

## MULESERVER V1.5



# **MULESERVER Installation Overview**

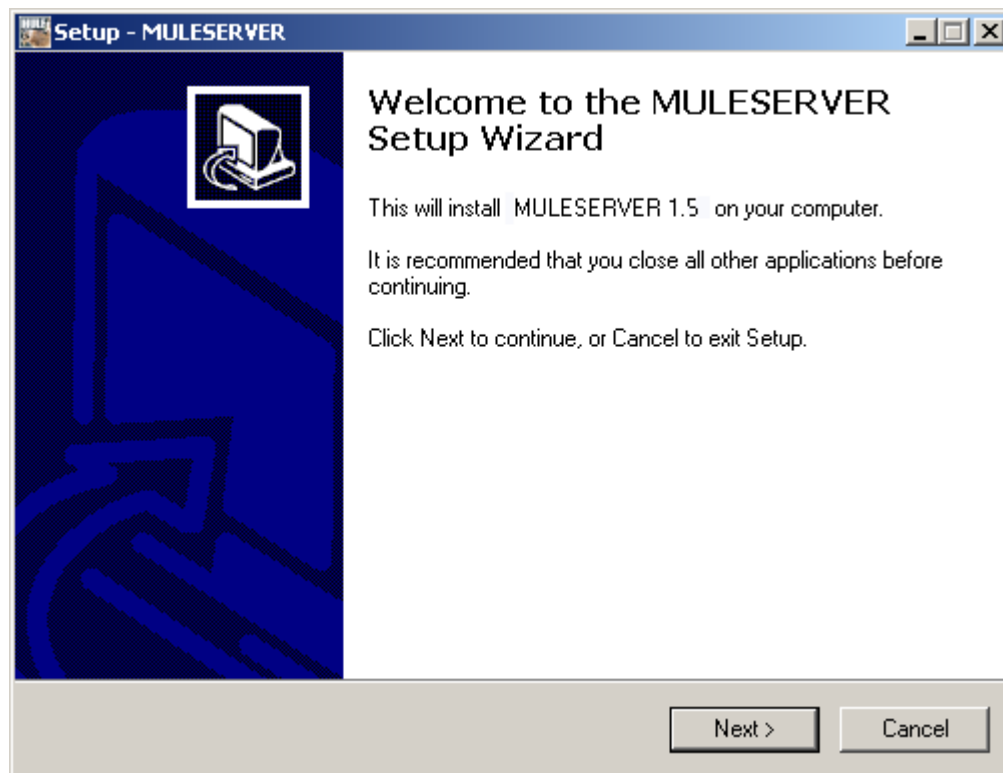
## **Recommended System Resources**

- Processor
  - Pentium III 500 MHz+
- Memory
  - 128MB+

## **Supported Operating Systems**

- Microsoft Windows 2000 Professional
- Microsoft Windows 2000 Server
- Microsoft Windows 2003 Server
- Microsoft Windows XP Home Edition
- Microsoft Windows XP Professional Edition
- Microsoft Windows Vista
- Additional Software
  - .NET Framework 1.1 or higher
  - Direct X 9.0 or higher

## Installing MULESERVER



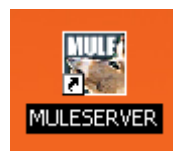
To install MULESERVER, run the MULESERVER\_SETUP.exe file obtained from either your MULE CD-ROM or MULE package download and follow the steps provided in the Setup Wizard. By default, the MULESERVER installation will place a MULESERVER Icon on your desktop as well as in a Program Files folder under "epicsoft" named "MULESERVERX.X" (where X.X is the version of MULESERVER you are installing).

**NOTE:** If you are logged on to your system as a user that does not have Administrative privileges, make sure that the installation directory for MULESERVER is granted write privileges.

## Starting MULESERVER

MULESERVER can be started in three ways:

1. Double clicking on the MULESERVER desktop icon.



2. Selecting MULESERVER from the Program Files directory in the Start Menu.
3. Double clicking the MULE\_Server.exe file from the MULESERVER installation directory.

Once started, MULESERVER will display a loading screen as shown below, and once the loading has completed, the main MULESERVER interface will appear.

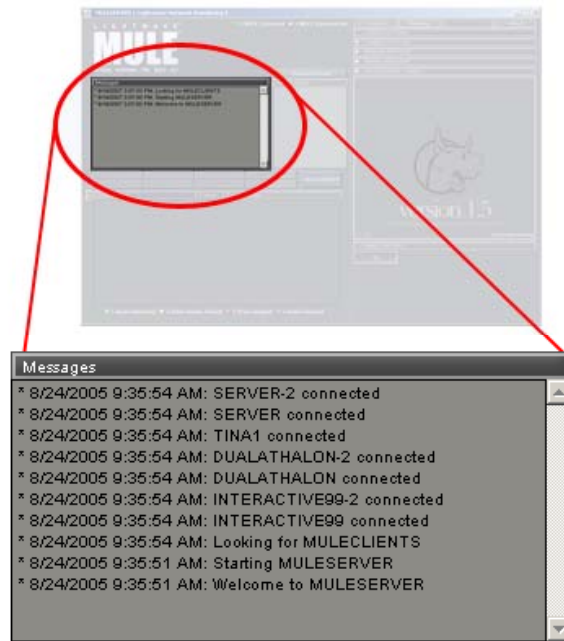


## MULESERVER Interface

The Main MULESERVER interface is designed to provide a single access point for all of the controls necessary to add, modify, and render a Lightwave Scene. The elements of the Main MULESERVER Interface are separated into *panels* and *windows* for optimal accessibility and ease of use. Windows are generally static elements of the MULE Interface and are always available, whereas panels are collapsible interface elements that provide easy access to MULE configuration. In this manual, we'll identify each of these windows and panels and describe the functionality of the elements they contain.

## MULESERVER Windows

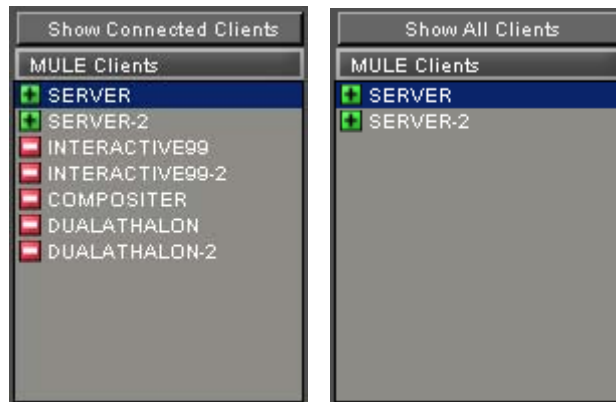
### Message Window





The MULESERVER Message Window is used to provide time-stamped notifications about the events that occur within MULESERVER. In this window, MULESERVER will display notifications when some of the following events occur:

- MULECLIENT connects
- MULECLIENT disconnects
- Frame is sent to a MULECLIENT for rendering
- Frame is completed by a MULECLIENT
- A MULECLIENT encounters an error

## Client Window



The MULESERVER Client Window provides information about MULECLIENTs that are currently connected or have connected to the MULESERVER in the past. Clients that are currently connected are indicated with the green plus sign , and disconnected clients with a red minus sign .

The Client Panel can be configured to display either all clients or only connected clients by clicking on (toggling) the button above the Client Panel, titled either “Show Connected Clients” or “Show All Clients”.

### Obtaining MULECLIENT System Information

Technical information about each MULECLIENT system can be obtained through the MULESERVER Client Window. This information includes:

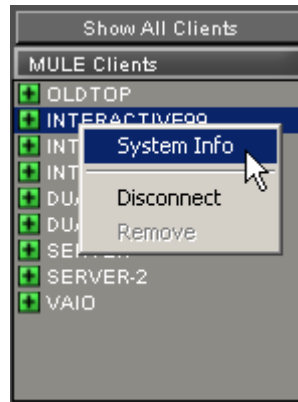
- System Name
- Operating System
- Processor Speed
- Memory Size
- Page File Size



This information can be obtained through the MULESERVER Client Window either of two ways:

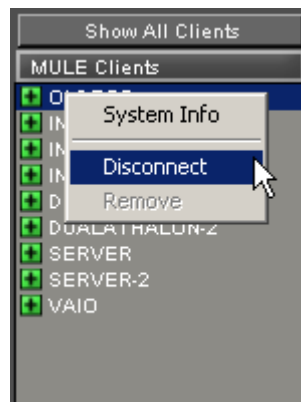
1. Double-clicking on the name of the MULECLIENT.

2. Right-clicking on the name of the MULECLIENT and selecting "System Info".



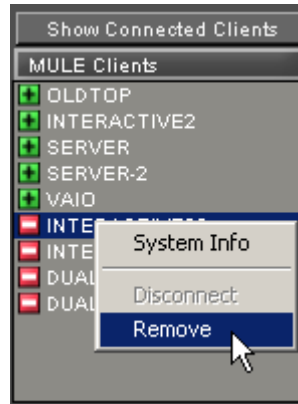
### Disconnecting a MULECLIENT from the MULESERVER

A connected MULECLIENT can be forced to disconnect by right-clicking on the name of the MULECLIENT in the MULESERVER Client Window and selecting "Disconnect". When the MULECLIENT is disconnected, it will not be available to the MULESERVER for rendering until the MULESERVER is shut-down and re-launched or the connection is re-initiated from the MULECLIENT application.

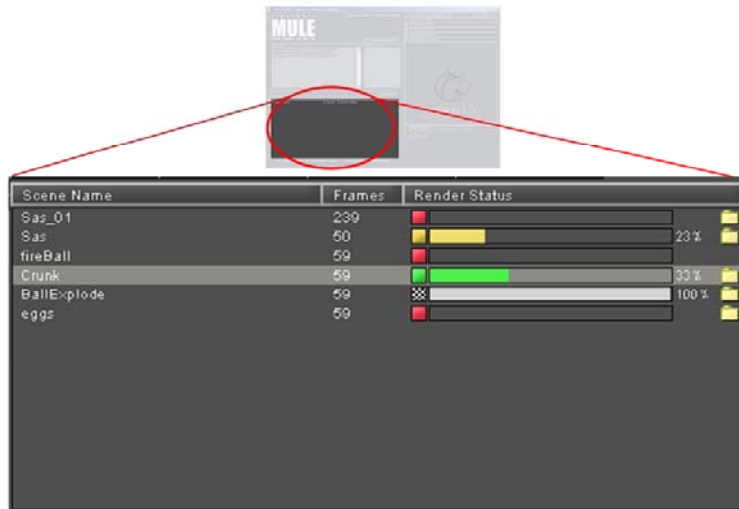


## Removing a MULECLIENT from MULE Memory

A disconnected MULECLIENT can be completely removed from the MULESERVER's memory by right-clicking on the name of the MULECLIENT and selecting "Remove" from the menu. This will permanently remove this MULECLIENT from the Client Window and MULE Groups until the MULECLIENT reconnects.







## SCENE-Q Window



The MULE SCENE-Q Window is used to display the scenes currently added to MULESERVER. The Scene-Q Window is broken down into four columns – Scene Name, Frame Count, Render Status, and Output Folder.

- **Scene Name:** Displays the short name of the scene, without the directory or file extensions.
- **Frame Count:** Displays the total number of frames set to be rendered for that scene – this value can be changed within the Render Options Panel.
- **Render Status:** Displays the current rendering status of the scene as a color-coded progress bar and numeric progress text indicating the percentage of the scene files that have rendered. The color-codes of the Scene Render Status is as follows:

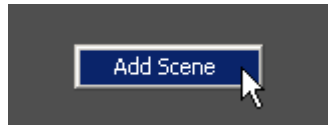


-  **Red:** Scene is currently stopped.
  -  **Green:** Scene is rendering
  -  **Yellow:** Scene is currently "Paused".
  -  **Checkedered / Gray:** Scene has finished rendering
- **Output Folder:** If the scene has an output folder specified, a folder icon is displayed. Clicking on this icon will open the output directory in Windows Explorer.

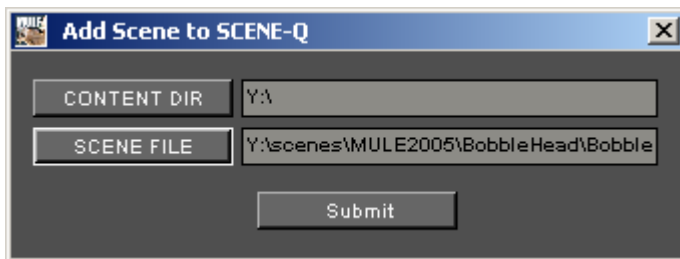
### Adding a Scene to the SCENE-Q Window

There are two ways to add a scene to the SCENE-Q Window in the MULESERVER.

1. Right-click on an area of the SCENE-Q Window outside of the listed scenes. This will display an "Add Scene" option which, when selected, will prompt for a Lightwave scene to add to the Scene Panel.



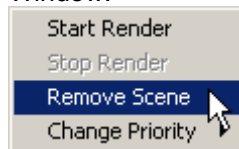
2. Select the "Add Scene" button located above the SCENE-Q Window. Selecting this button will prompt for a Lightwave scene to add to the SCENE-Q Window.



### Removing a Scene from the SCENE-Q Window

There are three ways to remove a scene from the SCENE-Q Window:

1. Right-clicking on a scene within the SCENE-Q Window, will display a menu with the option "Remove Scene". Selecting this option will remove the scene from the SCENE-Q Window.



**NOTE:** This option is only available for scenes not currently rendering.

2. Select the "Remove Scene" button located above the SCENE-Q Window.



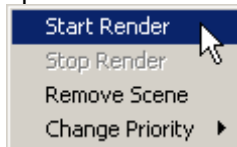
3. Select the “Remove All” button located above the SCENE-Q Window. This selection will remove all scenes not currently rendering from the SCENE-Q Window.



### Starting a Render

There are three different ways that a scene in the SCENE-Q Window can be queued to render:

1. Right-click on the scene within the SCENE-Q Window and selecting the “Start Render” option.




2. Select the “Start Render” button located above the SCENE-Q Window.



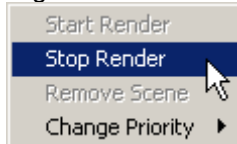
3. Select the “Start All” button located above the SCENE-Q Window. This selection will cause all of the scenes in the SCENE-Q Window to begin rendering.



### Stopping a Render

A scene in the SCENE-Q Window that is currently rendering (notated by the  icon) can be stopped three different ways:

1. Right click on the scene in the SCENE-Q Window and select the “Stop Render” option.



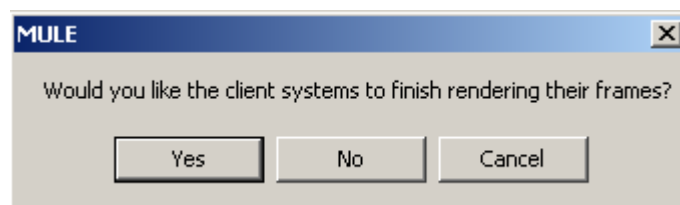
2. Select the “Stop Render” button located above the Scene.



3. Select the “Stop All” button located above the SCENE-Q Window. This selection will cause all scenes currently rendering to stop.




Once a selection has been made to stop a render, MULESERVER will display the following prompt:



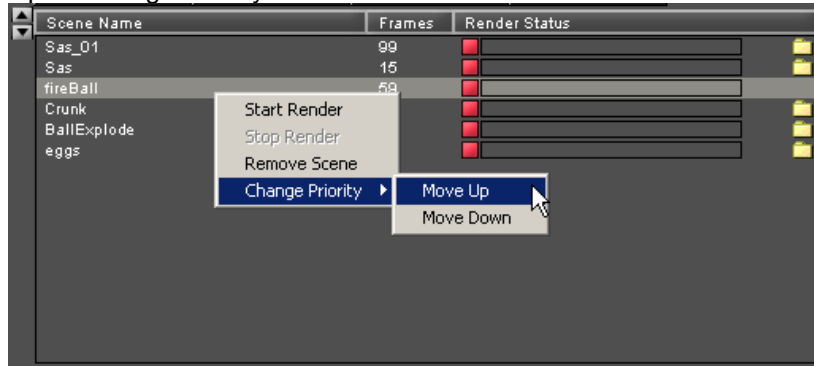
Selecting “Yes” will allow the MULECLIENTS to complete the frame they are currently rendering, while selecting “No” will cause the MULECLIENTS to abort their current frame render.

## Changing a Scene's Priority

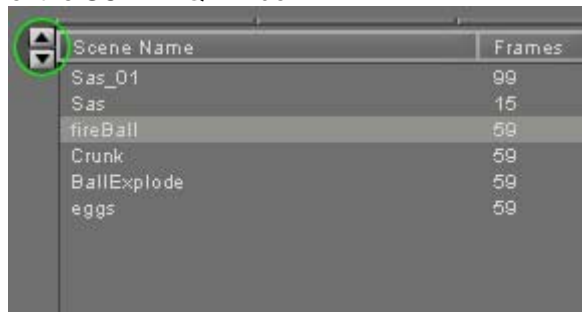
When multiple scenes are rendering at one time in MULESERVER (indicated by the  icon), the MULESERVER gives highest priority to the scenes listed ***closest to the top*** of the SCENE-Q Window. For example, if there are two scenes added to the SCENE-Q Window, both set to render on all connected MULECLIENTS (see Groups), and both started, MULESERVER will render all the frames in the scene listed closest to the top of the SCENE-Q first, then distribute the frames of the second scene.

There are two ways to change a scene's priority level once added to the SCENE-Q Window:

1. Right-click on the scene you would like to move and select the Change Priority – Move Up or Change Priority – Move Down items.

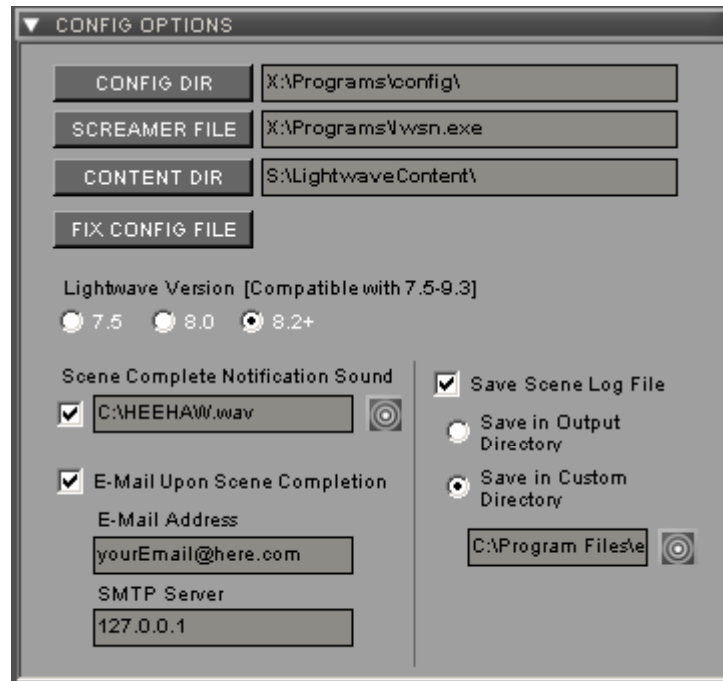


2. With the scene selected, click the up or down arrows located in the upper left hand corner of the SCENE-Q Window.



# MULESERVER Panels

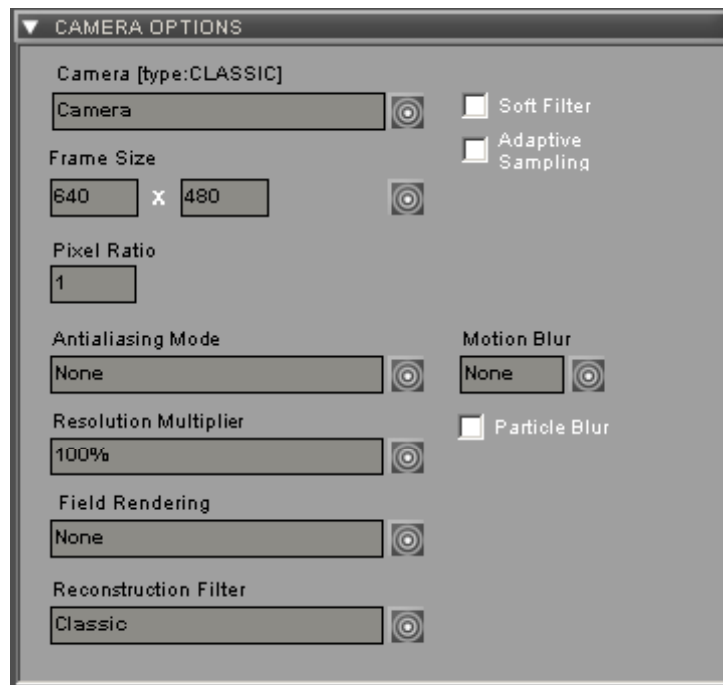
## Configuration Options Panel



The Configuration Options Panel is used to configure general MULESERVER rendering settings. The Configuration Options Panel consists of the following options:

- **Screamer File:** Used to select the lwsn.exe file from the shared Lightwave Programs directory.
- **Content Directory:** Used to select the shared Content Directory.
- **Config Directory:** Used to select the shared directory that contains the Lightwave config files.
- **VERY IMPORTANT! Fix Config File:** Select to have MULESERVER Auto-Fix your Lightwave config files. When selecting this option, you will be prompted to either write over the existing config files or create new files with a “mrf” extension. This option will fix the config files in the specified Config Directory (see above), NOT your local Documents and Settings directory.
- **Lightwave Version:** Used to specify the version of Lightwave of your Screamer File.
- **Scene Complete Notification Sound:** Used to select an .mp3 or .wav file to play when a scene has finished rendering.
- **E-Mail Upon Scene Completion:** Used to specify an E-mail address and SMTP server to e-mail a message once a scene has completed rendering.

## Camera Options Panel



The Camera Options Panel is used to change the camera options of your Lightwave scene file for rendering on MULE.

**NOTE:** Changing values in the Camera Options Panel will not change values in the original Lightwave scene files.

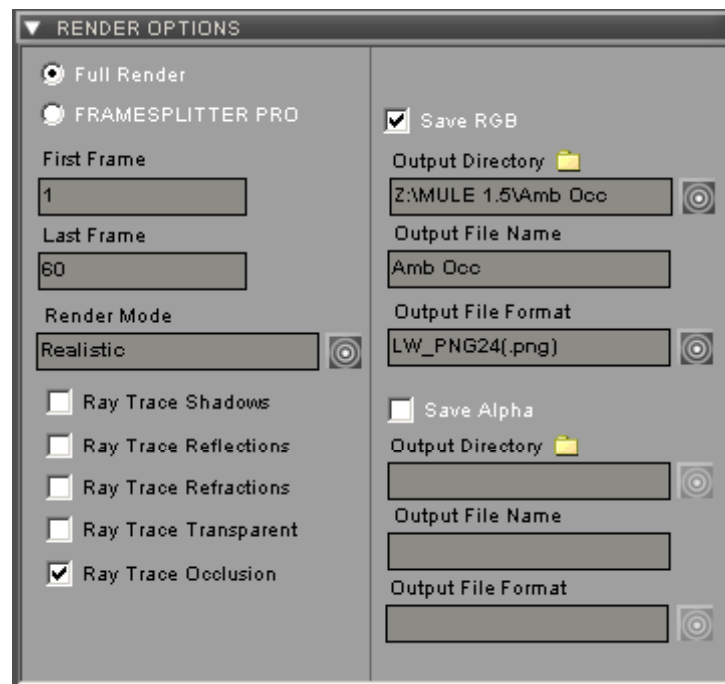
**VERY IMPORTANT!** A scene file must be selected in the Scene Panel in order to change values in the Camera Options Panel.

The Camera Options Panel consists of the following options:

- **Camera:** Used to change the selected camera for the scene. (The 'Camera Type' designation indicates the type of camera selected from inside of LightWave.)
- **Frame Size:** Used to specify the width and height of the output frames. This value may either be entered manually or selected from a dropdown list by selecting the button to the right of the Frame Size selection.
- **Pixel Ratio:** Used to specify the pixel ratio of the output frames. This value can be changed by typing directly in the Pixel Ratio text box.
- **Antialiasing Mode:** Used to specify the Antialiasing Mode of the render. This value can be changed by selecting the button to the right of the Antialiasing Mode selection.
- **Resolution Multiplier:** Specifies the Resolution Multiplier of the scene. This value can be changed by selecting the button to the right of the Resolution Multiplier selection.

- **Field Rendering:** Used to specify the Field Rendering option of the Lightwave Scene. This value can be changed by clicking on the button to the right of the Field Rendering selection.
- **Reconstruction Filter:** Used to specify the Reconstruction filter used to render the scene file.
- **Soft Filter:** Used to determine whether a soft filter effect will be applied to the scene.
- **Adaptive Sampling:** Used to determine whether adaptive sampling will be applied to the scene.
- **Motion Blur:** Used to determine the type of Motion Blur to apply to a scene.
- **Particle Blur:** Used to determine whether Particle Blur will be applied to the scene.

## Render Options Panel

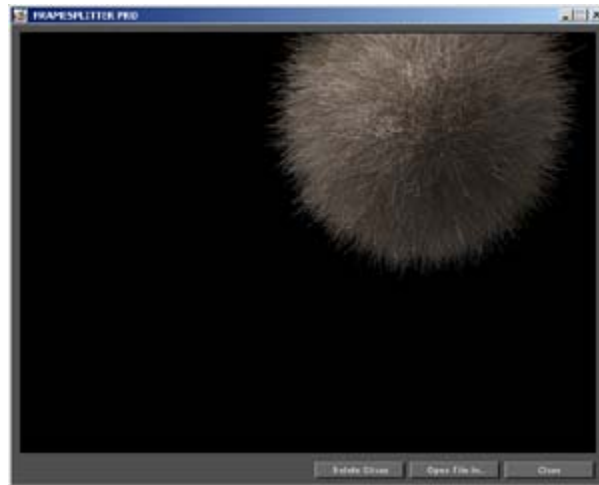


The Render Options Panel is used to set the output render options for a MULESERVER Scene. Within the Render Options Panel, you can select between doing a “Full Render” and a “FRAMESPLITTER PRO” Render. A Full Render will render a range of frames, specified in the Render Options Panel settings:

## Full Render Configuration Options

- **First Frame:** The frame number that the render should start with. This value can be changed by typing directly into the First Frame text box. This value must be entered to start a MULE render.
- **Last Frame:** The frame number that the render should end with. This value can be changed by typing directly into the Last Frame text box. This value must be entered to start a MULE render.
- **Render Mode:** Used to specify the Render Mode of the MULESERVER render. This value can be changed by selecting the button to the right of the Render Modes text box.
- **Output File Format:** Used to specify the image format of the output files.
- **Ray Trace Shadows:** Specifies whether the MULE render will use Ray Trace Shadows. (This feature only available when Realistic Render Mode is selected)
- **Ray Trace Reflections:** Specifies whether the MULE render will use Ray Trace Reflections. (This feature only available when Realistic Render Mode is selected)
- **Ray Trace Refractions:** Specifies whether the MULE render will use Ray Trace Refractions. (This feature only available when Realistic Render Mode is selected)
- **Ray Trace Transparent:** Specifies whether the MULE render will use Ray Trace Transparency. (This feature only available when Realistic Render Mode is selected)
- **Save RGB:** Used to specify whether an RGB image file will be saved when rendering. If this checkbox is selected, an Output Directory, Output File Name and Output File Format must be specified. For every scene, either the Save RGB or Save Alpha boxes must be checked in order to start a MULE render.
  - **Output Directory:** Sets the directory that the scene's RGB output files will be saved to. This directory can be changed by selecting the button to the right of the output directory text box. This directory must be selected in order to start a MULE render.
  - **Output File Name:** Used to specify the base name of the output RGB images.
  - **Output File Name:** Used to specify the image format of the output RGB image files.
- **Save Alpha:** Used to specify whether an Alpha image file will be saved when rendering. If this checkbox is selected, an Output Directory, Output File Name and Output File Format must be specified.
  - **Output Directory:** Sets the directory that the scene's Alpha output files will be saved to. This directory can be changed by selecting the button to the right of the output directory text box. This directory must be selected in order to start a MULE render.
  - **Output File Name:** Used to specify the base name of the output Alpha images.
  - **Output File Name:** Used to specify the image format of the output Alpha image files.

## Rendering with FRAMESPLITTER PRO



Using FRAMESPLITTER PRO, single frames can be rendered using multiple MULECLIENTs, greatly reducing the amount of time necessary to render a high-resolution frame. FRAMESPLITTER PRO has several settings which determine the number of “splits” the scene will be divided into for rendering as well the output format and location of the resulting frame:

- **Output Directory:** Sets the directory that the scene’s output files will be saved to. This directory can be changed by selecting the button to the right of the output directory text box. This directory must be selected in order to start a SPLITFRAME PRO render.
- **Splits:** The number of splits that the frame will be divided into. These splits will be treated by MULECLIENTs in a similar manner as frames when doing a Full Render. (Experimenting with the number of designated splits can help you find an optimum overall render speed for your unique system configuration and project.)
- **Output Frame Format:** Used to specify the output file type of the FRAMESPLITTER PRO frame.

NOTE: The output file type setting within MULE should match the output type designated within LightWave. Occasionally an error may occur if these two settings conflict.

Once a FRAMESPLITTER PRO render has completed, the FRAMESPLITTER PRO window opens. This window, when opened, begins merging the splits rendered by the MULE clients, forming a single output file. This output file will be saved in the directory specified by the Output Directory selection (see above), with a file name output.[chosen file extension].

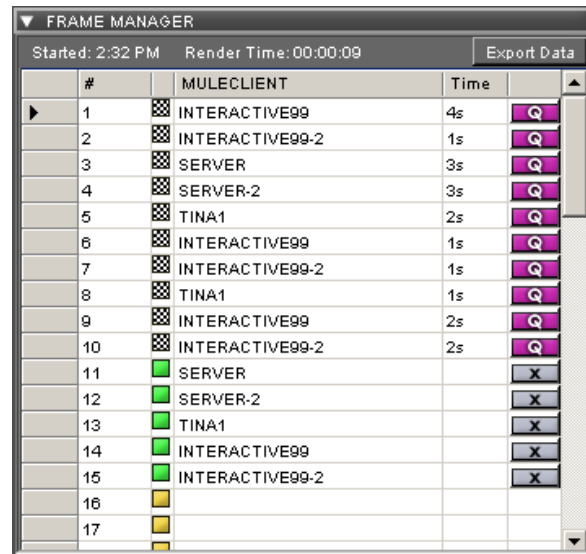
Once the FRAMESPLITTER PRO has completed assembling its output file, three options are available in the FRAMESPLITTER PRO window:

- **Delete Splits:** Deletes the temporary split files created by MULE in the scene’s output directory, freeing up drive space. When the splits have been deleted, the RE-Q function of the Frame Manager is no longer available.



- **Open File In...:** Opens the merged output image in the program you have associated with the FRAMESPLITTER PRO output file type.
- **Close:** Closes the FRAMESPLITTER PRO window.

## Frame Manager Panel



The screenshot shows the 'FRAME MANAGER' window. At the top, it displays 'Started: 2:32 PM' and 'Render Time: 00:00:09', along with an 'Export Data' button. Below this is a table with columns: '#', 'MULECLIENT', 'Time', and a status icon. The table lists 17 frames. Frames 1-10 are completed (checkered icon), frames 11-15 are currently rendering (green icon), and frames 16-17 are waiting in the queue (yellow icon). The status icons are located in the rightmost column of the table.



#	MULECLIENT	Time	Status
1	INTERACTIVE99	4s	Completed
2	INTERACTIVE99-2	1s	Completed
3	SERVER	3s	Completed
4	SERVER-2	3s	Completed
5	TINA1	2s	Completed
6	INTERACTIVE99	1s	Completed
7	INTERACTIVE99-2	1s	Completed
8	TINA1	1s	Completed
9	INTERACTIVE99	2s	Completed
10	INTERACTIVE99-2	2s	Completed
11	SERVER		Rendering
12	SERVER-2		Rendering
13	TINA1		Rendering
14	INTERACTIVE99		Rendering
15	INTERACTIVE99-2		Rendering
16			Waiting
17			Waiting

The Frame Manager Panel is used to monitor the frame status of the scene currently selected in the Scene Panel. In the top bar of the Frame Manager, you can find valuable information about your render, as well as export the data from the frames rendered.

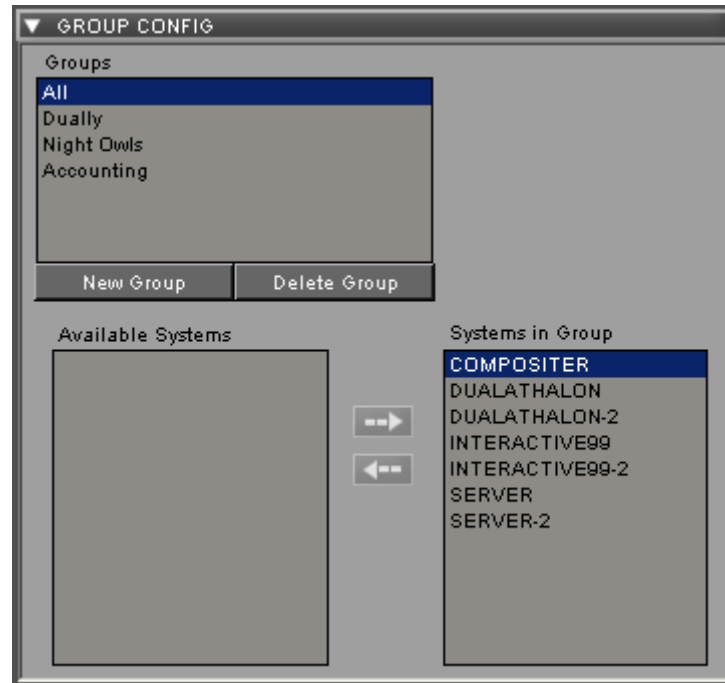
- **Started:** Displays the time that the scene started rendering
- **Render Time:** Displays the total time that the selected scene has been rendering.
- **Export Data:** Exports the render time of all frames to an Excel document for archival purposes.

The Frame Panel has five columns that display information about the frames of the scene currently rendering:

- **Frame Number:** Displays the number of the Frame in the scene.
- **Status:** A color-coded icon indicates the status of the frame's render. Color indication is as follows:
  - **Red:** Frame has been killed.
  - **Green:** Frame is currently rendering.
  - **Yellow:** Frame is waiting in MULE render queue.
  - **Checkered / Gray:** Frame has finished rendering

- **MULECLIENT:** Indicates the name of the MULECLIENT system that finished the frame.
- **Time:** The amount of time it took to render the specified frame.
- **Stop / Re-Q:** This column is used to either stop a frame that is currently rendering – indicated by the  icon, or to put a frame that has been killed or completed back into the MULE render queue – indicated by the  icon.



## SMARTGROUP Configuration Panel



The SMARTGROUP Configuration Panel is used to create groups to efficiently process your MULE renders. By default, MULE has one group, “All”, which automatically contains all of the MULECLIENTS connected to the MULESERVER.

### Creating New SMARTGROUPS

New SMARTGROUPS can be created in three steps:

1. Select the “New Group” button.
2. Enter a group name in the text box that appears in the group selection box.
3. Move a MULECLIENT from the “Available Systems” selection box to the “Systems in Group” selection box using the right arrow  button. (MULECLIENTS can also be removed from a group using the left arrow  button.

### Deleting SMARTGROUPS

SMARTGROUPS can be deleted by selecting the group in the group selection box and pressing the “Delete Group” button.

## SMARTGROUP Selection Panel



Once your MULECLIENTS have been categorized into SMARTGROUPS, they can be assigned to specific scenes by selecting the scene in the Scene Panel and selecting the group name in the SMARTGROUP Selection panel. When the selected scene is rendering, the MULESERVER will only distribute the scene's frames to MULECLIENTS specified in the selected SMARTGROUP.

## MULEVIEWER

MULE also includes a tool for viewing output frames rendered by the MULECLIENTs – the MULEVIEWER. The MULEVIEWER can be accessed from the main MULESERVER interface by selecting the MULEVIEWER button sitting right above the Scene Panel.



When the MULEVIEWER button has been selected, the MULEVIEWER interface will open, displaying the following window.

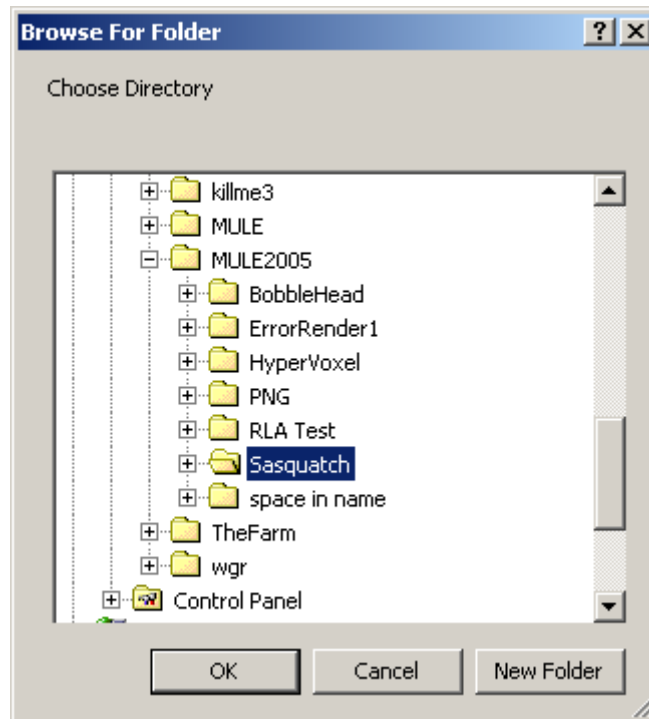


## Loading Frames into the MULEVIEWER From a Directory

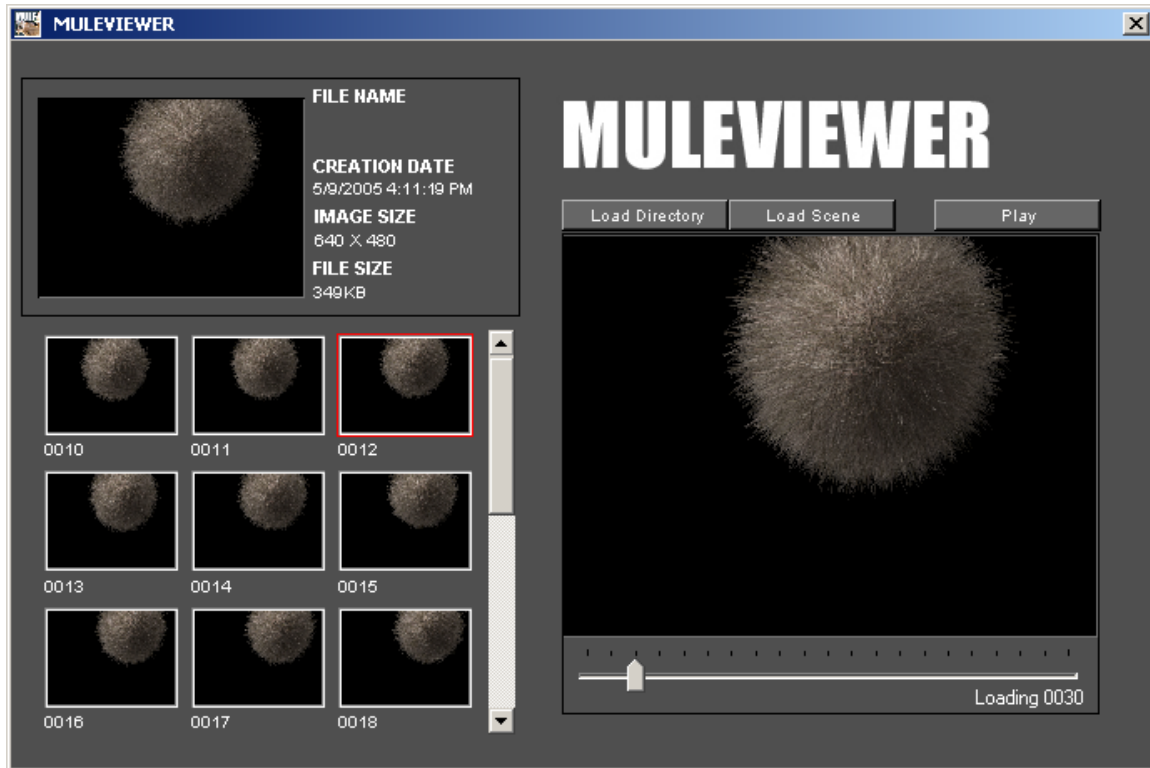
The MULEVIEWER can be used to load an image sequence from a directory by selecting the “Load Directory” button.

Load Directory

When the Load Directory button has been selected, a Folder Browser dialog will be opened. Navigate to the folder that contains the image sequence to load and select “OK”.



Once a directory has been selected, the MULEVIEWER will begin loading the image sequence from that directory, displaying a thumbnail representation of these images in the Thumbnail Panel.



### Loading Images by Selecting a Scene

An image sequence can also be loaded into the MULEVIEWER by selecting a scene from the list of scenes currently in the MULESERVER's Scene Panel by selecting the "Load Scene" button.



After selecting the "Load Scene" button, the MULEVIEWER will begin loading the image sequence from the selected scene's output directory.

### Viewing Image Detail

The MULEVIEWER is capable of providing details about each image loaded. These details include File Name, Creation Date, Image Size, and File Size. The details of a specific image can be viewed by either selecting the image in the MULEVIEWER Thumbnail Panel or by moving to that image using the slider underneath the Large Image Panel.

### Playing the Image Sequence

Using MULEVIEWER, the output image sequence in a render can be viewed as an animation by selecting the "Play" button. The playback frame rate will vary depending on the speed of your system.

