IBM SPSS Modeler Administration Console 15 User Guide

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Preface

IBM® SPSS® Modeler is the IBM Corp. enterprise-strength data mining workbench. SPSS Modeler helps organizations to improve customer and citizen relationships through an in-depth understanding of data. Organizations use the insight gained from SPSS Modeler to retain profitable customers, identify cross-selling opportunities, attract new customers, detect fraud, reduce risk, and improve government service delivery.

SPSS Modeler's visual interface invites users to apply their specific business expertise, which leads to more powerful predictive models and shortens time-to-solution. SPSS Modeler offers many modeling techniques, such as prediction, classification, segmentation, and association detection algorithms. Once models are created, IBM® SPSS® Modeler Solution Publisher enables their delivery enterprise-wide to decision makers or to a database.

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Appendix

Installing IBM SPSS Modeler Administration Console

The following instructions are for installing IBM® SPSS® Modeler Administration Console. For a description of Modeler Administration Console, see "Using IBM SPSS Modeler Administration Console" on p. 3.

System Requirements for Modeler Administration Console

The following requirements are needed to run Modeler Administration Console.

■ **Operating system.** Microsoft® Windows® 7 (Professional and Enterprise) 32-bit and 64-bit Editions; Microsoft Windows Vista (Business and Enterprise) with Service Pack 1 32-bit and 64-bit Editions; Microsoft Windows XP Professional with Service Pack 3 32-bit and 64-bit Editions. Windows Server 2008 (Standard and Enterprise) 32-bit and 64-bit; Windows Server 2008 R2 (Standard and Enterprise) 64-bit; Windows Server 2003® (Standard) 32-bit and 64-bit; Windows Server 2003 R2 (Standard) 32-bit and 64-bit.

Note: Modeler Administration Console can be installed only on Windows computers; however, it can administer an SPSS Modeler Server installed on any supported platform.

■ **SPSS Modeler software.** SPSS Modeler Server release 12.0 or newer installed on the network.

■ **Additional requirements.** The IBM® SPSS® Modeler Administration Console host computer must have network connectivity to the computer hosting IBM® SPSS® Modeler Server.

Installing Modeler Administration Console

To Install Modeler Administration Console

▶ Insert the SPSS Modeler Server installation disk into your disk drive. The AutoPlay feature presents a menu.

▶ On the AutoPlay menu, click *Install Modeler Administration Console* or *Install Modeler Administration Console for WIN64* depending on the platform to which you are installing, and then follow the instructions that appear on the screen.

▶ To start the console, follow the instructions under "Starting Modeler Administration Console" on p. 3.

To Use an Existing Deployment Manager Installation

If you have already installed a version of Deployment Manager to administer other server applications from IBM Corp., you can add the SPSS Modeler Server administration functionality to your existing Deployment Manager installation.

▶ Follow the procedure shown under *To Install Modeler Administration Console*, being sure to install in the same directory as your existing IBM® SPSS® Collaboration and Deployment Services Deployment Manager installation (for example, *C:\Program Files\IBM\SPSS\Collaboration and Deployment Services\4.<n>\Deployment Manager*). The installer will add the new IBM® SPSS® Modeler Server files to the existing installation.

Using IBM SPSS Modeler Administration Console

The Modeler Administration Console application provides a console user interface to monitor and configure your SPSS Modeler Server installations, and is available free-of-charge to current SPSS Modeler Server customers. The application can be installed only on Windows computers; however, it can administer a server installed on any supported platform.
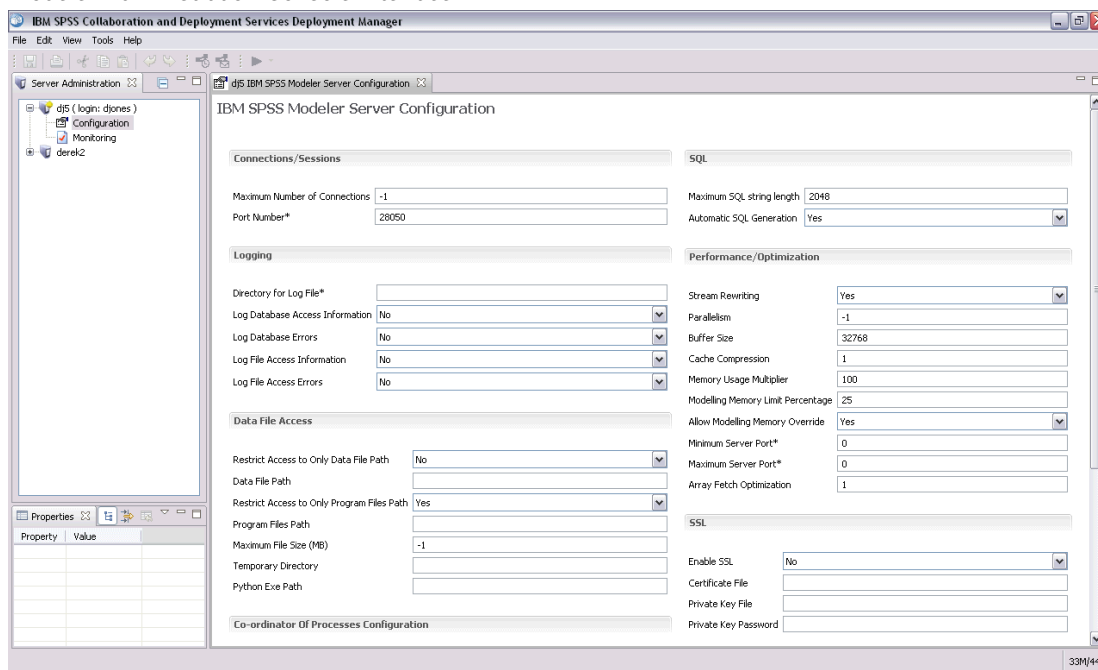
Many of the options available through Modeler Administration Console can also be specified in the *options.cfg* file, which is located in the SPSS Modeler Server installation directory under */config*. However, the Modeler Administration Console application provides a shared graphical interface that allows you to connect, configure, and monitor multiple servers.

Starting Modeler Administration Console

▶ From the Windows Start menu, choose [All] Programs, then IBM SPSS Collaboration and Deployment Services, then Deployment Manager, then IBM SPSS Modeler Administration Console <nn.n>.

When you first run the application, you see empty Server Administration and Properties panes (unless you already have Deployment Manager installed with an IBM SPSS Collaboration and Deployment Services server connection already set up). After you configure Modeler Administration Console, the Server Administrator pane on the left displays a node for each SPSS Modeler Server that you want to administer. The right-hand pane shows the configuration options for the selected server. You must first set up a connection for each server that you want to administer.

Figure 2-1
Modeler Administration Console interface

Configuring Access with Modeler Administration Console

Administrator access to SPSS Modeler Server through Modeler Administration Console is controlled with the administrators line in the *options.cfg* file, located in the SPSS Modeler Server installation directory under */config*. This line is commented out by default, so you mst edit this line to allow access to specific people, or use * to allow access to all users, as shown in the following examples:

```
administrators, "*"
administrators, "jsmith,mjones,achavez"
```

- The line must begin with administrators, and the entries must be contained in quotation marks. Entries are case sensitive.
- Separate multiple user IDs with commas.
- For Windows accounts, do not use domain names.
- Use the asterisk with care. It allows anyone with a valid user account for IBM® SPSS® Modeler Server (which, in most cases, is anyone on the network) to log in and change the configuration options.

SPSS Modeler Server Connections

You must specify a connection to each SPSS Modeler Server on your network that you want to administer. You must then log in to each server. Although the server connection is remembered across Modeler Administration Console sessions, the login credentials are not. You must log in every time you start Modeler Administration Console.

To Set Up a Server Connection

▶ Ensure that the IBM® SPSS® Modeler Server service is started.

▶ From the File menu, choose New and then Administered Server Connection.

▶ On the first page of the wizard, enter a name for your server connection. The name is for your own use and should be something descriptive; for example, *Production Server*. Ensure that Type is set to Administered IBM SPSS Modeler Server, then click Next.

▶ On the second page, enter the hostname or IP address of the server. If you have changed the port from the default, enter the port number. Click Finish. The new server connection is shown in the Server Administrator pane.

To perform administration tasks, you must now log in.

To Log in to the Server

▶ In the Server Administrator pane, double-click to select the server to which you want to log in.

▶ In the Login dialog box, enter your credentials. (Use your user account for the server host.) Click OK.

If the login fails with the message Unable to obtain administrator rights on server, the most likely cause is that administrator access has not been configured correctly. For more information, see the topic "Configuring Access with Modeler Administration Console" on p. 4.

If the login fails with the message Failed to connect to server '<server>',make sure that the user ID and password are correct, then make sure that the SPSS Modeler Server service is running. For example, under Windows, go to Control Panel > Administrative Tools > Services and check the entry for IBM SPSS Modeler Server. If the Status column does not show Started, select this line on the screen and click Start, then retry the login.

Once you log in to your SPSS Modeler Server, two options are shown below the server name, Configuration and Monitoring. Double-click one of these options.

SPSS Modeler Server Configuration

The Configuration pane shows configuration options for SPSS Modeler Server. Use this pane to change the options as desired. Click Save on the toolbar to save the changes. (Note that changing the port number requires a server restart in order to take effect.)

The options are described in the following sections, with the corresponding line in *options.cfg* given in parentheses for each option. Options that are visible only in *options.cfg* are described at the end of this section.

Connections/Sessions

Figure 2-2
Connections/Sessions settings

Maximum number of connections. (max_sessions) Maximum number of users connected at one time. A value of –1 indicates no limit.

Port number. (port_number) The port number for SPSS Modeler Server to listen on. Change if another application already uses the default (28047). End users must know the port number in order to use SPSS Modeler Server.

Logging

Figure 2-3
Logging settings

Directory for log file. (log_directory) Location of the *messages.log* file. A blank string means *[server install path]/log*. Note that you must use forward slashes.

Log database access information. (log_database_access) Add database access information to the log file.

Log database errors. (log_database_errors) Add database errors to the log file.

Log file access information. (log_file_access) Add file access information to the log file.

Log file access errors. (log_file_errors) Add file access errors to the log file.

Data File Access

Figure 2-4
Data File Access settings

Data File Access

Restrict Access to Only Data File Path	No
Data File Path	
Restrict Access to Only Program Files Path	Yes
Program Files Path	
Maximum File Size (MB)	-1
Temporary Directory	
Python Exe Path	

Restrict access to only data file path. (data_files_restricted) When set to *yes*, this option restricts data files to the standard data directory and those listed in the Data File Path below.

Data file path. (data_file_path) A list of additional directories to which clients are allowed to read and write data files. This option is ignored unless the Restrict Access to Only Data File Path option is turned on. Note that you should use forward slashes in all pathnames. Specify multiple directories using semicolons (for example, *[server install path]/data;c:/data;c:/temp*).

Restrict access to only program files path. (program_files_restricted) When set to *yes*, this option restricts program file access to the standard *bin* directory and those listed in the Program Files Path below.

Program files path. (program_file_path) A list of additional directories from which clients are allowed to execute programs. This option is ignored unless the Restrict Access to Only Program Files Path option is turned on. Note that you should use forward slashes in all pathnames. Specify multiple directories using semicolons.

Maximum file size (MB). (max_file_size) Maximum size of temporary and exported data files created during stream execution (does not apply to SAS and SPSS Statistics data files). A value of –1 indicates no limit.

Temporary directory. (temp_directory) The directory used to store temporary data files (cache files). Ideally, this directory should be on a separate high-speed drive or controller because speed of access to this directory may have a significant impact on performance. You may specify multiple temporary directories, separating each with a comma. These should be located on different disks; the first directory is used most often, and additional directories are used to store temporary work files when certain data preparation operations (such as sort) use parallelism during execution. Allowing each execution thread to use separate disks for temporary storage can improve performance. Use forward slashes in all path specifications. *Note*: Temporary files are generated in this directory during startup of SPSS Modeler Server. Ensure that you have the necessary access rights to this directory (for example, if the temporary directory is a shared network folder), otherwise SPSS Modeler Server startup will fail.

Python Exe Path. (python_exe_path) Full path to the python executable including the executable name. Note that Restrict access to only program files path may need to be set to *No* depending on the location where python is installed.

Performance/Optimization

Figure 2-5
Performance/Optimization settings

Stream rewriting. (`stream_rewriting_enabled`) Allows the server to optimize streams by rewriting them. For example, the server might push data reduction operations closer to the source node to minimize the size of the dataset as early as possible. Disabling this option is normally recommended only if the optimization causes an error or other unexpected results. This setting overrides the corresponding client optimization setting.

Parallelism. (`max_parallelism`) Describes the number of parallel worker threads that SPSS Modeler is allowed to use when running a stream. Setting this to 0 or any negative number causes IBM® SPSS® Modeler to match the number of threads to the number of available processors on the computer; the default value for this option is –1. To turn off parallel processing (for machines with multiple processors), set this option to 1. To allow limited parallel processing, set it to a number smaller than the number of processors on your machine. Note that a hyperthreaded or dual-core processor is treated as two processors.

Buffer size (bytes). (`io_buffer_size`) Data files transferred from the server to the client are passed through a buffer of this number of bytes.

Cache compression. (`cache_compression`) An integer value in the range 0 to 9 that controls the compression of cache and other files in the server's temporary directory. Compression reduces the amount of disk space used, which can be important when space is limited, and improves performance by reducing the amount of disk activity needed to create and read the cache. Compression increases processor time, but this is almost always made up by the reduction in disk access time. Note that only certain caches, those accessed sequentially, can be compressed. This option does not apply to random-access caches, such as those used by the network training algorithms. A value of 0 disables compression entirely. Values from 1 upward provide increasing degrees of compression but with a corresponding cost in access time. The default value is 1; higher values are rarely needed except where disk space is at a premium.

Memory usage multiplier. (`memory_usage`) Controls the proportion of physical memory allocated for sorting and other in-memory caches. The default is 100, which corresponds to approximately 10% of physical memory. Increase this value to improve sort performance where free memory is available, but be careful of increasing it so high as to cause excessive paging.

Modeling memory limit percentage. (modelling_memory_limit_percentage) Controls the proportion of physical memory allocated for training neural net, Kohonen, and *k*-means models. The default is 25%. Increase this value to improve training performance where free memory is available, but be careful of increasing it so high as to cause excessive paging when data spills onto the disk.

Allow modeling memory override. (allow_modelling_memory_override) Enables or disables the Optimize for Speed option in certain modeling nodes. The default is enabled. This option allows the modeling algorithm to claim all available memory, bypassing the percentage limit option. You may want to disable this if you need to share memory resources on the server machine.

Maximum and minimum server port. (max_server_port and min_server_port) Specifies the range of port numbers that can be used for the additional socket connections between client and server that are required for interactive models and stream execution. These require the server to listen on another port; not restricting the range could cause problems for users on systems with firewalls. Default value for both is –1, meaning "no restriction." Thus, for example, to set the server to listen on port 8000 or above, you would set min_server_port to 8000 and max_server_port to –1.

Note that you must open additional ports over the main server port to open or execute a stream, and correspondingly more ports if you want to open or execute concurrent streams. This is required in order to capture feedback from the stream execution.

By default, SPSS Modeler will use any open port that is available; if it does not find one (for example, if they are all closed by a firewall), an error is displayed when you execute the stream. To configure the range of ports, SPSS Modeler will need two open ports (in addition to the main server port) available per concurrent stream, plus an additional port for each connected client that has an ODBC connection. To execute more concurrent streams, you can widen the range of port numbers and open up more ports on the firewall accordingly.

Note: If you change these parameters, you need to restart SPSS Modeler Server for the change to take effect.

Array fetch optimization. (sql_row_array_size) Controls the way that SPSS Modeler Server fetches data from the ODBC datasource. The default value is 1, which fetches a single row at a time. Increasing this value causes the server to read the information in larger chunks, fetching the specified number of rows into an array. With some operating system/database combinations, this can result in improvements to the performance of SELECT statements.

SQL

Figure 2-6
SQL settings
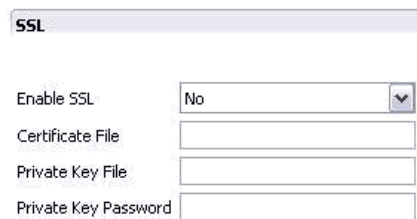
Maximum SQL string length. (max_sql_string_length) For a string imported from the database with SQL, the maximum number of characters that are guaranteed to be passed successfully. Depending on the operating system, string values longer than this may be truncated on the right without warning. The valid range is between 1 and 65,535 characters.

Automatic SQL generation. (sql_generation_enabled) Allows automatic SQL generation for streams, which may substantially improve performance. The default is enabled. Disabling this option is recommended only if the database is not able to support queries submitted by SPSS Modeler Server. Note that this setting overrides the corresponding client optimization setting; also note that for purposes of scoring, SQL generation must be enabled separately for each modeling node regardless of this setting.

SSL

Figure 2-7
SSL settings

Enable SSL. (ssl_enabled) Enables SSL encryption for connections between SPSS Modeler and SPSS Modeler Server.

Certificate file. (ssl_certificate_file) The public SSL certificate file to be loaded when the server starts.

Private key file. (ssl_private_key_file) The private SSL key file to be loaded when the server starts up.

Private key password. (ssl_private_key_password) Password key for the specified certificate. Note this key must have been signed by at least one of the Certification Authorities listed in the configured certificate file.

Coordinator of Processes Configuration

Figure 2-8
Coordinator of Processes configuration settings

Host. (`cop_host`) The hostname or IP address of the Coordinator of Processes service. The default "spsscop" is a vanity name which administrators can choose to add as an alias for the IBM SPSS Collaboration and Deployment Services host in DNS.

Port number. (`cop_port_number`) The port number of the Coordinator of Processes service. The default, 8080, is the IBM SPSS Collaboration and Deployment Services default.

Login name. (`cop_user_name`) The user name for authentication to the Coordinator of Processes service. This is an IBM SPSS Collaboration and Deployment Services login name so may include a security-provider prefix (for example: ad/jsmith).

Password. (`cop_password`) The password for authentication to the Coordinator of Processes service.

Enabled. (`cop_enabled`) Determines whether the server should attempt to register with the Coordinator of Processes. The default is *not* to register because the administrator should choose which services are advertised through the Coordinator of Processes.

Server name. (`cop_service_name`) The name of this SPSS Modeler Server instance; the default is the host name.

Description. (`cop_service_description`) A description of this instance.

Update interval (min). (`cop_update_interval`) The number of minutes between keep-alive messages; the default is 2.

Weight. (`cop_service_weight`) The weight of this instance, specified as an integer between 1 and 10. A higher weight attracts more connections. The default is 1.

Service host. (`cop_service_host`) The fully-qualified host name of the IBM® SPSS® Modeler Server host. The default of the host name is derived automatically; the administrator can override the default for multi-homed hosts.

Options Visible Only in options.cfg

administrators. Specify the usernames of those users to whom you want to grant administrator access. For more information, see the topic "Configuring Access with Modeler Administration Console" on p. 4.

allow_config_custom_overrides. Do not modify unless instructed to do so by a technical-support representative.

db_udf_enabled. If set to Y (default), causes the SQL generation option to generate user-defined function (UDF) SQL instead of pure SPSS Modeler SQL. UDF SQL usually outperforms pure SQL.

default_sql_string_length. Specifies the default width of string columns that will be created within database cache tables. String fields in database cache tables will be created with a default width of 255 if there is no upstream type information. If you have wider values than this in your data, either instantiate an upstream Type node with those values, or set this parameter to a value that is large enough to accommodate those string values.

max_transfer_size. For internal system use only; do not modify.

shell. (UNIX servers only) Overrides the default setting for the UNIX shell, for example shell, "/usr/bin/ksh". By default, IBM® SPSS® Modeler uses the shell defined in the user profile of the user who is connecting to IBM® SPSS® Modeler Server.

start_process_as_login_user. Set this to Y if using single sign-on and you are connected to a IBM® SPSS® Collaboration and Deployment Services server that does not use the same authentication method as the SPSS Modeler Server host. Also set this to Y if you are running SPSS Modeler Server as a non-root process on UNIX without a private password database.
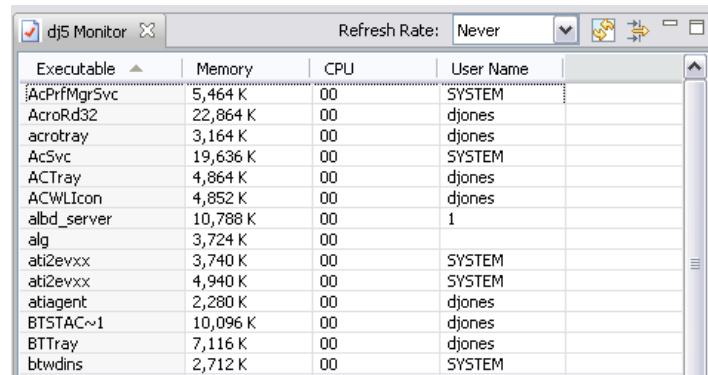
supported_sql_type_logging. For debug purposes only; do not modify unless instructed to do so by a technical-support representative.

time_ecode_execution_log. Set this to Y if you want the *message.log* file (in the *log* folder of the SPSS Modeler Server installation) to include individual execution times for each node in the stream.

SPSS Modeler Server Monitoring

The monitoring pane of Modeler Administration Console shows a snapshot of all processes running on the SPSS Modeler Server computer, similar to the Windows Task Manager. To activate the monitoring pane, double-click the Monitoring node beneath the desired server in the Server Administrator pane. This populates the pane with a current snapshot of data from the server. The data refreshes at the rate shown (one minute by default). To refresh the data manually, click the Refresh button. To show only SPSS Modeler Server processes in this list, click the Filter out non-SPSS Modeler processes button.

Figure 2-9
IBM SPSS Modeler Administration Console monitoring pane

dj5 Monitor ⊠		Refresh Rate:	Never
Executable ▲	Memory	CPU	User Name
AcPrfMgrSvc	5,464 K	00	SYSTEM
AcroRd32	22,864 K	00	djones
acrotray	3,164 K	00	djones
AcSvc	19,636 K	00	SYSTEM
ACTray	4,864 K	00	djones
ACWLIcon	4,852 K	00	djones
albd_server	10,788 K	00	1
alg	3,724 K	00	
ati2evxx	3,740 K	00	SYSTEM
ati2evxx	4,940 K	00	SYSTEM
atiagent	2,280 K	00	djones
BTSTAC~1	10,096 K	00	djones
BTTray	7,116 K	00	djones
btwdins	2,712 K	00	SYSTEM

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