

JDMS - A Java Based Alternative to Motif DMS Windows

Susanna Wallenberger, Janice Replogle, SAS® Institute Inc., Cary NC

ABSTRACT

JDMS harnesses the power of a SAS using Java technologies. JDMS is a Java applet/application that provides a minimally featured Graphical User Interface (GUI) to a SAS session. The minimal features of JDMS are perfect for those who used to rely on the ASCII driver to the SAS System using lightweight GUI capabilities. It also provides an alternative to using the X windows interface for those who use SAS from a dial-up connection. The JDMS applet/application includes the SAS windowing environment windows (Java Enhanced Editor, Log, and Output) as well as access to files on the Java client and SAS server machines. JDMS is not a replacement for the fully featured SAS windowing environment. However, its limited interface will prove valuable to users who wish to access their SAS server(s) over a network or by using the World Wide Web (WWW).

INTRODUCTION

Increasingly, users find themselves in situations where they are connected to their SAS server via a slow network connection. Whether working from the office, at home, or on the road, attempting to run any application that has a graphical user interface (GUI) with even the quickest of dialup connections can be difficult and slow. JDMS provides a lightweight, minimally featured GUI experience to the SAS System, Version 8 and beyond.

JDMS is an interface to a remote SAS session that provides the user with the three basic SAS Display Manager Windows: the Java Enhanced Editor, Output and Log windows. Files residing on the SAS server machine or on the local client machine can be opened into the Java Enhanced Editor. The contents of the editor can then be modified and submitted for processing to the SAS session that is running on the remote SAS server. Output from the SAS job is then displayed in the Output and/or Log windows. Text from the three main windows can be sent to printer or saved to a file either on the SAS server or on the local client machine.

JDMS is not an attempt to create a fully functional DMS replacement. JDMS will not run AF applications or support complex graphical or display objects.

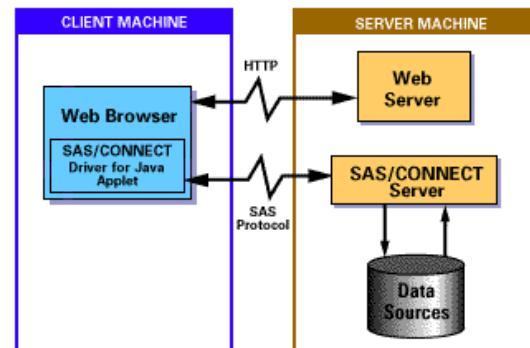
HOW DOES JDMS WORK?

JDMS operates by connecting to a SAS Spawner or a telnet port using the SAS/CONNECT® Driver for Java, starting a remote SAS session, thereby enabling users to submit code to that remote SAS session.

The user can alternatively connect to SAS using SAS Integration Technologies to access Integrated Object Model (IOM) servers. IOM provides distributed object interfaces for conventional SAS features.

SAS/CONNECT® DRIVER FOR JAVA

The SAS/CONNECT® driver for Java allows JDMS to take advantage of computing capabilities on a remote SAS server. These capabilities include starting a SAS session, connecting to that session, creating data sets, accessing existing SAS data, running procedures to analyze SAS data, and retrieving the results from within a Java applet/applications.

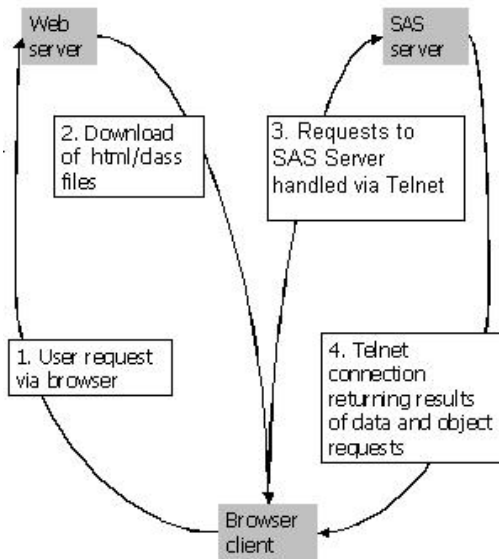


IOM INTERFACE

IOM provides distributed object interfaces for conventional SAS features. This enables development of component-based applications that integrate SAS features into an enterprise application. Client development in the Java environment enables applets, stand-alone applications, servlets, and even Enterprise JavaBeans to be written that interact with IOM servers.

APPLET DEPLOYMENT ENVIRONMENT

The following diagram shows how a client browser would access and use the JDMS applet to interface with a SAS server.



In order to run the applet version of JDMS, the Java[®] Plug-In, version 1.3 or greater must be installed on the client machine. The JDMS applet files must be installed in the web server directory on the web server host.

To run an applet, all of the applet's classes must be downloaded to the client browser in order to begin the connection process. The JDMS applet is signed with a Verisign Certificate to ensure authenticity. This allows the applet to escape the 'Sandbox' security standard for Java applets. Most recent versions of both IE and Netscape browsers can decode the Verisign Digital Signature.

When running the JDMS applet for the first time, a Java[®] Plug-In Security Warning dialog will be displayed asking for permission to run the applet code distributed by SAS Institute.

Note: Signed applets take longer to load because of the CPU-intensive verifying of the signatures of each class.

APPLICATION DEPLOYMENT ENVIRONMENT

In order to run the application version of JDMS, the Java Runtime Environment (JRE) version 1.3 or greater and the JDMS application files must be installed on the same machine. Alternatively, a Java Development Kit (JDK) can be installed. To ascertain the version of Java installed, type 'java -

version' at a command prompt. A message containing the version number of Java installed should be displayed.

JDMS can be downloaded from the SAS Institute, Inc. web site. The download file contains several jar files, which are used when running JDMS, as well as installation instructions and a user's guide. All of the jar files required for JDMS should be copied into the jre/lib/ext directory of the JRE installation.

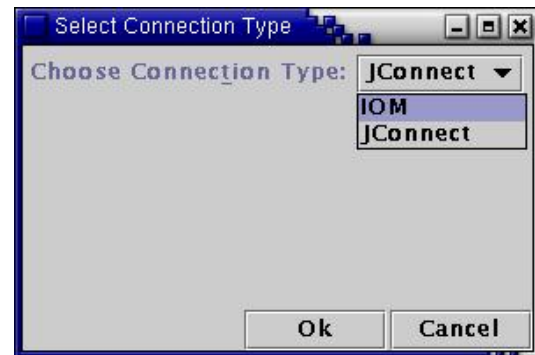
STARTING JDMS

To start the applet version of JDMS, enter the URL of the location where the JDMS files are installed: `http://YourMachineName/Path_to_JDMS_folder/`

The application version of JDMS is started by typing 'java -jar JDMS.jar' at a command prompt.

ESTABLISHING A CONNECTION

At startup, JDMS prompts the user to specify the desired connection type. The user can select from IOM or JCONNECT to connect to the SAS Server. After selecting the connection type, JDMS then displays a login dialog. The Login dialog prompts the user for the information required to login into the SAS server machine.

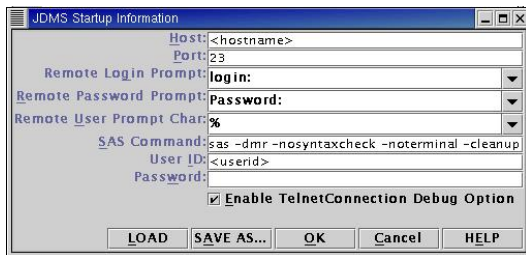


When using the SAS/CONNECT[®] Driver for Java to connect to SAS, JDMS prompts for the following information:

- **Host:** Enter the host name for the machine where the SAS server is installed.
- **Port:** Enter the number of the port to connect to (23).
- **Remote Login Prompt:** Enter the login prompt received when connecting to the SAS server machine ('login:').
- **Remote Password Prompt:** Enter the password prompt received when connecting to the SAS server machine ('Password:').
- **Remote User Prompt Char:** Enter the last character of the user's prompt received

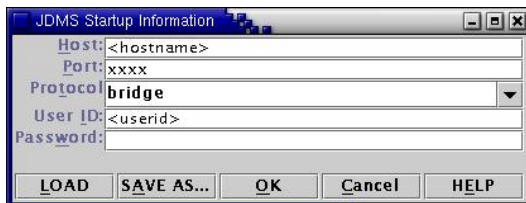
when connecting the SAS server machine ('%').

- **SAS Command:** Specify the command that is used to invoke SAS on the SAS Server machine. The following options must be specified with the SAS startup command:
 - dmr
 - nosyntaxcheck
 - noterminal
 - cleanup
- **User ID:** Enter userid.
- **Password:** Enter password.
- **Enable TelnetConnection Debug Option:** Select this option to echo the connection process to the Java console.



JDMS prompts for the following login information when connecting to the SAS IOM server:

- **Host:** Enter the host name for the machine where the SAS server is installed.
- **Port:** Enter the port number that the IOM server is listening on.
- **Connection Protocol:** Enter the connection protocol needed to establish a connection with the IOM server. For most instances bridge is the required value.
- **User ID:** Enter userid.
- **Password:** Enter password

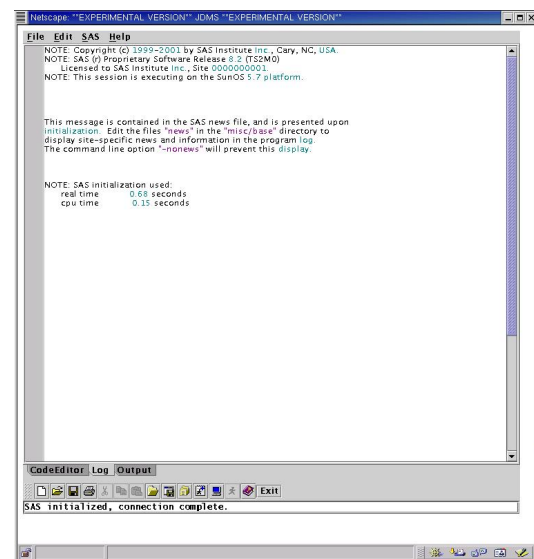


After the first invocation of JDMS, the login parameters are saved to a file. The default location of this file is the user's home directory. The information in this file will be read and re-displayed at the next invocation of JDMS. The **LOAD** and **SAVE AS** pushbuttons can be used to access a file containing login parameters from a non-default location. Password information is not saved to the file.

Note: When using an X emulator to run the application version of JDMS, it is recommended that the Windows Window Manager not be used, but one such as the Motif Window Manager (mwm) be used instead. Otherwise the GUI may not behave or appear as it should.

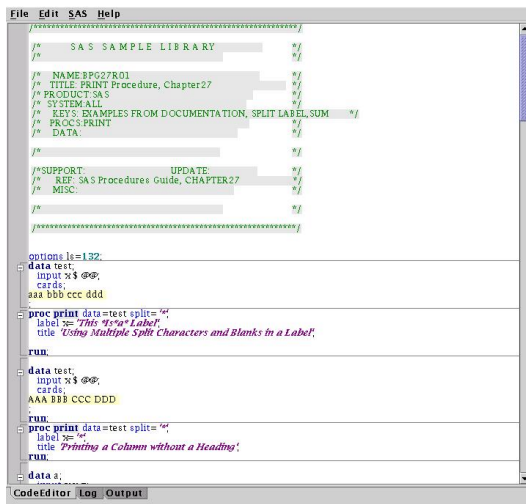
JDMS SESSION

After the startup information is provided, JDMS connects to the specified host and establishes a connection to a SAS session. It may take several seconds for JDMS to initialize. If JDMS is successful in making the connection, the message "SAS initialized, connection complete" is displayed in the JDMS status area. The Log window will display the SAS startup message. When connecting to the SAS IOM server, the message "Connected to IOM Server" will be displayed in the status area of JDMS. While running JDMS, information about the actions performed in JDMS and the SAS session are displayed in the JDMS status area.



SUBMITTING SAS CODE

The Java Enhanced Editor is a java-based text editor that allows the user to edit code. The editor is able to color SAS and HTML code based on syntax, with a completely customizable color scheme. The editor also supports code folding for the SAS language. The user may change keyboard accelerators, keywords, and display settings. The Java Enhanced Editor also supports normal text editor operations such as find/replace, undo/redo, go to a line, deletion, and navigation shortcuts.



Text from another editor or from another location can also be copied and then pasted into the Enhanced Editor.

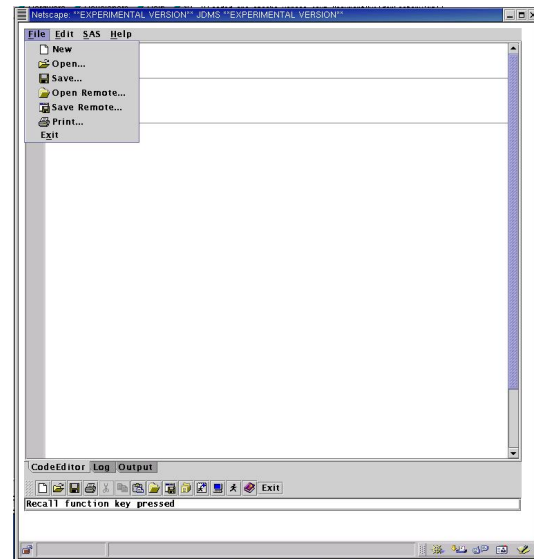
NAVIGATING JDMS

JDMS has four menus, File, Edit, SAS and Help as well as a toolbar. Both the menus and the toolbar can be used to execute commands in JDMS. The toolbar displays a subset of the menu commands.



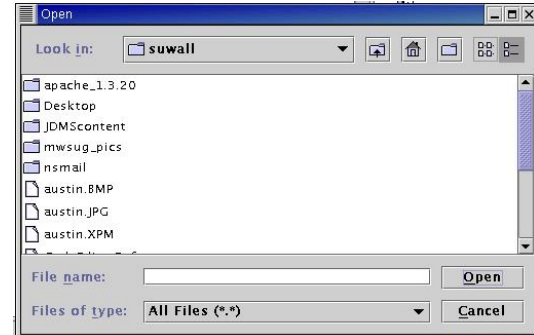
FILE MENU

The File menu contains the commands to clear the Enhanced Editor in order to write a new SAS program, open a file either from the client or the server machine, save the contents of the editor, log, or output window to a file, print, and to terminate the connection to the remote SAS session.



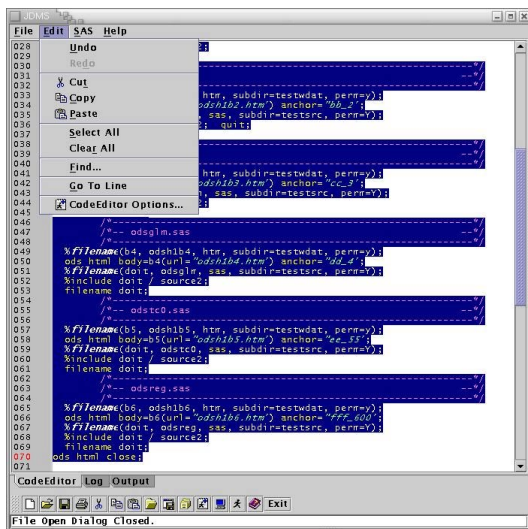
Accessing Files on the Client Machine or on the SAS Server Machine

The Open and Save buttons in the File menu provide access to files residing on the local (client) machine. The Open Remote and Save Remote buttons provide access to the remote SAS Server machine.



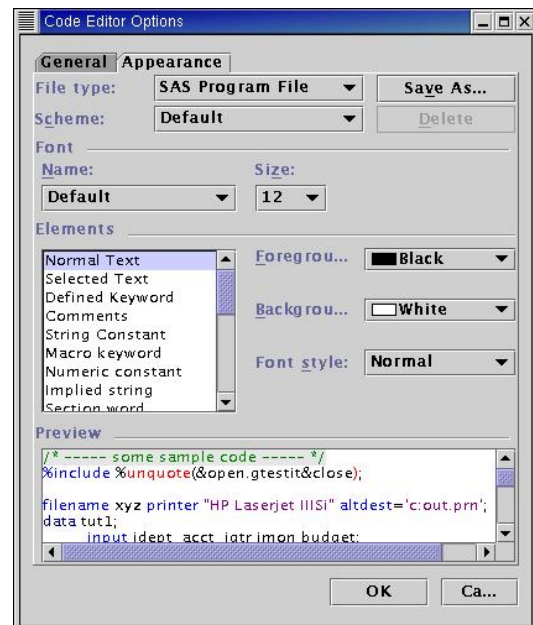
EDIT MENU

The Edit Menu contains several options, all designed to make editing code in the Java Enhanced Editor window easier, including the ability to Cut, Copy and Paste text, find text, go to a specific line number and select and clear all the text in the window.

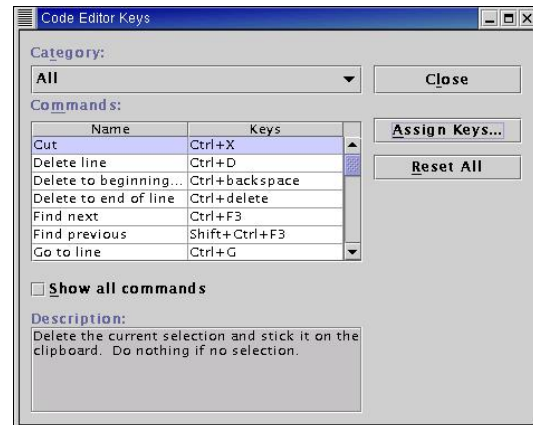
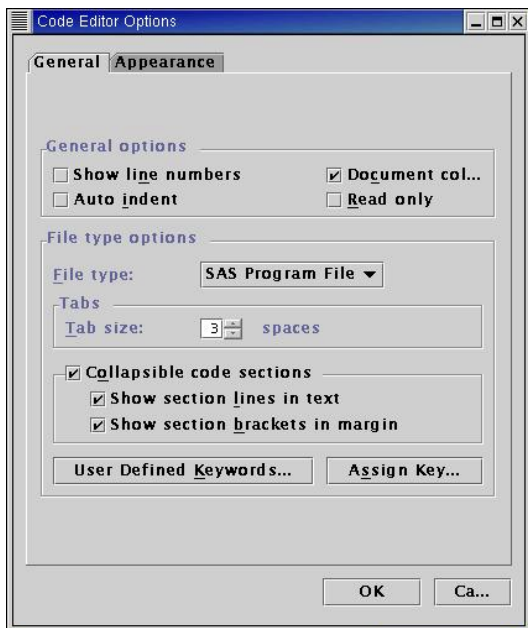


Code Editor Options

The Code Editor has an Options dialog, which allows the user to customize the Java Enhanced Editor. The user may control such settings as turning on or off line numbers, document coloring, and auto indentation. The user can also change the different displays of code folding. With the Appearance tab, the user is able to define schemes for how the text is colored for the available languages.



The Java Enhanced Editor also allows for customizable keyboard accelerators. Actions such as copy, paste, delete line, find, match brackets, and several others can be mapped to any keystroke and saved with the user preferences. The Assign Keys dialog allows the user to manage these settings, adding new ones, deleting old ones, or simply viewing all available options.



SAS MENU

The SAS Menu contains commands to view available datasets on the SAS server machine, execute commands on the server machine and submit a SAS program to the server machine.

- A SAS server running SAS System software (Version 6.12 or higher)
- Licenses for SAS/CONNECT® and SAS/IntrNet® software are required when

using a version of the SAS System Software prior to version 8.2.

- When using SAS/CONNECT®, the SAS server machine must have either the SAS spawner program or a telnet daemon available. The SAS Spawner program is provided with Base SAS and with SAS/CONNECT® software.
- IOM connection to SAS requires a license for SAS Integration Technologies software
- The Tunnel Feature (needed only if the web server and the SAS server are not installed on the same machine) is a part of the SAS/IntrNet® software.
- The Java™ Plug-in version 1.3.

Additional Requirements for the Applet Version:

- A current version of either Netscape® (version 4.08 or higher) or Microsoft® Internet Explorer (version 5.01 or higher).
- A copy of the JDMS applet files, which must be installed on the web server.
- Apache Web server, Microsoft Internet Information server, or Netscape Enterprise server.

Additional Requirements for the Application Version:

- A Java™ Development Kit or Java™ Runtime Environment (version 1.3 or higher, also known as Java™ 2 Platform, Standard Edition). This can be downloaded from <http://java.sun.com>.
- A copy of the JDMS Application files.

REFERENCES

For information about installing a JDK, JRE or the Java Plug-In, please visit <http://www.javasoft.com/products/>.

See SAS/CONNECT® Driver for Java (<http://www.sas.com/rnd/web/intrnet/>) and click on SAS/CONNECT® Driver for Java under "Components") for more information on deploying applets.

The JDMS Applet/Application can be downloaded by visiting SAS Institute, Inc.'s web site at <http://www.sas.com/products/base/>. Included in the download file is a User's Guide.

For information about Information Technologies, visit <http://www.sas.com/technologies/integration/index.html>.

For more information on the SAS spawner program, please see the SAS System documentation.

CONTACT INFORMATION

The authors may be contacted as follows:

Susanna Wallenberger
SAS Institute Inc.
SAS Campus Drive
Cary, NC 27513
Email: Susanna.Wallenberger@sas.com

Janice Replogle
SAS Institute Inc.
SAS Campus Drive
Cary, NC 27513
Email: Janice.Replogle@sas.com

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