **Deploy the report.** The end users gets access to the report, possibly through the file system or through a Web browser link implemented by the Web administrator.

The steps are discussed in detail in the following chapters. The last two steps are repeated periodically for the lifetime of the report.

Working with IBM SPSS Statistics

This chapter describes the basic process of getting a report into automated production—from planning to writing IBM® SPSS® Statistics syntax. It is intended for the analyst who builds command syntax command files, makes specifications for how the Batch Facility should be run, and decides how reports should be distributed.

Overview of Reporting and Production

There are some things you should consider when planning reports and production.

Requesting Reports

A variety of individuals in an organization may request statistical reports. Follow the established process for submitting these requests to an analyst. The report request should take into account:

- Available IBM® SPSS® Statistics statistics and procedures
- Available output types (text, HTML, SPSS Statistics data file, and SPSS Statistics Output XML)
- Available data
- How often the report should be run

Planning Reports

Once you have received the request for a report, plan the report considering:

- The statistical procedures that correspond to the request. See the *IBM® SPSS® Statistics Command Syntax Reference* (on the product DVD) for a complete listing of procedures.
- The data to analyze, and whether data transformations are required.

Planning Production

When the design is finalized and the report is put into production, the IT professional who is running the report needs the following information from you:

- **Output type.** Decide what type of output you want. Text, HTML, IBM® SPSS® Statistics data file (.sav), and SPSS Statistics Output XML (OXML) are available. For more information, see the topic [Output](#) on p. 11.
- **Other Batch Facility options.** Decide if you want to use other Batch Facility options when the report is run. For more information, see the topic [Output Options](#) on p. 11.
- **Schedule.** Decide when and how frequently you will run the report.

- **Up-to-date data.** Coordinate report production with updates to your data source.
- **Output location and deployment.** Decide where to store the results and how to deploy them to the end users at your site.

Command Syntax Files

After you have planned the report and its production, write the command syntax file. You need to specify:

- **Data.** Create or use an existing data source. If data transformations are required, add the appropriate syntax to the job.
- **Syntax.** Decide what syntax corresponds to the statistical procedures that you want to run, and then build and verify the syntax file.
- **Output.** Decide which output format to use and which options are appropriate.

Steps in a Command Syntax Analysis

To analyze data with command syntax:

- ▶ **Data.** Get the data into IBM® SPSS® Statistics. For example, use the `GET FILE` or `GET DATA` command.
- ▶ **Transformations.** Specify data transformations or other manipulations, if any. For example, use the `COMPUTE`, `FLIP`, or `WEIGHT` command.
- ▶ **Procedures.** Specify statistical procedures, variables to analyze, and additional specifications. For example, use the `OLAPCUBES`, `FREQUENCIES`, or `TABLES` command.

Data

Your command syntax file must specify the data to be analyzed. In most cases, you will access a data file or data source; however, command syntax files can contain inline data. The following list summarizes the syntax that can be used to get data for an analysis. See the *IBM® SPSS® Statistics Command Syntax Reference* (on the product DVD) for details.

- **External and inline text data.** The `DATA LIST` command defines a text data file (a text data file contains numbers and other alphanumeric characters) by assigning names and formats to each variable in the file. Text data can be inline (entered with your commands between `BEGIN DATA` and `END DATA`) or it can be in an external file (enter the filename in the syntax).
- **Data in SPSS Statistics format.** The `GET FILE` command reads SPSS Statistics data files. For example, it reads a file that was created by the SPSS Statistics `SAVE` command.
- **Other file formats.** The `GET DATA`, `GET SAS`, and `GET TRANSLATE` commands create a working data file from files produced by other software applications.
- **Databases.** The `GET DATA` command retrieves data from a database and converts them to a format that can be used by SPSS Statistics procedures.

When you access data in external files, specify a fully qualified path to the files (for example, `GET FILE = 'C:\myfolder\mydata.sav'`) to ensure that the data will be found when the report is put into production.

Accessing Data from Databases

The Batch Facility, like IBM® SPSS® Statistics Server, uses ODBC technology to access data from databases. This means that you must define an ODBC data source before you can use the Batch Facility to access database data. The data source must be defined on the computer where you will run the report. If you have data sources defined for SPSS Statistics Server, you can use the same data sources with the Batch Facility. For more information about the SPSS Statistics Server data access technology and what you need to do to use it, see the “Data Access” chapter in *admin doc_name* (on the product DVD).

Note: `GET DATA` has a `CONNECT` subcommand that specifies a connection string for the ODBC data source. You cannot specify a new connection string that is valid directly in the syntax window—instead, use the Database Wizard in the SPSS Statistics client application to paste the command.

To use the Database Wizard to paste syntax:

- ▶ Launch the SPSS Statistics client application.
- ▶ Connect to the SPSS Statistics Server. This ensures that the pasted syntax specifies the ODBC data sources from the perspective of the server computer—that’s where the production report will be run.
- ▶ From the menus choose:
File > Open Database > New Query
- ▶ Select a data source.
- ▶ When you get to the last panel of the Database Wizard, select the Paste it into the syntax editor radio button.
- ▶ Click Finish to paste the connection string and the rest of the syntax into the syntax editor. See the SPSS Statistics client application online Help for more information about using the Database Wizard.

Syntax Rules and Guidelines

All of the procedures that are currently available in IBM® SPSS® Statistics Server are available in the Batch Facility. See the *SPSS Statistics Command Syntax Reference* (on the product DVD) for a complete listing of commands. If you’ve used an earlier version, be aware that some procedures and commands might have changed.

This section provides an overview of the SPSS Statistics command syntax. For detailed information about syntax and complete syntax specifications for specific commands, see the *SPSS Statistics Command Syntax Reference* (on the product DVD).

A command syntax file is simply a text file that contains commands. Commands are the instructions that you give the program to initiate an action. Each command begins with a command keyword (which may contain more than one word). The command keyword is followed by at least one blank space and then any additional specifications.

Interactive syntax rules. When you run the Batch Facility in interactive mode, the syntax must follow these rules:

- Commands must end with a command terminator—a period.
- Subcommands are usually separated by forward slashes (/).
- Variable names must be completely spelled out.

Batch syntax rules. By default, when you run the Batch Facility in batch mode, the following rules apply in addition to the rules listed above:

- Each command must begin in the first column of a new line.
- The command terminator (.) is optional.
- Continuation lines must be indented at least one space.

Although batch syntax rules are the default when running the Batch Facility in batch mode, there is a command line switch that allows you to enforce interactive syntax rules. For more information, see the topic [Syntax Rules](#) in Chapter 3 on p. 22.

The following is an example of the contents of a command syntax file, suitable for batch mode.

Figure 2-1
Example command syntax file

```
GET
  FILE='Employee data.sav'.
CORRELATIONS
  /VARIABLES=salary prevexp
  /PRINT=TWOTAIL NOSIG
  /MISSING=PAIRWISE.
```

Additional syntax guidelines. Consider the following points when you are creating or editing command syntax files:

- Command syntax is not case sensitive (note that filenames enclosed in quotes are case sensitive if the file system is case sensitive).
- You can use as many lines as you want to specify a command.
- You can add extra spaces or break lines at almost any point where a single space is allowed; for example, around slashes, parentheses, arithmetic operators, or between variable names.

Creating Syntax

There are three ways to build command syntax files:

- Paste command syntax from the dialog boxes in the IBM® SPSS® Statistics client application.

- Write command syntax in a text editor.
- Copy syntax from the journal file or from output.

Pasting Syntax from the IBM SPSS Statistics Client Application

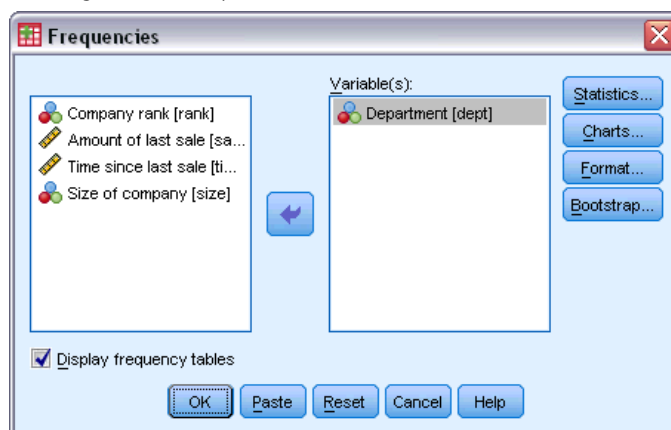
When you need to create a new command syntax file that is unlike any syntax file you currently have, use IBM® SPSS® Statistics client application to generate the syntax. This is the easiest way to build a command syntax file.

To paste syntax that will run in the Batch Facility without modifications:

- ▶ Launch the SPSS Statistics client application.
- ▶ Connect to the SPSS Statistics Server. This ensures that your view of the data sources is from the perspective of the server computer where the Batch Facility will run.
- ▶ Select the data source from the File menu. For example, you can open SPSS Statistics data files or create a query to a database.
- ▶ On the dialog that opens for the data source, make selections and click Paste.
- ▶ Run the syntax to open the data source. This gives you access to the names of the variables in the data.
- ▶ Open the dialog box for the appropriate procedure.
- ▶ Make selections in the dialog box.
- ▶ Click Paste to paste the syntax that corresponds to your selections.
- ▶ Repeat until you have pasted the syntax for all of the procedures that you require.
- ▶ Run the syntax and check that it produces the results that you want.
- ▶ Save the syntax file.

You can edit the contents of the syntax window if necessary. For complete documentation of the command language, refer to the *Command Syntax Reference*. For information about using the SPSS Statistics client application, consult the *Core System User's Guide*.

Figure 2-2
A dialog box with a paste button



Writing Syntax in a Text Editor

When you need to create a new command syntax file that is unlike any syntax file and you don't have the IBM® SPSS® Statistics client application at your site, you need to write your own syntax. Open a text editor and type the syntax. Use the *SPSS Statistics Command Syntax Reference* (on the product DVD).

Copying Syntax from an Output File

When you need to make a minor modification to an existing command syntax file, one way to do this is to edit the output. By default, each command appears in the output immediately before its output (note that you can turn this feature off with the `SET PRINTBACK OFF` command).

To copy syntax from an output file:

- ▶ Use the Batch Facility to run the existing command syntax file and specify text output.
- ▶ Open the output file with a text editor.
- ▶ Delete the output and line numbers from the file.
- ▶ Modify the syntax as desired.
- ▶ Save the file with a new name.

Figure 2-3
Unedited output file

```

7  SET LIST='/home/users/development/mcnancy/warning.txt'.
31 Oct 00
>Warning # 802 on line 7 in column 5. Text: LIST
>You have attempted to use a SET subcommand which is obsolete.
8  GET
9  FILE='Employee data.sav'.
10 FREQUENCIES
11  VARIABLES=gender
12  /ORDER= ANALYSIS .
13

```

```

14 * End of INCLUDE nesting level 00.
Frequencies
Statistics
Gender

```

N	Valid	474
	Missing	0

```

Gender

```

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	216	45.6	45.6	45.6
	Male	258	54.4	54.4	100.0
	Total	474	100.0	100.0	

```

15
14 command lines read.
0 errors detected.
1 warnings issued.
1 seconds elapsed time.
End of job.

```

In this example, we also removed the `SET` command because it had an invalid subcommand.

Figure 2-4

Edited output file ready to be used as syntax

```

GET
FILE='Employee data.sav'.
FREQUENCIES
VARIABLES=gender
/ORDER=ANALYSIS.

```

Designing a Profile

There may be some syntax that you want to run automatically every time the Batch Facility runs. For example, you may want to run certain `SET` commands to configure your output. You can run commands automatically by creating a *profile.sps* file on Windows or a *.profile.sps* file on UNIX. For more information, see the topic [Using an Automatic Batch Facility Profile](#) in Chapter 3 on p. 26.

Verifying Syntax

Before you put your command syntax file into production, you should verify that it runs correctly and produces the results that you expect. To do this, you can:

- Run the command file from a syntax window in the IBM® SPSS® Statistics client application.. Launch the SPSS Statistics client application, open your syntax file, and run it.

or

- Run the Batch Facility in interactive mode. Start the Batch Facility in interactive mode and enter one line of syntax at a time, or use input redirection to input the syntax file. For more information, see the topic [Working in Interactive Mode](#) in Chapter 3 on p. 16.

Output

When your command syntax file is put into production, the person who runs it needs to know what output options to use on the command line.

Output Options

The Batch Facility allows you to control output:

- **Type.** Choose between text, HTML, IBM® SPSS® Statistics data file, and SPSS Statistics Output XML.
- **Content.** Choose to suppress or display some types of output.
- **Appearance.** Choose formatting options, such as page breaks and column widths.

Deploying Reports

The Batch Facility can be used to deploy **static** HTML reports on an intranet or the Internet. End users can only view static reports—they can't interact with them.

Deploying static reports with the Batch Facility involves a cooperative effort among the analyst, the IT professional, and the Web administrator.

To deploy a static report on the Web:

- ▶ The analyst designs the report and creates a command syntax file to produce it.
- ▶ The analyst specifies HTML as the output type, a production schedule, and a location for the HTML output. (The production schedule isn't needed if the report will be produced only once.)
- ▶ The IT professional uses the Batch Facility to run the command syntax file according to the schedule and put the HTML output in the agreed-upon location. Usually, this is done by writing a shell script or batch program.
- ▶ Working with the analyst or the IT professional, the Web administrator puts a link to the HTML report into an existing Web page or creates a new page with the link.
- ▶ The Web administrator distributes the URL to the page with a link to the end users.
- ▶ End users view the report with a Web browser.

The production schedule determines how often the report is updated. If the report is always put in the same location, the links will work after an update. The IT professional can write a program to automate production and deployment of results.

Working with the IBM SPSS Statistics Batch Facility

This chapter describes how to use the IBM® SPSS® Statistics Batch Facility. It is intended for the IT professional who is responsible for production of the reports, including scheduling report production, running the command syntax files, and ensuring that the reports are available at an agreed-upon location.

When the command syntax files are ready to be put into production, run them with the SPSS Statistics Batch Facility in batch mode. Although you can run commands in either batch or interactive mode, batch mode is appropriate for production.

On Windows, the SPSS Statistics Batch Facility is in the SPSS Statistics Server installation directory. On UNIX, it is in the */bin* subdirectory of the installation directory. The SPSS Statistics Batch Facility can be run independently from SPSS Statistics Server—you do not need to start the server to run the SPSS Statistics Batch Facility.

Before Starting the IBM SPSS Statistics Batch Facility

The IBM® SPSS® Statistics Batch Facility requires that some environment variables be set. The environment variables are shared by other IBM Corp. applications on Windows. On UNIX, they should be set in *statsenv.sh*, a script that is included in the */bin* subdirectory of the SPSS Statistics Server installation directory. The *statsenv.sh* script is called by the startup script, *statisticsb*. The system administrator should edit the environment variables on Windows or edit the UNIX script to define the environment variables and then place the script in an accessible location.

To edit the environment variables on Windows:

Note: The following steps might vary depending on your version of Windows. If you need help setting up an environment variable on Windows, refer to the Windows help.

- ▶ Open the System control panel.
- ▶ Click the Advanced tab.
- ▶ Click Environment Variables.
- ▶ Under System Variables or User Variables, click New. A system variable will apply the default for all users. A user variable will apply to a specific user.
- ▶ Specify *SPSSTMPDIR* as the variable name.
- ▶ Specify the directory in which temporary files are to be written as the variable value.

- ▶ Click OK.

To run the Batch Facility from any location on the command prompt, you also need to update the PATH system variable with the location of the SPSS Statistics Server installation directory.

- ▶ Under System Variables, select Path and click Edit.
- ▶ In the Edit System Variable dialog, update Variable value by adding a semicolon (;) and the full path to the SPSS Statistics Server installation directory.
- ▶ Click OK.
- ▶ Click OK again to close the System control panel.

To edit the UNIX script:

- ▶ Open the *statisticsb* script with a text editor. The script is in the */bin* subdirectory of the SPSS Statistics Server installation directory.
- ▶ After the first line in the file, add a line for SPSS_HOME and set it to the SPSS Statistics Server installation directory. For example:

```
SPSS_HOME=/usr/local/Server
```

- ▶ Save the edited script to a directory on the users' path (for example, */user/bin*).
- ▶ Open the *statsenv.sh* script with a text editor. The script is in the */bin* subdirectory of the SPSS Statistics Server installation directory.
- ▶ Locate SPSS_TMPDIR_DEFAULT and set it to the directory in which temporary files are to be written. This will be the default temporary file directory for all users. If individual users want to use a different directory, they can add and set SPSS_TMPDIR in their environment (for example, in a *.profile* file).
- ▶ If you are using the IBM Corp. data access technology, locate MERANT_ENVIRONMENT_SCRIPT, find the line for the technology that you are using, and set it to the location in which you installed the data access client. For example:

```
MERANT_ENVIRONMENT_SCRIPT=/opt/odbc/odbc.sh
```

- ▶ Save the edited script.

Environment Variables for the Batch Facility

The environment variables and their settings are listed in the following table. Some of these variables must be set before you run the IBM® SPSS® Statistics Batch Facility.

Table 3-1
Environment variables

Variable	Definition	Windows?	UNIX?
PATH	The paths needed by various Windows applications. To run the Batch Facility from any location on the command prompt, you should append the SPSS Statistics Server installation directory to the PATH variable.	Yes	No
SPSSTMPDIR	The directory in which temporary files are to be written. Select a location where you can grant users read, write, and execute permissions and with lots of disk space. On Windows, you can set this as a System (for all users) or User variable. On UNIX, users can add this variable to their environment. If you want a default for all users, use the SPSSTMPDIR_DEFAULT variable instead.	Yes	Yes
SPSSTMPDIR_DEFAULT	The directory in which temporary files are to be written. Select a location where you can grant users read, write, and execute permissions and with lots of disk space. This is the default temporary file location for all users. Individual users can override this location by setting SPSSTMPDIR in their environment.	No	Yes
MERANT_ENVIRONMENT_SCRIPT	The location in which the data access client, for Connect ODBC or the SequeLink client, is installed.	No	Yes

Working in Batch Mode

In batch mode, commands are read and acted upon as a batch, without user intervention. The Batch Facility terminates after it processes the last command in the syntax file or it encounters an error. Typically, output is redirected to a file. If the Batch Facility encounters an error, it returns a non-zero code. You can use this code to ensure that your batch jobs finished successfully.

Starting a Batch Job

To run Batch Facility in batch mode, use this command at the prompt:

```
statisticsb -f syntaxfile -type outputtype -out outputfile
```

where *syntaxfile* is replaced by the name of your command syntax file, *outputtype* is a valid output type (text, html, sav, or oxml), and *outputfile* is replaced by name of the file where the output is placed. If the file path contains spaces, the path must be enclosed in double quotes.

For example, the command:

```
statisticsb -f "C:\syntaxjobs\bank.sps" -type text -out C:\output\bank.txt
```

will run the command syntax file *bank.sps* and put text output into *bank.txt*.

One command syntax file name is allowed on the command line. Additional command line parameters are described in this guide. For more information, see the topic [Command Line Switches](#) on p. 17.

If you have a profile, the commands in the profile will be processed before the commands in your command syntax file. For more information, see the topic [Using an Automatic Batch Facility Profile](#) on p. 26.

Interrupting and Ending a Batch Job

Interrupt jobs that are taking much longer than expected. Use interrupt with caution—it terminates The Batch Facility abnormally and it may leave extra files (for example, *core*) on your system.

The Batch Facility automatically exits after it processes the last command in the syntax file. You don't need to issue any finish commands.

- ▶ **Windows.** Use the Task Manager to end the *statisticsb.exe* process.
- ▶ **UNIX.** Find the process ID of the batch job (for example, use the `ps -ef` command at the UNIX prompt) and then kill the process (for example, use `killpid` at the UNIX prompt).

Running as a Detached Process

There are several ways that you can run the Batch Facility as a detached process. For example, you can run the Batch Facility:

- **As a background process on UNIX.** Use `&` on the command line to run the Batch Facility as a background process. With the Batch Facility running in the background, you can use your terminal for other tasks. For example, to run the Batch Facility in the background, use this command at the prompt (it should be one line):

```
statisticsb -f /home/users/myhome/syntaxjobs/bank.sps -type text  
-out /home/users/myhome/output/bank.txt &
```

- **While you are logged off from UNIX.** Use `nohup` on the command line to allow the Batch Facility to continue running when you are logged off of the terminal. This is useful for jobs that take a long time. You can run them without leaving your terminal open. For example, to run the Batch Facility while you are logged off, use this command at the UNIX prompt (it should be one line):

```
nohup statisticsb -f /home/users/myhome/syntaxjobs/bank.sps -type text
```

```
-out /home/users/myhome/output/bank.txt
```

- **As a scheduled process.** On UNIX, use `at` or `cron` to run the Batch Facility at whatever time and date you specify. See the manual pages of your UNIX system for details. On Windows, you can use the `at` command or you can configure a scheduled task with the Scheduled Tasks control panel.

Working in Interactive Mode

During an interactive session, the Batch Facility prompts you, and you respond with commands or data. When you terminate a command, it is executed immediately and the results are displayed on your screen. As discussed earlier, interactive mode is useful for verifying that the syntax is correct. It is not useful for running production jobs.

Starting an Interactive Session

To start the Batch Facility in interactive mode, use this command from the prompt:

```
statisticsb
```

If you have a profile, it will be executed before you see the Batch Facility interactive prompt. For more information, see the topic [Using an Automatic Batch Facility Profile](#) on p. 26.

Interactive Prompts

The Batch Facility presents one of the following prompts, depending on the status of your command entries:

- `STATISTICS>` is the command level prompt. The system expects a command. This is the prompt that the Batch Facility presents when it starts.
- `CONTINUE>` is the continuation line prompt. The system expects you to continue your command from the previous line because the previous line did not include the command terminator. Either continue your command, or, if your command is complete, press Enter.
- `DATA>` is the inline data prompt. The Batch Facility presents this prompt after a `BEGIN DATA` command has been entered. Enter the inline data. When you are finished, enter the `END DATA` command. You will be returned to the `STATISTICS` prompt.

Command Line Continuation

If your commands are long, for readability you may want to find a natural breaking point in your command, press Enter, and continue on the next line.

```
STATISTICS> frequencies variables=testvar1 testvar2 testvar4  
CONTINUE> testvar7 testvar11 /statistics=all.
```

Command Terminator

Use a command terminator to complete your command. The command terminator causes the Batch Facility to process the command. The default command terminator is a period.

Interrupting and Ending an Interactive Session

You can interrupt command processing by pressing Ctrl+C. This is useful when you've entered a command that is taking a long time and isn't what you need. Use interrupt with caution—it can affect your working data. It is safest to restart the session after an interruption.

End the Batch Facility session with a `FINISH` command. `FINISH` closes the Batch Facility and returns you to the command prompt.

Command Line Switches

Command line switches are optional parameters that you can specify when you start the Batch Facility. With command line switches, you can tell the Batch Facility:

- What input and output files to use.
- What type of output to produce.
- How to format the output.
- What type of output items to include in the output.
- What type of pivot table output to produce.
- Which pivot tables to produce.
- Which locale and language to use when producing the output.

All command line switches, except `-f`, apply to both modes (`-f` starts the Batch Facility in batch mode). Some switches are available regardless of output type; others depend on which kind of output you have requested. A summary of the switches appears in this guide. For more information, see the topic [Summary](#) on p. 24.

About the figures: The examples shown in the figures were produced with the following syntax, using the example Employee Data file included with IBM® SPSS® Statistics Server:

```
SORT CASES BY gender jobcat .  
SPLIT FILE  
  LAYERED BY gender jobcat .  
DESCRIPTIVES  
  VARIABLES=salary salbegin  
  /STATISTICS=MEAN .
```

All examples were slightly modified in a text editor.

Input and Output Files

To start the Batch Facility in batch mode, specify a command syntax file for it to process. You can redirect output to a file.

-f syntax file name. Runs the Batch Facility in batch mode and processes the command syntax in the named file. Specify one file. If the file path contains spaces, enclose it in double quotes. To process multiple syntax files, execute the Batch Facility multiple times. If you omit the **-f** switch, you can enter interactive commands at the the Batch Facility command prompt. (To force interactive rules in batch mode, use the **-i** switch instead. For more information, see the topic [Syntax Rules](#) on p. 22.)

-out output file name. Specifies the output file for the results of the command syntax. It works for batch mode only. If you omit it, output will go to standard output. (*Note:* On UNIX, If you want to redirect the output while in interactive mode, try the UNIX `tee` command.)

Output Type

You can produce text output, HTML output, IBM® SPSS® Statistics data file (.sav), SPSS Statistics Output XML (OXML), or SPSS Statistics Viewer file (.spv)

- type text. Produces plain text output. The output is space-separated by default. Tab-separated output is available with the **-t** switch. For more information, see the topic [Formatting Output](#) on p. 19.

Figure 3-1
Example text output

Descriptive Statistics

Gender	Employment Category		N	Mean
Female	Clerical	Current Salary	206	\$25,003.69
		Beginning Salary	206	\$12,750.75
		Valid N (listwise)	206	
	Manager	Current Salary	10	\$47,213.50
		Beginning Salary	10	\$20,121.00
		Valid N (listwise)	10	
Male	Clerical	Current Salary	157	\$31,558.15
		Beginning Salary	157	\$15,861.21
		Valid N (listwise)	157	
	Manager	Current Salary	74	\$66,243.24
		Beginning Salary	74	\$31,627.70
		Valid N (listwise)	74	
	Custodial	Current Salary	27	\$30,938.89
		Beginning Salary	27	\$15,077.78
		Valid N (listwise)	27	

- type html. Produces HTML output. If there are charts or tree diagrams in the output, these are saved as portable network graphics (PNG) files and are referenced by the HTML. Image files are saved in a separate subdirectory (folder). The subdirectory name is the name of the HTML destination file without any extension and with `_files` appended to the end. For example, if the HTML destination file is `julydata.htm`, the images subdirectory will be named `julydata_files`.

Figure 3-2
Example HTML output

Descriptive Statistics				
Gender	Employment Category		N	Mean
Female	Clerical	Current Salary	206	\$25,003.69
		Beginning Salary	206	\$12,750.73
		Valid N (listwise)	206	
	Manager	Current Salary	10	\$47,213.50
		Beginning Salary	10	\$20,121.00
		Valid N (listwise)	10	
Male	Clerical	Current Salary	157	\$31,558.15
		Beginning Salary	157	\$15,861.21
		Valid N (listwise)	157	
	Manager	Current Salary	74	\$66,243.24
		Beginning Salary	74	\$31,627.70
		Valid N (listwise)	74	
	Custodial	Current Salary	27	\$30,938.89
		Beginning Salary	27	\$15,077.78
		Valid N (listwise)	27	

- **type sav.** Produces SPSS Statistics data files. This is a binary file format. The output can include only one pivot table or multiple tables with the same structure. Each column of a table becomes a variable in the data file. If the output contains multiple tables with different structures, use the `-keep` switch to specify the name of the table that you want in the SPSS Statistics data file. For more information, see the topic [Controlling Pivot Tables by Name](#) on p. 21. For more information about this output type, refer to the OMS command in the *SPSS Statistics Command Syntax Reference* (on the product DVD). Use the `.sav` file extension for the output file.

- **type oxml.** Produces SPSS Statistics Output XML, which is XML that conforms to the `spss-output.xsd` schema. For information about OXML and the `spss-output.xsd` schema, refer to the OMS command in the *SPSS Statistics Command Syntax Reference* (on the product DVD).

- **type spv.** Produces SPSS Statistics Viewer files. This is the same format as output files created and saved in the client version of SPSS Statistics.

Note: Output requested with the `OUTPUT SAVE` command is produced in addition to, and independent of, the Batch Facility output stream described above. The output type for output written by `OUTPUT SAVE` is determined by the `-type` switch. For `-type text`, `-type html`, or `-type oxml`, `OUTPUT SAVE` writes text, HTML, or SPSS Statistics Output XML respectively. `OUTPUT SAVE` ignores `-type sav` and creates HTML output instead.

Formatting Output

You can control the format and appearance of your output with the command line switches in the following table.

Table 3-2
Switches for formatting output

Switch	Description
-t	Separates text output with tabs instead of spaces.
-pb	Inserts page breaks between output from different procedures and/or between individual output items.

Switch	Description
-n <i>width</i>	Fixes the width of the columns in the table. <i>Width</i> is an integer that specifies the maximum number of characters that will appear in a column.
-rs " <i>character</i> "	Defines <i>character</i> as the character to use as the row separator for tables in text output.
-cs " <i>character</i> "	Defines <i>character</i> as the character to use as the column separator for tables in text output.

Note: Output requested with the `OUTPUT SAVE` command honors these switches.

For example, use of the `-t` switch produces the tab-separated text shown below.

Figure 3-3

Example of tab-separated text output

```
Descriptive Statistics
Gender Employment Category N Mean
Female Clerical Current Salary 206 $25,003.69
Beginning Salary 206 $12,750.75
Valid N (listwise) 206
Manager Current Salary 10 $47,213.50
Beginning Salary 10 $20,121.00
Valid N (listwise) 10
Male Clerical Current Salary 157 $31,558.15
Beginning Salary 157 $15,861.21
Valid N (listwise) 157
Manager Current Salary 74 $66,243.24
Beginning Salary 74 $31,627.70
Valid N (listwise) 74
Custodial Current Salary 27 $30,938.89
Beginning Salary 27 $15,077.78
Valid N (listwise) 27
```

Controlling Output Items

IBM® SPSS® Statistics procedures produce output items including logs, warnings, notes, output titles, page titles, pivot tables, text output, charts, trees, and models. Which items are produced depends on the procedure. You can control which items appear in the output with the command line switches and the appropriate argument(s) shown in the following table.

Table 3-3

Switches for controlling output items

Switch	Description
-notes	Produces information about how the output was created. You get the same result with <code>-show N</code> .
-show <i>L W N E G P T C R M</i>	Produces the output items that are listed in the arguments included after the switch.
-hide <i>L W N E G P T C R M</i>	Does not produce the output items that are listed in the arguments included after the switch.

Note: If you are using OMS in the syntax, the OMS command overrides these specifications for showing and hiding specific output items. Output requested with the `OUTPUT SAVE` command, however, honors these switches.

Table 3-4

Arguments and display defaults for output items

Output Item	Description	Show/hide with argument:	Displayed by default?
Log	A record of the syntax that was executed	L	Yes

Output Item	Description	Show/hide with argument:	Displayed by default?
Warnings	Warning messages that occurred when the procedure was run	W	Yes
Note	Information about how the output was created	N	No
Output title	Title connected to the output of a procedure	E	No
Page title	Title connected to a page	G	No
Pivot table	Tabular statistical output	P	Yes
Text output	Output not displayed in pivot tables	T	Yes
Charts	Charts (not applicable for text output)	C	Yes
Trees	Tree diagrams (not applicable for text output)	R	Yes
Models	Models (not applicable for text output)	M	Yes

When the output is HTML, charts, tree diagrams, and models are rendered as portable network graphics (PNG) files. If you prefer a different image format, you must use the OMS command in your syntax. OMS allows you to specify other image formats.

Controlling Pivot Table Output

Many IBM® SPSS® Statistics procedures produce layered tabular output. These tables can be manipulated with the SPSS Statistics graphical user interface, so they are called **pivot tables**. Pivot table **layers** are produced when the same table is repeated for each value of a grouping variable. Pivot table **footnotes** and **captions** are produced by syntax, or for some procedures, they are produced automatically to convey additional information about the statistical results displayed in the table.

You can control which parts of the pivot table appear in the output with the switches in the following table.

Table 3-5
Switches for pivot table output

Switch	Description
-nl	Produces only the first layer of the table. You can also use <code>-top</code> , which is just a synonym for <code>-nl</code> .
-nfc	Suppresses footnotes and captions.
-st	Produces static tables, that is, tables that cannot be pivoted.

Note: Output requested with the `OUTPUT SAVE` command honors `-nl` and `-nfc` but not `-st`.

Controlling Pivot Tables by Name

Most IBM® SPSS® Statistics procedures produce several types of pivot tables in their output. For example, the Regression procedure produces an ANOVA table, a Coefficients table, and other tables. Pivot tables produced by SPSS Statistics procedures have internal names that you can use to display specific pivot tables produced by a procedure. For example, if you want to display only

the Regression ANOVA table, you can do that on the Batch Facility command line by specifying the table's name after the `-keep` switch.

You can control which of a procedure's pivot tables appear in the output with the following switches and the appropriate table name(s):

Table 3-6
Switches for pivot table names

Switch	Description
<code>-keep table name(s)</code>	Produces the procedure pivot tables that are named after the switch.
<code>-drop table name(s)</code>	Does not produce the pivot tables that are named after the switch.

Note: Output requested with the `OUTPUT SAVE` command honors these switches.

You can use the SPSS Statistics client user interface to find table names:

- ▶ Use the SPSS Statistics client user interface to produce the output of interest.
- ▶ In the output window outline pane, right click on the outline pane entry for the table.
- ▶ From the context menu choose Copy OMS Command Identifier.
- ▶ Paste the copied OMS command identifier into any text editor (or a syntax window).
- ▶ Right-click the outline pane entry again and choose Copy OMS Table Subtype.
- ▶ Paste the copied OMS table subtype after the OMS command identifier. At this point, you have something that looks like this:

```
'Command Identifier' 'Subtype Name'
```

- ▶ Between the command identifier and the subtype name, insert `_Table_`.
- ▶ Remove the single quotes and any spaces in the identifier and subtype names.

The final result is the unique table name, which has the general form:

```
CommandIdentifier_Table_SubtypeName
```

Syntax Rules

By default, when you run the Batch Facility in batch mode, the command syntax file must follow batch syntax rules. You can force the Batch Facility to use interactive syntax rules instead. Using this switch is required if the syntax file includes `BEGIN PROGRAM-END PROGRAM` and/or `BEGIN GPL-END GPL` syntax blocks.

- **i** Force the Batch Facility to use interactive syntax rules in batch mode.

For more information about the difference among interactive and batch syntax rules, refer to Syntax Rules and Guidelines on p. 6.

Error Handling

By default, when you run Batch Facility in batch mode, the Batch Facility stops processing when it encounters certain errors such as empty input files or empty selections. You can change the default so that the Batch Facility continues to run when it encounters these errors.

Use the `-k` switch to continue to execute commands even after certain errors. It will stop only when there are syntax errors.

Controlling Locale, Language, and Encoding

The Batch Facility uses the **locale** of the server computer to do certain tasks correctly. For example, it uses locale for sort order and to select the appropriate decimal delimiter. In most cases, the Batch Facility will automatically detect the server's locale. Furthermore, the Batch Facility uses English as the default **language** for error messages and other output.

If the default settings prove unsatisfactory, you can override them using the following command line switches:

Table 3-7
Switches for languages and locales

Switch	Description
<code>-LC_ALL locale</code>	Sets the locale for the Batch Facility. Use the appropriate locale name for your operating system. <ul style="list-style-type: none"> ■ On UNIX, you can get a list of locales that are available on your system by typing <code>locale -a</code> at the UNIX prompt. ■ On Windows, you can use the Regional and Language Options control panel to temporarily change to the locale you desire. Then issue the <code>SHOW LOCALE</code> command in the Batch Facility.
<code>-language de en es fr it ja ko pl ru zh_CN zh_TW</code>	Sets the language for error messages and other output. You can choose from languages available in the IBM® SPSS® StatisticsServer installation directory on Windows or in the <code>/bin</code> subdirectory of the installation directory on UNIX.
<code>-encoding windows</code>	Specifies an encoding subdirectory where error message and string table files are located. The encoding subdirectory is in the language subdirectory specified by <code>-language</code> . Currently, only Windows encoding is available.

Alternatively, if the Batch Facility doesn't detect the server's locale, try updating the Regional Options control panel on Windows.

Command Line Examples

Batch text output. Submits a command syntax file to the Batch Facility to be processed in batch mode and directs text output to a file:

```
statisticsb -f tables.sps -out tables.txt
```

Batch HTML output. Submits a command syntax file to the Batch Facility to be processed in batch mode and directs HTML output to a file:

```
statisticsb -f tables.sps -type html -out tables.htm
```

Interactive mode. Runs the Batch Facility in interactive mode:

```
statisticsb
```

Interactive syntax rules. Runs the Batch Facility using interactive syntax rules in batch mode (needed for BEGIN PROGRAM-END PROGRAM and BEGIN GPL-END GPL syntax blocks):

```
statisticsb -f myprogramblock.sps -i
```

Tab-separated text. Produces tab-separated text output:

```
statisticsb -f tables.sps -t -out tables.txt
```

Custom row and column separators for text tables. Uses a blank as the row separator and “+” as the column separator for tables in text output:

```
statisticsb -f tables.sps -rs " " -cs "+" -out tables.txt
```

Suppress output items. Outputs only pivot tables, suppresses all other output items. Any output items that do not appear in a show-or-hide list revert to the default display, so the -show P is not strictly required—it is there for clarity.

```
statisticsb -f tables.sps -show P -hide T -out tables.txt
```

Suppress pivot table layers. Outputs only the first layer of the pivot table.

```
statisticsb -f tables.sps -nl
```

Produce only the Regression ANOVA tables. Outputs only Regression ANOVA tables.

```
statisticsb -f regr.sps -keep Regression_Table_ANOVA
```

Summary

Table 3-8
Summary of command line switches

Switch	Affects output type	Parameter	Description	Default
-f	na	command syntax filename	Name of the command syntax file to run in batch mode. Must be the first switch on the command line. Omit for interactive mode.	none
-type	na	text html sav oxml	Type of output. Must be the second switch on the command line.	text

Switch	Affects output type	Parameter	Description	Default
-hide	text, HTML, and OXML	L W N E G P T C R M	Do not produce the specified object.	For more information, see the topic Controlling Output Items on p. 20.
-show	text, HTML, and OXML	L W N E G P T C R M	Produce the specified object.	For more information, see the topic Controlling Output Items on p. 20.
-notes	text, HTML, and OXML	na	Produce information about how the output was created.	Do not show notes
-nfc	text	na	Do not produce table footnotes and captions. Omit to get footnotes and captions.	Produce footnotes and captions
-nl	text, HTML, and OXML	na	Do not produce all table layers (produce the top layer only). Omit to get all layers.	Produce all layers
-top	text, HTML, and OXML	na	Same as -nl.	See -nl
-drop	text, HTML, and OXML	name(s) of tables	Do not produce the specified pivot table(s).	Produce all tables for a procedure
-keep	text, HTML, and OXML	name(s) of tables	Produce only the specified pivot tables for a procedure. Do not produce the rest of the procedure's tables.	Produce all tables for a procedure
-pb	text	na	Page breaks. Omit for no page breaks.	No page breaks
-t	text	na	Tab-separated output. Omit to get space-separated output.	Space-separated
-n	space-separated text	integer (the maximum number of characters for table column width)	Omit for automatic sizing of column width.	Automatic sizing
-rs	space-separated text	character to use as the row separator in tables (specify the character in quotation marks)	Omit to use _ as the row separator.	“ ” _
-cs	space-separated text	character to use as the column separator in tables (specify the character in quotation marks)	Omit to use as the column separator.	“ ”

Switch	Affects output type	Parameter	Description	Default
-i	text, HTML, and OXML	na	Forces the Batch Facility to use interactive syntax rules in batch mode.	Use batch syntax rules in batch mode
-k	text, HTML, and OXML	na	Allows the Batch Facility to continue processing after some errors.	Stop processing when an error is encountered
-LC_ALL	text, HTML, and OXML	server locale	Specifies the locale that the Batch Facility should use when producing output.	The default setting for the server computer
-language	text, HTML, and OXML	de en es fr it ja ko pl ru zh_CN zh_TW	Specifies the language used for error messages and other output.	English
-encoding	text, HTML, and OXML	windows	Specifies encoding used for error messages and other output. Only Windows encoding is currently available.	Windows
-out	na	output file name	Name of the output file. Use this command line switch for batch mode only (for interactive on UNIX try the tee command).	none

Using an Automatic Batch Facility Profile

If there are IBM® SPSS® Statistics commands that you want to run every time you run the Batch Facility (for example, SET commands), you can put them into a file named *profile.sps* on Windows and *.profile.sps* on UNIX. This file is a simple text file that contains the command syntax that you want to execute every time you start the Batch Facility. The Batch Facility looks for *profile.sps* in the same directory from which the Batch Facility is run.

Figure 3-4

Example of a *.profile.sps* file

```
SET
PRINTBACK OFF
MESSAGES OFF
EPOCH=1948
LENGTH=24
HEADER=NONE.
```

The commands in the example do the following:

- PRINTBACK OFF prevents command syntax from appearing in text output.
- MESSAGES OFF prevents summary messages (for example, the number of commands processed) from appearing in text output.
- EPOCH=1948 defines the starting year of a 100-year span for two-digit dates.

- `LENGTH=24` sets the maximum page length to 24 lines.
- `HEADER=NONE` suppresses headings in text output and starts a new page where the header would have appeared.

Accessing Data

Data files. When the command syntax accesses data in external files, the analyst has specified a fully qualified path to the files. If this doesn't work, change the path in the syntax or on the computer that is used to run the production job.

Databases. The Batch Facility, like IBM® SPSS® Statistics Server, uses ODBC technology to access data from databases. This means that the ODBC data source used in the production job must be defined on the computer where you are running the job. Data sources defined for SPSS Statistics Server can be used with the Batch Facility.

Upgrading from Version 6.1.4 for UNIX

This appendix describes items that have changed, dropped, or enhanced since version 6.1.4 for UNIX.

Procedures and Commands

Since version 6.1.4 for UNIX, new procedures have been added, some procedures have been enhanced, and some commands have been dropped. See the *IBM® SPSS® Statistics Command Syntax Reference* (on the product DVD) for more information about syntax that is currently available.

Table A-1
Commands that are no longer available

GET BMDP	GET OSIRIS
GET SCSS	SAVE SCSS
NUMBERED	UNNUMBERER
GET INFORMIX	HELP
GET ORACLE	GET INGRESS
GET SYBASE	

Data and Database Access

Data files. If the command is still available, you can use your existing syntax to access data from files produced by software applications. `DATA LIST` and `GET FILE` work the same way they did in earlier versions. The `GET SAS` command has been enhanced; however, your existing syntax will work.

Database access. Database access is now supported with the `GET DATA` command. You will need to rewrite command syntax that used `GET INFORMIX`, `INGRESS`, `ORACLE`, or `SYBASE`. The `GET DATA` command has a `CONNECT` subcommand that specifies a connection string for the ODBC data source. You cannot specify the connection string directly in the syntax window—instead, use the Database Wizard in the IBM® SPSS® Statistics client application to paste the command.

To paste syntax from the Database Wizard, from the SPSS Statistics menus choose:

File > Open Database > New Query

Choose a data source and follow the prompts to select your data. When you get to the last panel of the Database Wizard, select the radio button labeled Paste it into the syntax editor. See the SPSS Statistics client application online Help for more information about using the Database Wizard.

Prompted Mode

Prompted mode is now called interactive mode in this guide. Interactive mode works the same way as the old prompted mode with a few exceptions:

- **No command line switches.** The `-p` (one page at a time) and `-t` (output to screen and file) switches are gone. You can look at output one page at a time by running the Batch Facility from an X-window and using the scrollbars. You can direct output to a file while in interactive mode by using the UNIX `tee` command. For example, the command:

```
statisticsbl tee myoutput.txt
```

allows you to get output on both screen and in the a file.

- **Obsolete commands.** `HELP` and `HOST` are not available.

Batch Mode and Existing Batch Jobs

You can schedule your Batch Facility jobs to run the same way you scheduled your IBM® SPSS® Statistics for UNIX jobs. For example, you can use the UNIX `at` command.

If you have an **profile** in a text file, `.profile.sps`, the Batch Facility will execute it. The Batch Facility looks for `.profile.sps` first in the login directory of the user who is running the Batch Facility and next in the `/bin` subdirectory of the SPSS Statistics Server installation directory. Most `SET` subcommands supported in earlier UNIX releases are supported by SPSS Statistics Server.

You might need to edit your batch script and command syntax files as described in the following sections.

Editing Batch Job Scripts

Existing scripts that run batch jobs will have to be modified. Following is a summary of the changes to the IBM® SPSS® Statistics command line:

- ▶ Change the executable name. Change `statistics` to `statisticsb`.
- ▶ Remove obsolete command line switches. Remove `-m` (no manager) and `-s` (workspace) switches from the SPSS Statistics command line—they are no longer available. The manager doesn't exist in the SPSS Statistics Server product. Workspace is now allocated automatically and dynamically.
- ▶ Add new command line switches. Add the `-f` switch before the command syntax file name—use it to replace the input redirection operator (`<`). There are additional command line switches that you may want to use. For more information, see the topic [Command Line Switches](#) in Chapter 3 on p. 17.
- ▶ If you were using the `SET LISTING` command to specify the output filename, remove it and use the output redirection operator (`>`) on the Batch Facility command line.
- ▶ Define the environment variables. Define `SPSS_HOME`, and the library path for your operating system in your environment or in the startup script. For more information, see the topic [Environment Variables for the Batch Facility](#) in Chapter 3 on p. 13.

Editing Command Syntax Files

Syntax jobs may need to be modified to remove or replace unsupported commands that cause errors. This guide lists the commands that are no longer available. You do not need to remove GRAPH commands or graph-producing subcommands—they are ignored by Batch Facility (unless you are producing XML output—XML output is an internal type of output that cannot be directly viewed by end users, it can only be displayed by some Web-based products).

Output

Many IBM® SPSS® Statistics procedures now produce layered tabular output that is suitable for formatting as HTML. These tables can be manipulated with the SPSS Statistics client application graphical user interface, so they are called **pivot tables**. Pivot table **layers** are produced when the same table is repeated for each value of a grouping variable. Most procedures also produce a table of **notes**, in addition to the statistical output. The notes table provides information about how the pivot table was created and replaces many warning and information messages that used to appear in text output.

The first time you run your existing command syntax files with the Batch Facility, we recommend that you read through the output to see if it is what you expect. Also consider the new commands and features (such as OMS)—you might want to incorporate them into your existing syntax jobs.

Creating New Command Syntax Files

The Batch Facility does not have a graphical user interface and cannot be used to paste syntax. The IBM® SPSS® Statistics client application is the recommended alternative. This and other ways to create command syntax files for the Batch Facility are discussed in this guide. For more information, see the topic [Creating Syntax](#) in Chapter 2 on p. 7..

The IBM SPSS Statistics Manager

The Batch Facility does not have this feature.

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