software shall not be libel for any claim by you or any other party for damages arising out of the use, inability to use, quality, or performance of such software and users manuals, based upon principals of contract warranty, negligence, strict liability for the negligence of IISC or other tort, breach of any statutory duty, principals of indemnity or contribution, the failure of any remedy to achieve its essentials purpose, or otherwise.

Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation may not apply to you.

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About This Guide

This Guide contains information about:

- your application package, including media content, hardware requirements, and software requirements.
- how to install and configure JSheet Server, JSheet Builder, JSheet Client, Orbix, and ODBC.
- how to set up your web server to run JSheet demos.
- how to run JSServer/JSheet demos.
- the JSServer menu structure, as well as the various features of the JSServer interface.
- how to use JSServer Admin to administrate the JSServer configuration and preferences.
- server configuration and startup, as well as how to add a user.
- how to set up and run the load balancing application within JSheet.

Your Application Package

Your application package consists of the application installation CD-ROM and this *Installation and Administration Guide*. The installation process initializes the system configuration with defaults that are appropriate for most purposes.

To access the JSheet documentation, double-click the doc.htm file found in the root directory of the CD-ROM. This file contains hyperlinks to the individual user guides. For distribution purposes, this Guide and the other individual documents can be found on the CD-ROM in the doc directory. For your convenience, the documentation is provided in two formats: .htm and .pdf. The .htm format requires a browser and the .pdf format requires Adobe Acrobat Reader.

If you are installing JSheet on the Windows platform, there is a windows directory on the CD-ROM installation media that contains the subdirectories listed in the following table.

Windows Directory	Contains
\	Install files for the Windows NT JSheet products.
\builder	Install files for JSBuilder only. Double-click setup.exe in this directory and follow the installation prompts to install JSBuilder.
\client	Install files for JSClient only. Double-click setup.exe in this directory and follow the installation prompts to install JSClient.
\server	Install files for JSServer only. Double-click setup.exe in this directory and follow the installation prompts to install JSServer.

If you are installing JSheet on the Unix platform, there is a unix directory on the CD-ROM installation media that contains the subdirectories listed in the following table.

Unix Directory	Contains
\solaris	Install files for the Sun Solaris Unix platform. Execute solinst.bin and follow the installation prompts to install the JSheet products.
\hp	Install files for the HP-UX Unix platform. Execute hpinst.bin and follow the installation prompts to install the JSheet products.

The 3rdparty directory on the CD-ROM installation media contains the subdirectories listed in the following table.

3rdparty Directory	Contains
\odbc\unix	Install files for a 30-day product evaluation copy of Merant DataDirect Connect ODBC 3.50 for the Unix platform. Execute install.sh and follow the installation prompts to install. For detailed information or support regarding this software, please access the manufacturer's web site: http://www.merant.com/products/. Merant DataDirect Connect ODBC documentation can be found at: http://www.merant.com/products/datadirect/download/docs/dochome.asp. Should you need the licensed version, please contact our Sales department at http://www.jsheet.com.
\odbc\windows	Install files for a 30-day product evaluation copy of Merant DataDirect Connect ODBC 3.50 for Windows 9x and Windows NT. Double-click setup.exe and follow the installation prompts to install. For detailed information or support regarding this software, please access the manufacturer's web site: http://www.merant.com/products/. Merant DataDirect Connect ODBC documentation can be found at: http://www.merant.com/products/datadirect/download/docs/dochome.asp. Should you need the licensed version, please contact our Sales department at http://www.jsheet.com.
\orbix\unix	Install files for the optional CORBA installation. Execute orbinst.sh to install. Prior to installing, please view the readme.txt file in this directory. For detailed information or support regarding this software, please access the manufacturer's web site: http://www.iona.com/products/. Iona Orbix 3.0 documentation can be found at: http://www.iona.com/docs/orbix/orbix30.html.
\orbix\windows	Install files for the optional CORBA installation. Double-click setup.exe and follow the installation prompts to install. For detailed information or support regarding this software, please access the manufacturer's web site: http://www.iona.com/products/. Iona Orbix 3.0 documentation can be found at: http://www.iona.com/docs/orbix/orbix30.html.

The doc directory on the CD-ROM installation media contains the subdirectories listed in the following table.

Doc Directory	Contains
\doc\htm	Includes all of the end-user product documentation in htm format.
\doc\htm\jsbldrug	The *JSheet Builder User Guide*. Provides a complete reference to the functionality of JSheet Builder, the JSheet component that is used to open, edit, and save workbook files before they are published to web sites. Simple spreadsheet templates, dynamic data analysis, and comprehensive analytical applications for enterprise-wide deployment are discussed in this book.
\doc\htm\jsfunctn	The *JSheet Functions* manual. Includes all of the functions that can be used in JSheet to perform data calculations, return range information, and return information on settings, selections, and status. The JSheet functions are presented alphabetically, complete with syntax structures, return values, definitions, examples, and related functions.
\doc\htm\jsheetug	The *JSheet User Guide*. Provides step-by-step instructions on how to use the visual interface to the JSheet engine. The features and functionality of the spreadsheet matrix, menus, palettes, and optional charting module are discussed.
\doc\htm\progrmgd	The *Programmer's Guide*. This book explains how to put the JSheet applet into a web page and how to call the API from Java and JavaScript.
\doc\htm\instladm	The *Installation and Administration Guide*. This book contains information about the hardware and software requirements and how to install and configure your JSheet components.
\doc\pdf	All of the end-user product documentation in pdf format.
\doc\pdf\jsbldrug	The *JSheet Builder User Guide*. Provides a complete reference to the functionality of JSheet Builder, the JSheet component that is used to open, edit, and save workbook files before they are published to web sites. Simple spreadsheet templates, dynamic data analysis, and comprehensive analytical applications for enterprise-wide deployment are discussed in this book.
\doc\pdf\jsfunctn	The *JSheet Functions* manual. Includes all of the functions that can be used in JSheet to perform data calculations, return range information, and return information on settings, selections, and status. The JSheet functions are presented alphabetically, complete with syntax structures, return values, definitions, examples, and related functions.

\doc\pdf\jsheetug	The *JSheet User Guide*. Provides step-by-step instructions on how to use the visual interface to the JSheet engine. The features and functionality of the spreadsheet matrix, menus, palettes, and optional charting module are discussed.
\doc\pdf\progrmgd	The *Programmer's Guide*. This book explains how to put the JSheet applet into a web page and how to call the API from Java and JavaScript.
\doc\pdf\instladm	The *Installation and Administration Guide*. Contains information about the hardware and software requirements and how to install and configure your JSheet components.

System Requirements

Before you attempt to install JSheet, make certain your configuration meets or exceeds the system requirements detailed in this section. Requirements are provided for Windows NT, Sun Solaris, and HP-UX.

Windows NT Hardware Requirements

The following hardware represents the minimum requirements for installing and running JSheet on Windows NT:

- Intel Pentium-based personal computer
- Hard disk space: 40 MB for JSServer; 25 MB for JSBuilder, 10 MB for JSheet Client
- 64 MB RAM available for JSheet Client (128 MB recommended)
- 256 MB RAM available for JSServer (512 MB recommended)
- CD-ROM drive
- Video display capable of 800x600 screen resolution

Your application runs in virtual memory; available RAM directly affects the speed of the program.

Windows NT Software Requirements

Before you run the application, the following software requirements must be met:

- JSServer: Microsoft Windows NT 4.0 and web server (if supporting browser-based clients)
- JSBuilder: Microsoft Windows NT 4.0
- JSClient: JDK/JRE 1.1.4 or greater (for running Client as a Java application or within appletviewer), or a web browser supporting Java 1.1.4 or greater
- JSAdmin: JDK/JRE 1.2.2 or higher

IMPORTANT: JSheet is not supported on the Windows 2000 platform. However, at the time of this writing, there are no known issues on this platform.

Sun Solaris Hardware Requirements

The following hardware represents the minimum requirements for installing and running JSheet on Sun Solaris:

- Sparc-based computer
- Hard disk space: 40 MB for JSServer; 25 MB for JSBuilder; 10 MB for JSheet Client
- 64 MB RAM; 56 MB free disk space
- CD-ROM drive
- Video display capable of 800x600 screen resolution
- System temp directory with 50 MB of free space

IMPORTANT: If more than a few users are to be served with JSServer, a minimum of 128 MB RAM is recommended.

Sun Solaris Software Requirements

Before you run the application, the following software requirements must be met:

- JSServer: Solaris for Sparc, version 2.5 or greater and web server (if supporting browser-based clients)
- JSBuilder: Solaris for Sparc, version 2.5 or greater
- JSClient: JDK/JRE 1.1.4 or greater (for running Client as a Java application or within appletviewer), or a web browser supporting Java 1.1.4 or greater

HP-UX Hardware Requirements

The following hardware represents the minimum requirements for installing and running JSheet on HP-UX:

- PA-RISC-based computer
- Hard disk space: 32 MB for JSServer; 15 MB for JSBuilder; 5 MB for JSheet Client
- 64 MB RAM; 56 MB free disk space
- CD-ROM drive
- Video display capable of 800x600 screen resolution
- System temp directory with 50 MB of free space

IMPORTANT: If more than a few users are to be served with JSServer, a minimum of 128 MB RAM is recommended.

HP-UX Software Requirements

Before you run the application, the following software requirements must be met:

- JSServer: HP-UX 10.20 or greater and web server (if supporting browser-based clients)
- JSBuilder: HP-UX 10.20 or greater
- JSClient: JDK/JRE 1.1.4 or greater (for running Client as a Java application or within appletviewer), or a web browser supporting Java 1.1.4 or greater

Installing on Windows NT

This section explains how to install the JSheet Server, Builder, and Client, as well as Orbix, the CORBA implementation on Windows NT. For information on installing these JSheet components on Sun Solaris or HP-UX, refer to the corresponding sections later in this Guide.

To install your JSheet applications on Windows NT:

1. Insert the JSheet Products CD. If the JSheet Installation does not load automatically, manually run autorun.exe in the root directory of the JSheet Products CD.

2. Choose the product package to install: **Server, Builder**, or **Client**. You can customize your choice before completing the installation.

3. Enter your name and company name.

4. Choose the installation type and location. To customize your installation selections, choose the **Custom** option.

5. Choose the **Program** folder for your JSheet Products.

6. Enter the name of the machine on which JSServer will run, followed by the network domain. For example, enter **demo** as the machine and **jsheet.com** as the domain to specify that JSServer will run on the machine **demo.jsheet.com**.

7. Enter the ports for the Orbix daemon and Orbix server. (Retain the defaults 1570 and 1571, respectively, if you are unsure.)

8. If you are overwriting an existing installation of the JSheet products and want to retain the existing user and group permission files, choose the default **Maintain Existing Information** option when prompted.

9. Depending upon your distribution, there may be 30-day evaluation license files on your CD-ROM. If you received an evaluation version, copy the **jsserver.dat** and **jsbuilder.dat** license files from the root directory of the installation CD to the directory where JSheet is installed. (This is typically **C:/Program Files/**.) If you purchased JSheet, contact your sales representative to obtain your personalized license files.

10. The programs can be run from the **Start/Programs/JSheet 1.0** program group.

Setting Up Your Web Server to Run JSheet Demos

The **Demos** subdirectory of the **JSHEET** directory needs to be added as an available directory in your web server, either as a physical directory in your default web path or as a virtual directory. To do this, reference the directions for your specific web server software to ensure you add the directory according to the requirements of your web server. Once the **Demos** directory is available through your web server, opening the **index.html** file will provide links to the JSheet demos.

IMPORTANT: If you are copying the JSheet demo files to another location, or creating **.html** files to work with JSServer, you must reference the proper **.jar** and **.js** files. If you chose to install the Client files, the **.jar** and **.js** files also will be placed in the **JSHEET\Client** directory for your convenience. These **.jar** files can also be copied to the class path of your local browser for faster loading of the JSheet applets.

Installing JSheet Documentation

IISC provides HTML documentation for the JSheet products in the documentation directory of the CD. The files and folders in this directory can be accessed from the CD or copied to your hard drive for local access. Refer to the **docs.htm** file for information on the JSheet documentation.

Installing on Sun Solaris

This section explains how to install the JSheet Server, Builder, and Client on Sun Solaris. The JSServer executable can be run as a normal user. It is recommended that a specific user, **jsheet**, be created for this purpose.

IMPORTANT: You must be **root** to install JSheet Products.

To install your JSheet applications on Sun Solaris:

1. Run **solinst.bin** from the **/unix/solaris** directory.

2. Choose the installation location.

3. Choose the product package to install: **Server, Builder**, or **Client**. To customize your installation selections, choose the **Custom** option.

4. Enter your user and company name, the owner and group, and the server name.

   NOTE: The JSServer executable owner should be a user other than **root**. It is recommended that a specific user (**jsheet**) be created for this purpose. The owner will run the JSServer executable and will own all of the files created by JSClient. The group and owner setting is **jsheet** by default, but can be set to any valid group.

5. Enter the server name of the machine on which JSServer will run, including the network domain. For example, enter **demo.jsheet.com** as the server name to specify that JSServer will run on the machine **demo** in the domain **jsheet.com**.

6. If you are overwriting an existing installation of the JSheet products and want to retain the existing user and group permission files, choose the **Maintain Existing Information** option when prompted.

7. Copy the **jsserver.dat** and **jsbuilder.dat** license files from the root directory of the installation CD to the location where JSheet is installed. The environment variable

JSHEET must be set to the installation directory before running the JSheet Server.

After the environment is set up, use the command **$JSHEET/bin/JSServer** to start the JSheet Server. Run **$JSHEET/bin/JSBuilder** to start JSBuilder.

Setting Up Your Web Server to Run JSheet Demos

The **Demos** subdirectory of the **$JSHEET** directory needs to be added as an available directory in your web server, either as a physical directory in your default web path or as a virtual directory. To do this, reference the directions for your specific web server software to ensure you add the directory according to the requirements of your web server. Once the **Demos** directory is available through your web server, opening the **index.html** file will provide links to the JSheet demos.

IMPORTANT: If you are copying the JSheet demo files to another location, or creating **.html** files to work with JSServer, you must reference the proper **.jar** and **.js** files. If you chose to install the Client files, the **.jar** and **.js** files also will be placed in the **$JSHEET/Client** directory for your convenience. These **.jar** files also can be copied to the Class path of your local browser for faster loading of the JSheet applets.

Installing JSheet Documentation

IISC provides HTML documentation for the JSheet products in the documentation directory of the CD. The files and folders in this directory can be accessed from the CD or copied to your hard drive for local access. Refer to the **docs.htm** file for information on the JSheet documentation.

Installing on HP-UX

This section explains how to install the JSheet Server, Builder, and Client on HP-UX. The JSServer executable should be run as a normal user. It is recommended that a specific user, **jsheet**, be created for this purpose. The JSServer user owns all of the files created by Clients.

IMPORTANT: You must be **root** to install JSheet Products.

To install your JSheet applications on HP-UX:

1. Run **hpinst.bin** from the **/unix/hp** directory.

2. Choose the installation location.

3. Choose the product package to install: **Server, Builder**, or **Client**. To customize your installation, choose **Custom**.

4. Enter your user and company name, the owner and group, and the server name.

   NOTE: The JSServer executable owner should be a user other than **root**. It is recommended that a specific user (**jsheet**) be created for this purpose. The owner will run the JSServer executable and will own all of the files created by Clients. The group setting is **bin** by default, but can be set to groups like **other**.

5. Enter the server name of the machine on which JSServer will run, including the network domain. For example, enter **demo.jsheet.com** as the server name to specify that JSServer will run on the machine **demo** in the domain **jsheet.com**.

6. If you are overwriting an existing installation of the JSheet products and want to retain the existing user and group permission files, choose the **Maintain Existing Information** option when prompted.

7. Copy the **jsserver.dat** and **jsbuilder.dat** license files from the root directory of the installation CD to the location where JSheet is installed (the **$JSHEET/JSServer** and **$JSHEET/JSBuilder** directories, respectively). The environment variable JSHEET must be set to the installation directory before running the JSheet Server.

After the environment is set up, use the command **$JSHEET/bin/JSServer** to start the JSheet Server. Run **$JSHEET/bin/JSBuilder** to start JSBuilder.

Setting Up Your Web Server to Run JSheet Demos

The **HtmlDemo** subdirectory of the **$JSHEET** directory needs to be added as an available directory in your web server, either as a physical directory in your default web path or as a virtual directory. To do this, reference the directions for your specific web server software to ensure you add the directory according to the requirements of your web server. Once the **HtmlDemo** directory is available through your web server, running the **index.html** file will provide links to the JSheet demos.

IMPORTANT: If you are copying the JSheet demo files to another location, or creating **.html** files to work with JSServer, you must reference the proper **.jar** and **.js** files. If you chose to install the Client files, the **.jar** and **.js** files also will be placed in the **$JSHEET/Client** directory for your convenience. These **.jar** files also can be copied to the class path of your local browser for faster loading of the JSheet applets.

Installing JSheet Documentation

IISC provides HTML documentation for the JSheet products in the documentation directory of the CD. The files and folders in this directory can be accessed from the CD or copied to your hard drive for local access. Refer to the **docs.htm** file for information on the JSheet documentation.

Introducing JSServer

JSServer is the calculation engine that resides on the server with the web server. The JSServer interface is detailed in this section.

The JSServer Menu Bar

When JSServer is launched, the menu bar, illustrated in the following figure, is displayed.

Figure 1

The JSServer Menu Bar contains four menu items: **Server, Administration, Window**, and **Help**.

The Server Menu

The **Server** menu contains three menu items:

- **Startup.** Select **Startup** to start the server.
- **Status.** Select **Status** to display the **Server Status** dialog box; information regarding connection and configuration is contained in this dialog box.
- **Shutdown.** Select **Shutdown** to shut down JSServer. If users are connected when you select **Shutdown**, additional shutdown options (**Graceful Shutdown, Delayed Shutdown**, and **Immediate Shutdown**) are presented.

When you select **Graceful Shutdown**, a warning is issued to all connected users that the server will shut down in xx number of minutes. Once all users have logged off, the server shuts down.

When you select **Delayed Shutdown**, a warning is issued to all connected users that the server will shut down in xx number of minutes. Once the designated number of minutes has expired, the server shuts down, regardless of whether or not all users have logged off.

When you select **Immediate Shutdown**, the server shuts down without issuing a warning to connected users.

The Administration Menu

The **Administration** menu contains six menu items: **Connections, Users & Groups, Logging, Auditing, RealTime**, and **Preferences**.

- **Connections**. Select **Administration/Connections** to display open client connections, windows, and database connections. When you select **Administration/Connections**, the **Connections** dialog box is displayed.

The **Connections** dialog box contains three tabs: **Clients, Windows**, and **ODBC Clients**.

Click the **Clients** tab to display the **Client Connections**. Click the radio buttons at the bottom of the tab to display the connections ordered by user, host, or time. Use the **Terminate** button to disconnect a user, or the **Message** button to send a message to the connected user.

Click the **Windows** tab to display the **Open Books**. Click the **Show** or **Hide** button at the bottom of the tab to perform the specified action on the selected book. Check the **Apply Option To All Windows** check box to view all of the open books.

Click the **ODBC Clients** tab to display the **Database Connections**. To disconnect from a database, highlight the database and click the **Disconnect** button.

- **Users & Groups.** Select **Administration/Users & Groups** to add and remove users and groups. When you select **Administration/Users & Groups**, the **Users & Groups** dialog box is displayed.

The **Users & Groups** dialog box contains two tabs: **User Management** and **Group Management**.

Click the **User Management** tab to add or delete a user, or to set a password for a user. Click the **Group Management** tab to add, delete, or edit a group or the members of a group.

IMPORTANT: When a user is deleted in JSBuilder, the system administrator must manually delete the corresponding folder in the user directory.

- **Logging.** To define session-specific logging settings, select **Administration/Logging/Configuration** and indicate the desired settings. Session-specific settings override the global default logging settings that are defined using the **Administration/Preferences/Logging** tab. Select

Administration/Logging/Start to initiate logging. Select **Administration/Logging/Stop** to cease logging. Select **Administration/Logging/View** to display the generated log file.

When you select **Administration/Logging/View**, the **View Log File** dialog box is displayed. Click the **View The Whole Log File** radio button at the bottom right of the dialog box to display the entire log file. Click the **View Last 100 Lines** radio button at the bottom left of the dialog box to display only the last 100 lines of the log file.

- **Auditing**. To define session-specific audit trail settings, select **Administration/Audit Trail/Configuration** and indicate the desired settings. Session-specific settings override the global default audit trail settings that are defined using the **Administration/Preferences/Auditing** tab. Select **Administration/Auditing/Start** to initiate auditing. Select **Administration/Auditing/Stop** to cease auditing. Select **Administration/Auditing/View** to display the generated audit file.

When you select **Administration/Auditing/View**, the **View Audit Trail** dialog box is displayed. Click the **View The Whole Log File** radio button at the bottom left of the dialog box to view the entire audit trail log file. Click the **View Last 100 Lines** radio button at the bottom right of the dialog box to display only the last 100 lines of the audit trail log file.

- **RealTime.** When you select **Administration/RealTime,** the **RealTime** dialog box is displayed. The **Settings** tab contains configuration information and statistics regarding realtime updates. The **About** tab contains information about how to contact Investment Intelligence Systems Corporation, as well as information about your JSheet product, including the version number, serial number, and license status.

- **Preferences**. Select **Administration/Preferences** to display the **Preferences** dialog box and set global default preferences. The Preferences dialog box contains ten tabs: **Format, Workbook, Paths, Logging, Auditing, Connection**, **Environment, Delimiters, Realtime,** and **Client**.

The **Format** tab contains the options that control the appearance of the data in your worksheets. Use the **Font Name, Font Size, Font Color, Font Alignment, Font Bold, Font Italic,** and **Font Underline** settings to specify the font name, size, color, alignment, and style for all of the textual data you enter in your worksheets. The text defaults also are used for row and column headings, text in the entry bar, and text in the current cell address.

Use the **Number Format, Precision, Hide Zero, Show Commas, Show Parenthesis**, and **Negative Color** settings on the **Format** tab to specify the number format, attributes, precision, and negative number color for the numeric data you enter in your worksheets. Use the **Book Background Color** color picker to select the color you want to use as the background color for your worksheet cell grid. The default is white (**RGB(255,255,255)**).

Use the **Public Read, Public Write,** and **Public Save** settings on the **Workbook** tab to specify the default public workbook permissions. Use the **Number of Sheets** option to specify how many worksheets will be available in a workbook. A workbook can contain a maximum of 256 sheets.

Use the **Paths** tab to specify settings for the location where all user workbooks are located, where the configuration files are to be stored, and where the on-line documentation is to be installed.

Use the **Logging** tab to specify settings that control the enabling of the log file, and whether or not to log serious errors, warnings,

connections, client requests, server responses, debug messages, and callbacks.

Use the **Auditing** tab to specify settings that control enabling of the audit file, and whether to audit connections, book manipulation, sheet manipulation, data manipulation, database activity, and range observers.

Use the **Connections** tab to specify the service identifier and port, the number of client retries allowed, the bind port, and the listen on port.

Use the **Environment** tab to specify the settings to customize the display and behavior of the JSheet environment. Preferences include settings that determine whether a new workbook is created at launch; whether column headings are labeled with numbers or letters; the behavior of the DELETE key, the ENTER key, and the LEFT, RIGHT, UP, and DOWN arrow keys; the style of dialog boxes invoked; whether keyboard shortcut keys appear on the JSheet menus; the location of the toolbar; the placement of windows on your desktop between JSheet sessions.

Use the **Delimiters** tab to specify how your text is delimited for exported files and the default end-of-line separator.

Use the **Realtime** tab to specify the length of time, in seconds, that a cell remains highlighted when it is updated due to a real-time value change.

Use the **Client** tab to control the display of the components of the workbook window (the format bar, formula bar, and status bar). Select an option from the **Cell Update Tracking** dropdown to activate the tracking of numeric changes made to your worksheets. Use the **Broken Connection Timeout** setting to select the number of seconds at which a broken connection is timed out. Use the **Rollover Year** option to specify the 100-year period for which 2-digit year input is allowed.

The Window Menu

The **Window** menu contains three menu items: **Show All, Hide All**, and **Arrange Windows**. In addition, a list of any open windows or dialog boxes is displayed at the bottom of the Window menu.

- **Show All**. Select **Window/Show** All to show all of the workbooks that currently are open by users who are connected to the server.
- **Hide All**. Select **Window/Hide All** to hide all of the shown workbooks.
- **Arrange Windows**. Select **Window/Arrange Windows** to display the shown workbooks on the server in tiled, stacked, or side-by-side arrangements. Select a window from the window list to make that window the current window.

The Help Menu

The **Help** menu contains four menu items: **Help, About JSServer, License Information**, and **License Configuration**.

- **Help**. Select **Help/Help** to access the JSheet online documentation files.
- **About JSServer**. Select **Help/About JSServer** to display the JSheet product logo and copyright information.
- **License Information**. Select **Help/License Information** to display flex licensing and contact information. When you select **Help/License Information**, the **License Information** dialog box is displayed. This dialog box contains three tabs: **Information, Contact IISC**, and **View License**.

  Click the **Information** tab to display flex licensing information. Click the **Contact IISC** tab to display contact information for IISC. Internet addresses and telephone numbers for the London,

New York, Kansas, Paris, and Toronto offices are listed. Click the **View License** tab to display the IISC license file.

- **License Configuration**. Select **Help/License Configuration** to display the **License Configuration** dialog box. Use the controls in this dialog box to indicate the product license type, number of users, host id, authorization code, and license expiration date. Be certain you have no open windows or workbooks, nor any connections with open workbooks, before you select **Help/License Configuration**. If any open windows or workbooks exist, an error message is displayed when you select this menu command.

Introducing JSServer Admin

JSServer Admin is a client tool for administrating the JSServer configuration preferences. Using JSServer Admin, the administration of JSServer can be controlled from a remote location. This provides an extra layer of security, as well as increased extensibility to the product.

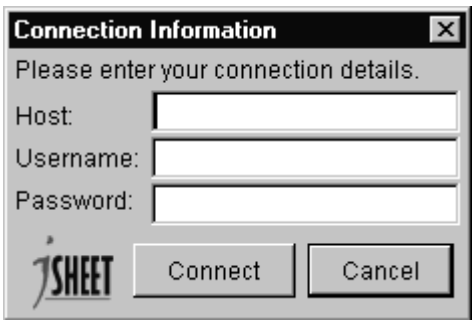
There are two methods of execution available to launch JSServer Admin. The first method is to double-click the **JSAdmin.jar** file icon. The second method is to run the application from the command line. To run JSServer Admin from the command line, use the command:

```
java –jar JSAdmin.jar
```

NOTE: A JSDK or JRE of version 1.2.2 or higher must be used.

When JSServer Admin launches, the JSServer Admin window is displayed, followed by the **Connection Information** dialog box, an example of which is shown in the following illustration.

Figure 2



To connect to the server:

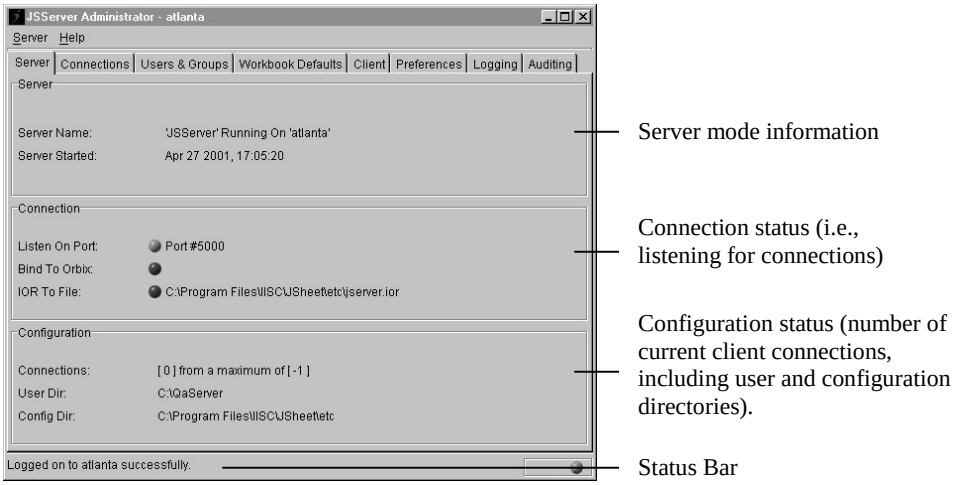
1. Enter the server host address, your user name, and your password into the **Connection Information** dialog box.

2. Press **Connect**. The status of the connection attempt is displayed in the status bar of the JSServer Admin window.

If a connection is made, logging on is attempted. When a successful log-on occurs, the tabbed panels become enabled for use, the **Server** panel is displayed, as shown in the following illustration, and the Connection Status icon in the bottom right corner of the Status Bar becomes green, indicating a connected and logged on status.

If a connection or log-on attempt is unsuccessful, the reason for the failure is displayed in the status bar and the Connection Status icon remains red.

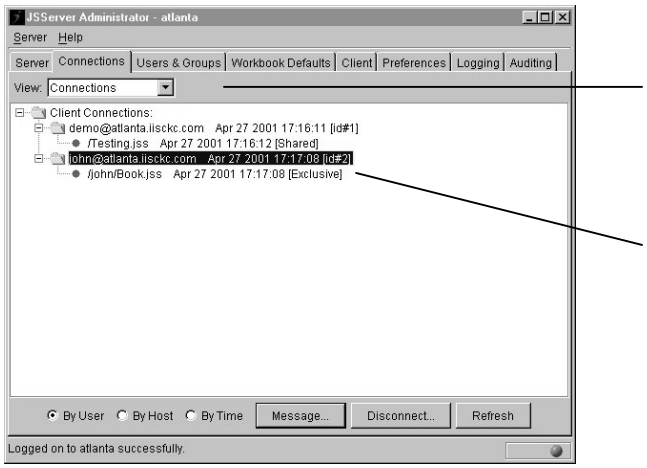
Figure 3



The Connections Panel

After a connection and successful log-on have been made, click the **Connections** tab to view the **Connections** panel; a list of client connections is displayed. Each client is a hierarchical tree structure of information. The user name and host name are displayed for each client, as well as the connection time and connection ID. If a client has workbooks open, this information can be viewed by expanding the client tree-node. The client details listed can be sorted by different attributes, such as **By User**, **By Host**, and **By Time**.

Figure 4



Click the **View** dropdown arrow to display different data in the **Connections** panel.

When **Connections** is selected from the **View** dropdown, the list of clients currently connected to the server is displayed in the **Connection** panel.

To display the open workbooks, select **Open Workbooks** from the **View** dropdown. In addition, you can select **ODBC Connections** from the **View** dropdown to display the current ODBC connections.

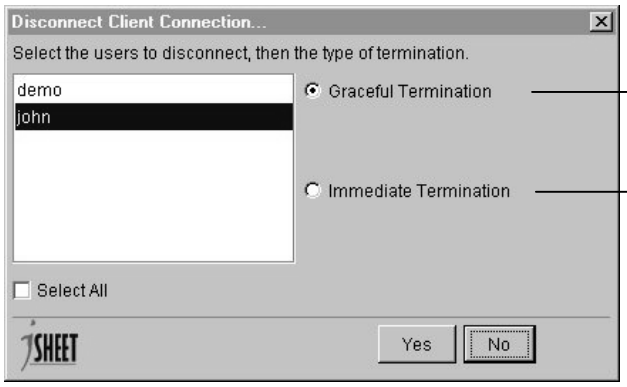
Disconnecting a Connected Client

When the list of connected clients is displayed in the **Connections** panel, you can elect to disconnect one or more of the clients from the server. Simply select any user and click the **Disconnect** button at the bottom of the **Connections** panel. A **Disconnect Client Connection** dialog box, similar to the one shown below, is displayed.

This dialog box is populated with a list of all of the connected clients. Select the user(s) to disconnect and indicate the type of disconnection you want performed by clicking the corresponding radio button. Click **Yes** to execute the disconnection, remove the user(s) from the

connections client list, and close the **Disconnect Client Connection** dialog box.

Figure 5



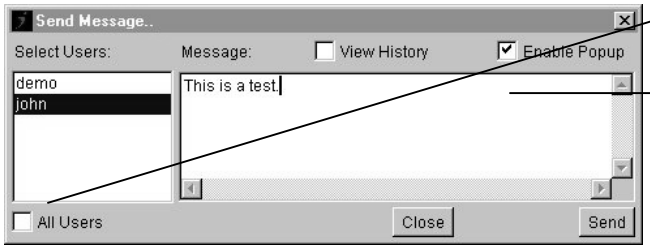
Select this option to warn the client of an impending disconnection.

Select this option to disconnect the client without prior warning.

Messaging a Connected Client

When the list of connected clients is displayed in the **Connections** panel, you can elect to send a message to one or more of the clients connected to the server. Select an initial recipient user and click the **Message** button at the bottom of the **Connections** panel. A **Send Message** dialog box, similar to the one shown below, is displayed.

Figure 6



To send a message to all users, click the **All Users** check box.

Type the message you want to send in this text box. Then, click the **Send** button in the bottom right corner of the dialog box to send the message and close the dialog box.

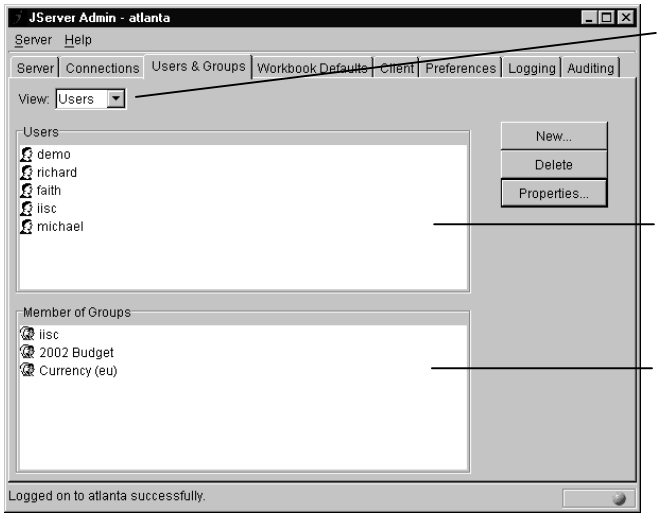
The Users & Groups Panel

Using JSServer Admin, you can easily maintain the users that are allowed to connect to the server, as well as the various groups to which the users may belong. To access the users and groups information, click the **User & Groups** tab in the JSServer Admin window.

The Users Panel

Two panels are available on the **Users & Groups** tab: the **Users** panel and the **Groups** panel. To indicate the panel you want to use, select the corresponding option from the **View** dropdown list.

Figure 7



When Users is selected from the **View** dropdown list, a list of users registered on the server is displayed in the Users section of the panel.

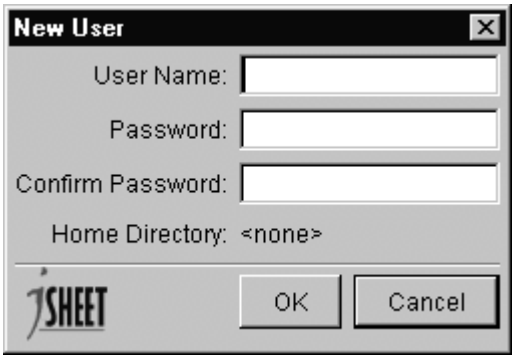
Select a user from this list to display the corresponding membership details.

The groups to which the users belong are displayed here.

Adding a New User

To add a new user to the list of users that may connect to the server, click the **New** button in the **Users** panel of the **Users & Group** tab. A **New User** dialog box, similar to the one shown below, is displayed.

Figure 8



To add a new user:

1. In the **User Name** field, enter a maximum of 16 characters for the name of the new user. The user name must be unique from any existing user names.

2. In the **Password** field, enter a maximum of 8 characters for the password of the new user.

3. Enter the password a second time in the **Confirm Password** field.

4. When all of the information is entered correctly, click **OK** to create the new user.

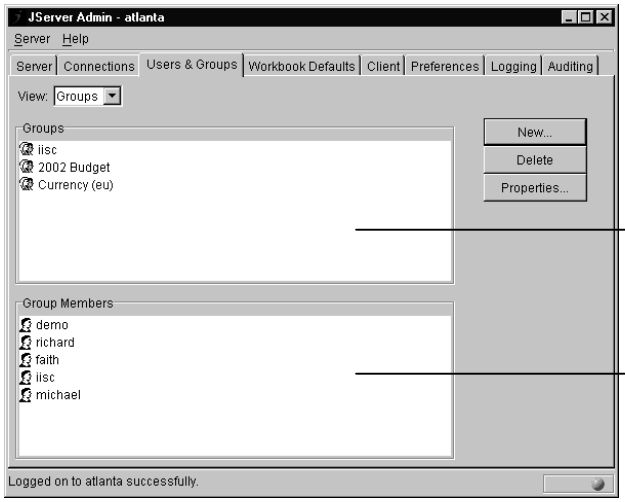
Removing a User

It is very easy to remove a user. In the **Users** list in the **Users** panel of the **Users & Groups** tab, simply select the user you want to remove and click the **Remove** button. The user is removed from the list.

The Groups Panel

To view the **Groups** panel on the **Users & Groups** tab, select **Groups** from the **View** dropdown list. The **Groups** panel, similar to the illustration shown below, is displayed.

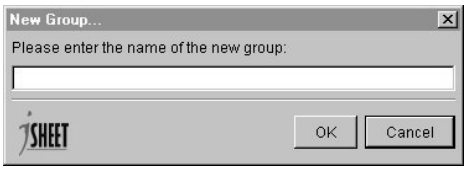
Figure 9



Adding a New Group

To add a new group to the list of groups registered on the server, click the **New** button in the **Groups** panel of the **Users & Group** tab. A **New Group** dialog box, similar to the one shown below, is displayed.

Figure 10



In the text field, enter a maximum of 16 alphanumeric characters for the name of the new group, and click **OK** to create the group. The group name must be unique from any existing group names.

Removing a Group

It is equally easy to remove a group. In the **Groups** list in the **Groups** panel of the **Users & Groups** tab, simply select the group you want to remove and click the **Remove** button. The group is removed from the list and all of the users assigned membership in the group are removed.

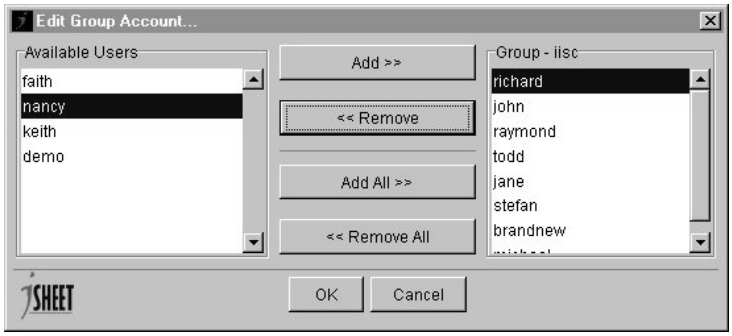
Editing a Group Account

There may be instances where you need to add or delete one or more members from a group, but otherwise leave the group intact. To accomplish this, you can edit the properties of a group account.

To edit a group account:

1. From the **Groups** panel of the **Users & Groups** tab, select the group that you want to modify and click the **Properties** button. An **Edit Group** dialog box similar to the one shown below is displayed.

Figure 11



The **Available Users** list on the left side of the dialog box provides all of the registered users on the server that are not currently in the selected group. The users listed on the right side of the dialog box are all of the registered users currently in the selected group.

2. To add a user to the group from the **Available Users** list, select the user and click the **Add** button. To add all of the users to the group, click the **Add All** button.

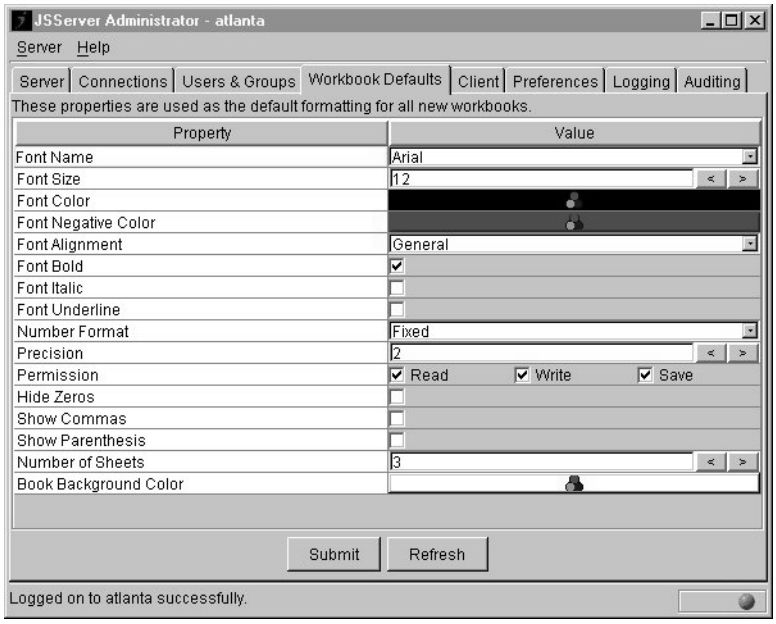
3. To remove users from the group, select the user in the **Group** list and click the **Remove** button. Likewise, to remove all of the users from the group, click the **Remove All** button.

4. When all of the required changes have been made to the group members, click **OK** to submit the changes to the server and close the dialog box.

The Workbook Defaults Panel

To establish and maintain the default formatting that is used for all of the new workbooks shared on the system, use the settings available in the **Workbook Defaults** panel. To display this panel, click the **Workbook Defaults** tab in the JSServer Admin window. A panel similar to the one shown in the following illustration is displayed.

Figure 12



Click the dropdown menus to select a different font, a different alignment, or to specify a different number format. Check or uncheck the various check boxes to enable or disable the corresponding formatting values, such as boldfacing, underlining, displaying commas,

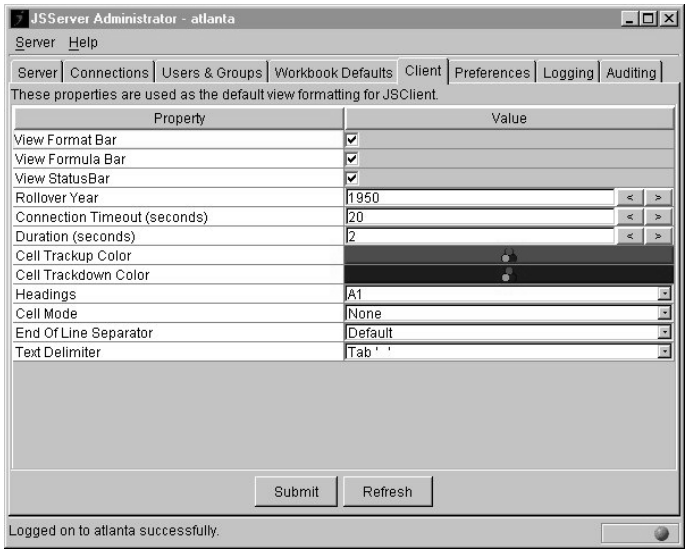
and hiding zeroes. Check or uncheck the **Read, Write**, and **Save Permission** check boxes to assign default permissions for workbooks. Click the **Pick Me** buttons to display the **Color Pick** dialog box and select a different color for the book background color, font color, and the negative value color.

When the property values are accurately set, click **Submit**. The changes are submitted to the server immediately.

The Client Panel

To establish and maintain the default view formatting for JSClient, use the settings available in the **Client** panel. To display this panel, click the **Client** tab in the JSServer Admin window. A panel similar to the one shown in the following illustration is displayed.

Figure 13

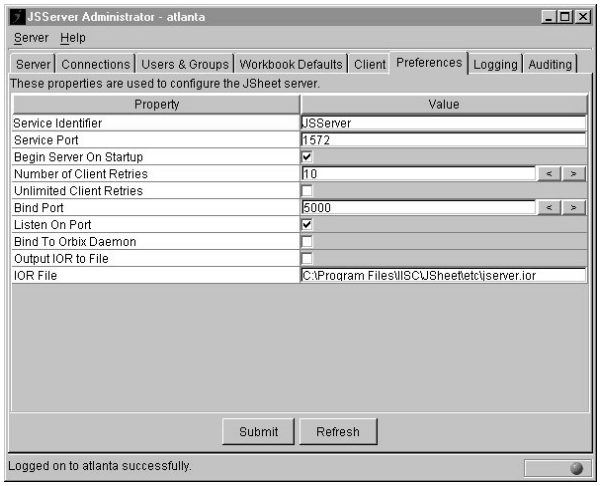


Check or uncheck the various check boxes to enable or disable the corresponding formatting values, such as displaying the format bar, the status bar, and the formula bar. Enter the **Rollover Year**, the **Connection Timeout** information and the **Duration** information using the corresponding arrow keys. Indicate the cell tracking color that you want to use, the row and column headings style, the end of line separator, and the text delimiter. When all of the values are entered correctly, click **Submit**. The changes are submitted to the server immediately.

The Preferences Panel

To establish and maintain the properties used to configure the JSheet Server, use the settings available in the **Preferences** panel. To display this panel, click the **Preferences** tab in the JSServer Admin window. A panel similar to the one shown in the following illustration is displayed.

Figure 14

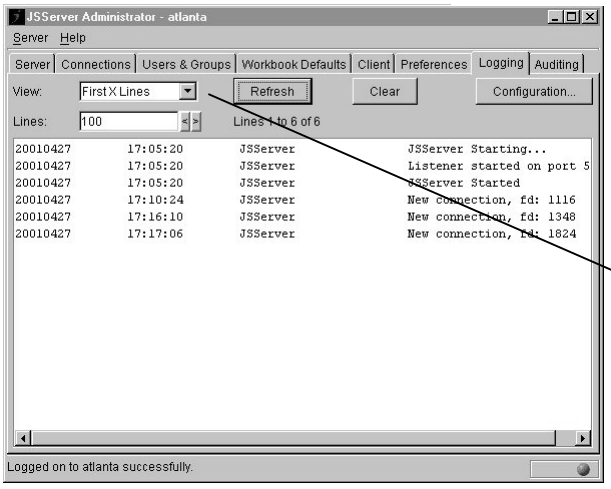


Check or uncheck the various check boxes to enable or disable the corresponding properties, such as whether to begin the server on startup, bind to an Orbix daemon, and send output IOR to a file. Enter the service identifier, the service port number, and the number of client retries to allow. When the information is entered correctly, click **Submit**; the changes are sent to the server immediately.

The Logging Panel

To establish and maintain the properties used to define a specific logging configuration and display the generated log file, use the settings available in the **Logging** panel. To display this panel, click the **Logging** tab in the JSServer Admin window. A panel similar to the one shown in the following illustration is displayed.

Figure 15



Use this dropdown list to select the section of the log file that you want to view.

Different sections of the log file can be viewed. To display a specific section of the log file, select the corresponding value from the **View** dropdown list. The number of lines of the file that is displayed is set by the **Lines** spinbox. The default value is 100 lines. The following options are available in the **View** dropdown list:

- **First X Lines**. Select this option to view the beginning of the log file.
- **Last X Lines**. Select this option to view the end of the log file.
- **Next X Lines**. Select this option to view the next portion of the log file.
- **Jump Forward**. Select this option to go forward in the file *x* number of lines, equal to the previous number of lines viewed.
- **Jump Back**. Select this option to go backward in the file x number of lines, equal to the previous number of lines viewed.

When the appropriate number of lines are selected for viewing, click **Refresh** to retrieve and display the requested log entries.

Clearing the Log File

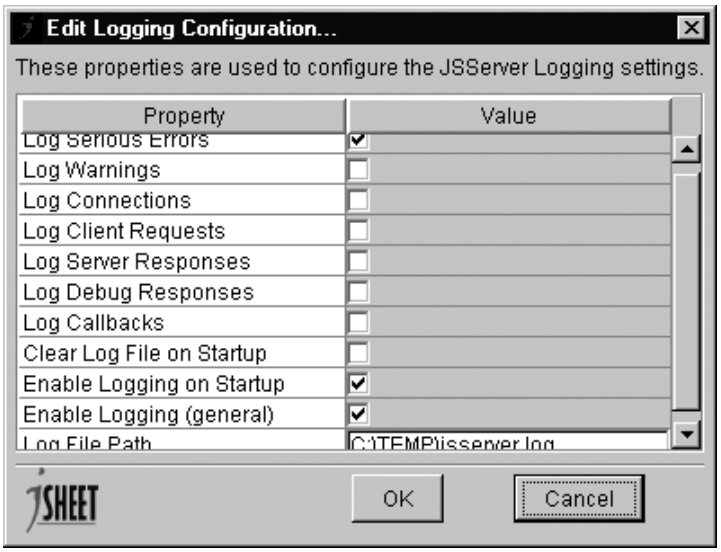
Press **Clear** to clear the server-generated log file. A dialog box prompts you for confirmation. Select **Yes** to submit a request to the server to clear its log file.

Editing the Logging Configuration

The settings that control the configuration for the JSServer Logging features are contained in the **Edit Logging Configuration** dialog box. To display this dialog box, click the **Configuration** button in the top

right corner of the **Logging** panel. An **Edit Logging Configuration** dialog box similar to the one shown below is displayed.

Figure 16



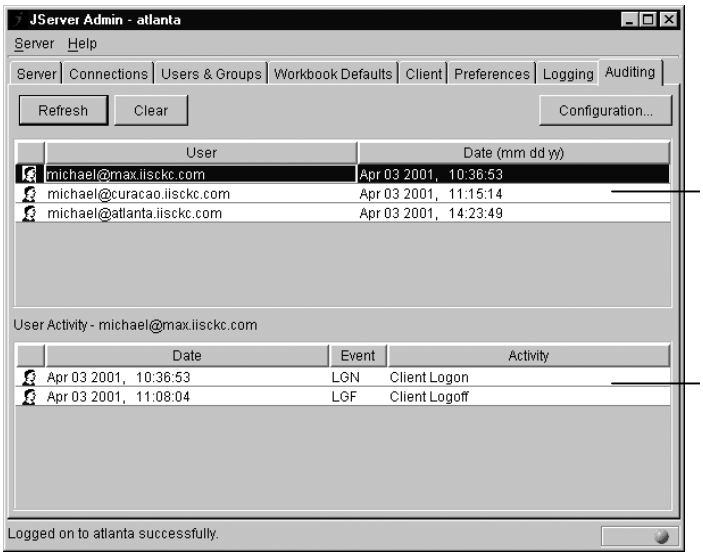
Check or uncheck the various check boxes to enable or disable the corresponding properties. To modify the log file path, type a new value path in the **Log File Path** field. When all of the information is specified correctly, click **OK** to submit the changes to the server and close the dialog box.

The Auditing Panel

The **Auditing** panel of JSServer Admin provides an easy way to monitor the activities on the server. To display this panel, click the **Auditing** tab

in the JSServer Admin window. A panel similar to the one shown in the following illustration is displayed.

Figure 17



The **User** list is updated each time the **Refresh** button is

This area of the panel displays auditing information specific to the selected user.

From this panel, you can clear the audit file or list the activity of a selected user. To update or refresh the audit information displayed, click the **Refresh** button on the **Auditing** panel. The **User** list is updated and the **User Activity** list is cleared. To clear the audit file, click the **Clear** button on the **Auditing** panel.

To list the activity of a specific user, select the user from the **User** list in the top portion of the panel. JSServer Admin displays the auditing information for the selected user in the **User Activity** portion of the panel: when the user logged on, the workbook(s) the user has open, and the worksheet(s) that the user has created or opened.

Using the JSheet Load Balancer

The JSheet Load Balancer is a Java application. All of the required Java classes are held within the **LoadBalancer.jar** file, which must be in the classpath. To run the Load Balancer application from the command line, use the command:

java – cp loadbalancer.jar com.iisc.loadbalancer.LoadBalancer

The Load Balancer supports the following command line options:

Parameter	Usage	Min Value	Max Value	Default
noquery	The noquery option stops the Load Balancer from listening on the control port for control process connections.	N/A	N/A	N/A
clientport	This defines the port that the Load Balancer uses to listen for client connections.	0	32768	5000
serverport	This defines the port that the Load Balancer uses to listen for server connections.	0	32768	5001
controlport	This defines the port that the Load Balancer users to listen for controller process connections.	0	32768	5002
ping	The ping option allows the rate of ping messages from the Load Balancer to the servers to be adjusted from the default of five seconds.	1	300	5
usage (or ?)	These print out a list of the valid arguments.	N/A	N/A	N/A

loglevel	This defines the type of messages that are logged by the system. The valid values are: 0 – no logging; 1 – log errors; 2 – as for level 1 + log warnings; 3 – as for level 2 + log diagnostic messages; 4 – as for level 3 + log information messages.	0	4	1
logfile	The name of the log file to which to output messages. If none is specified, output is to the console.	N/A	N/A	N/A
timerdelay	This defines how long, in milliseconds, the system pauses between each poll of the server sockets for ping messages and disconnect messages. Generally the shorter the time, the more responsive the system is but also the greater the processing power it uses.	5	5000	500
alivetime	This is the maximum time that a server can remain in an alive state when it is not responding to ping messages. The server state is checked once per ping period after 80% of the ping period has expired. Setting this value to less than the ping period means that the server must respond promptly to each ping message.	0	3600	4
suspecttime	This is the maximum time that the server is marked as suspect when it is not responding to ping messages. A suspect server IOR will only be given out to clients if no servers are currently alive. If a server does not respond within the suspect time, then it is marked as dead.	0	3600	30
deadtime	This is the maximum amount of time, in seconds, that a server remains in the dead state when it is not responding to ping messages. Once the deadtime is exceeded, the connection to the server is closed.	0	3600	300
pendingtime	This is the amount of time, in milliseconds, that a server or controller connection is allowed to remain open with a message being received from it. Once this time is exceeded, the connection is closed.	0	30000	5000

Use the following command line options to start as many JSServer executables as are required for the load balancing:

```
JSServer.exe -loadbalancehost<host> -loadbalanceport<portnum> -master<no/yes/only>
```

The **host** and **portnum** parameters refer to the machine that is running the Load Balancer and the server port of the Load Balancer, respectively. The **master** parameter indicates how the server is treated by the Load Balancer. A server that indicates that it is the **master** is used by any clients that want to use shared books or by any clients that do not want to use load balancing. A server with the **master only** setting is only used for this; however, a server with the **master yes** setting is also used as a load balancing server. A server with a **master no** setting is used only for load balancing.

IMPORTANT: If a JSServer is being used for load balancing, it is no longer possible for clients to connect to that server directly on port 5000.

In addition, clients can attach to the Load Balancer as if it were a standard server. To use load balancing, they must specify **-loadbalance true** on the command line.

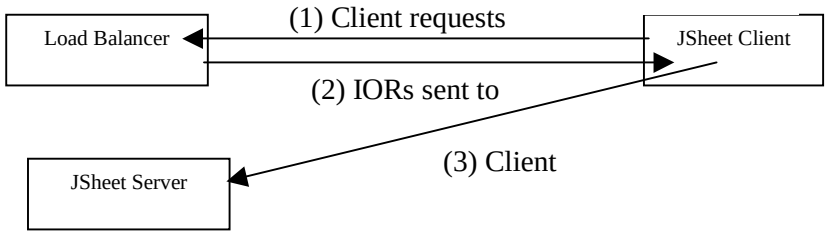
How the Load Balancer Works

Load balancing works in a cooperative fashion with both the servers and the clients. The load balancing process sits between the clients and servers, intercepts IOR requests (defaults to port 5000), and provides IORs to the clients that redirect them to a particular server in the cluster of available servers.

In its simplest form, the Load Balancer sends the IOR of a server randomly selected from a list of active servers. Once the IOR has been sent to the client, the load balancing process then plays no further part in

the communications flow between client and server. This process is illustrated in the following drawing.

Figure 20



While this is a relatively simple process, it does have the significant drawback that it is not possible to properly handle shared books. At the point that the client requests the IOR from the Load Balancer, the Load Balancer does not know what books the client wants to open and whether they are to be shared or not. If the client wants to share a book already open on server *x* and the load balancer directs it to server *y*, then it will not be able to use the book in a cooperative fashion.

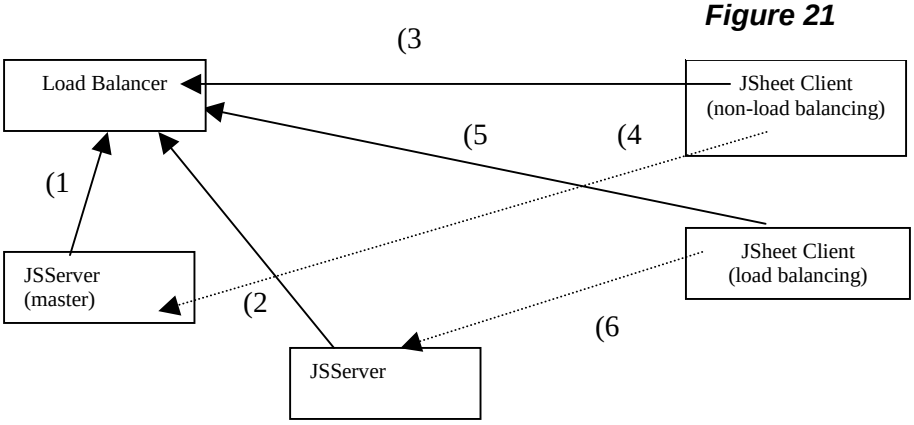
Future releases of the Load Balancer will address this issue. However, for now, the Load Balancer provides two IORs to each client. The first IOR always refers to the same server and can be used for shared books. The second IOR is a randomly selected server from the list of known servers. If the client is aware of the load balancing and knows that the books are single-user, the second IOR can be used to open the book. This form of load balancing is designed to be used primarily in HTML pages where a book to open is specified as a parameter to the applet and it is known at design time that the book is not shared. The designer can then pass an additional parameter to the applet to tell it to use the second IOR to open the book.

When the servers register with the load balancing process, one of them indicates that it should be used as the server for shared books; this server

is referred to as the master server. The master server can indicate whether it is a potential candidate for the second IOR or whether it should only be used for the first IOR.

The steps involved in load balancing are diagrammed in the following drawing.

Figure 21



In step 1, a JSServer process contacts the Load Balancer process to inform it that it is ready to accept incoming requests. It defines itself as the "master" JSServer process. Therefore, the first IOR supplied to the clients will be the IOR of this process. It also indicates that it wishes to be added to the list of load balancing servers, which means that it may be provided as the second IOR, as well as always being the first IOR sent to the client.

In step 2, a second JSServer process informs the Load Balancer that it is ready to accept incoming requests.

In step 3, a JSheet client contacts the Load Balancer to request IORs. The Load Balancer returns the IOR of the master JSServer as the first IOR and the IOR of the second server as the second IOR.

In step 4, the client is unaware of load balancing or specifically does not want to use load balancing because it is opening a shared book. In this case, it uses the first IOR to make a connection to the master server. It has no further communication with the load balancer.

In step 5, a second client contacts the Load Balancer for IORs. The Load Balancer returns the IOR of the master JSServer as the first IOR and the IOR of the second server as the second IOR.

In step 6, the client knows that the sheet it wants to open is not shared and so it connects to the server given by the second IOR.

The Load Balancer attempts to monitor the state of each server that it knows about. If a server appears to have died, it attempts to route clients to servers that are “alive.”

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