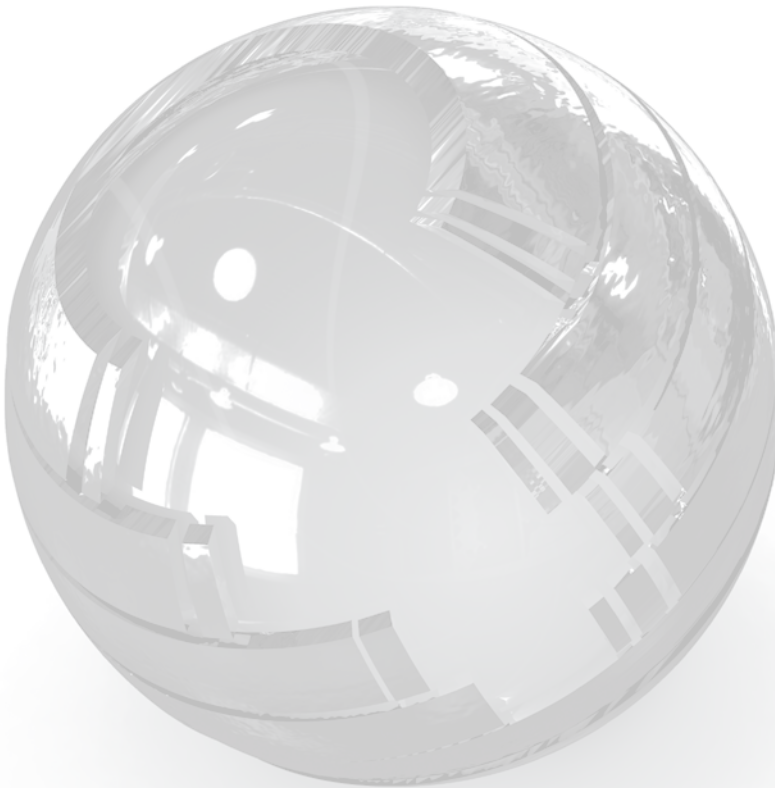


Reference Manual



STRATA 3DTM GX



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Introduction

About this Guide and the Reference Manual

This Reference Manual is a companion to the **Strata 3D CX User Guide**, both the printed and electronic PDF versions. While the User Guide covers every tool and technique available in Strata 3D CX, this Manual covers the many options in a reference format. This Reference Manual is included as an electronic, Adobe Acrobat **PDF** that is installed at the same time as the full application.

The User Guide includes notations where extended information on a tool, command, or concept can be found in this Reference Manual. If you are reading the PDF version of the User Guide, clicking on that notation will open this PDF Reference Manual for ease of reference.

This Reference Manual is also available at any time while you are working in Strata 3D by going to the **Help** menu (at the top of the Strata workspace) and selecting the **Reference Manual** menu item. This will open the PDF in a separate application.

Preferences

Preferences are a way to set options for the entire application environment of Strata 3D CX. These settings will carry over into all of your projects, and control the behavior, function, and look of many other parts of the application. Default settings are provided, but these Preferences can be used to customize Strata 3D CX based on your workflow and needs.

Using the Preferences dialog

Choose the Preferences command from the Edit menu to display the Preferences dialog. The dialog contains three tabs: General, Rendering, and Windows. Preferences for different portions of the application are in each tab. Common to all tabs are the **Reset**, **Cancel**, and **OK** buttons. Cancel and OK are self-explanatory and common to all dialogs.

Reset Button

Each tab contains a special Reset button at the bottom left of the palette. The Reset button, which is available on all three tabs of the Preference dialog, allows you to reset all of your preference settings back to the default. It takes effect only when you re-launch the software.

WARNING: *Using the Reset button deletes your serial number. Make sure you have a copy of it on hand. You will be required to re-enter the serial number the next time you launch Strata 3D.*

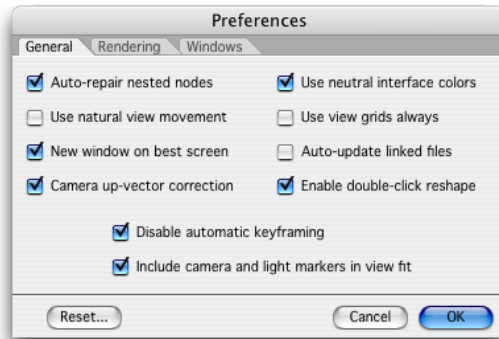
The Reset button serves the same purpose as deleting your preferences file from the system. Occasionally, preference files can become corrupt. If you are having problems with the software, this is a quick possible fix.

When you click the Reset button a dialog appears stating: “Preferences will be reset when the application is relaunched. Would you like to quit now?” You’re given the opportunity to Cancel, Continue or Quit.

- **Cancel** returns you to the Preferences dialog without making any changes.
- **Continue** closes the Preferences dialog and returns you to the main window.
- **Quit** shuts down Strata 3D and resets your preferences for the next launch.

General tab

The General tab provides preference settings for various areas of the application that do not fall under the Rendering or Windows categories.

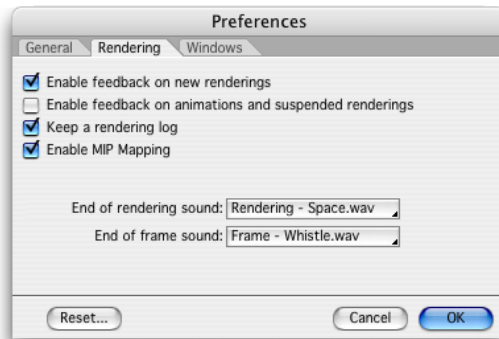


- **Auto repair nested nodes.** If you check this box, Strata 3D will automatically repair nested nodes - a complex problem that can occur when you group and un-group objects multiple times.
- **Use natural view movement.** This allows users who are familiar with Strata's previous view movement to continue using that behavior, or the newer, more intuitive method. This checkbox essentially toggles a reversal of mouse-to-view directions when altering the view in a Modeling window.
- **New window on best screen.** If you have more than one monitor, checking this box will cause the new window to open on the best color monitor. If there is no difference in color depth between the monitors, the window will open on the monitor where the Menu bar appears. If this option is disabled, the new window also opens on the monitor where the Menu bar appears.
- **Camera up-vector correction.** When this box is checked, the default camera tool setting is to constrain the camera from rolling as it moves through your model. The camera always remains in a vertical orientation.
- **Use Neutral Interface Colors.** Enabling this option sets the colors of all icons, buttons, frames, and other elements of the interface to a neutral (neither warm nor cool) grey. Unchecking this option reverts Strata3D to the "warmer" grey interface that it originally had.
- **Use view grids always.** When this box is checked, new models open with the View Grids active. With View Grids enabled, all modeling occurs relative to the active view. To disable View Grids, click the View Grid button in the Modeling window. If this box is unchecked, all models open with the default grid specified on the Windows tab.

- **Auto-update linked files.** When this box is checked Strata 3D will automatically update linked files once you edit the file in a third party application.
- **Disable Automatic Keyframing.** When objects are modified at different points in the timeline, Strata3D can automatically add an animation keyframe for you, speeding up the animation process by saving that change in the appropriate channel. However, this can create unwanted keyframes if you do not intend to change your object over time (animate it), so by default this option is set to “disabled.”
- **Include camera and light markers in view fit.** By default, camera and light markers are recognized by the “Fit Views to All” command (Command = on Mac, Ctrl = on PC) found in the Windows Menu. To disregard these markers when fitting all items in a scene to the view, you will need to uncheck this option.

Rendering tab

These settings determine the kind of feedback you receive about renderings and texture interpolation options.



- **Enable feedback on new renderings.** Check this box if you want to watch the image take shape on screen while it is rendering. This will cause the rendering process to take a little longer, however. If this box is not checked, images still render, but no information is sent to the screen. In many cases this can make the rendering proceed faster.

NOTE: With the feedback turned off, you can still display the progress of the rendering by clicking on the button with the pencil icon to update the Rendering window. The image redraws, and the rendering continues without further updating until the pencil icon is clicked again.

- **Enable feedback on animations and suspended renderings.** When this box is checked, screen feedback is on when suspended renderings are restarted. This is the same as the previous description of screen feedback for new renderings.

- **Keep a rendering log.** Enabling this option creates a text file that records the start and end times for your rendering projects. It also documents the name of the file, the number of frames, frame size, resolution, and image depth of the rendering.

Macintosh: The rendering log is located in: System Folder / Preferences / Strata Preferences /

Windows: Strata 3D places the rendering log in the default Windows temporary directory, which is usually the \TMP or \TEMP directory located on the boot drive. If neither of these directories can be found, the rendering log is placed inside the Strata 3D application directory.

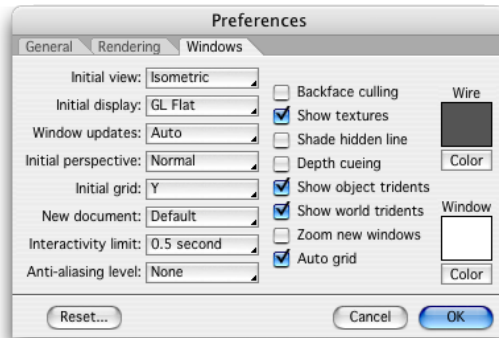
- **Enable MIP Mapping.** MIP mapping prevents moiré patterns and/or background flickering in textures or backgrounds that contain surface maps. Enabling this option may increase the amount of memory required. When this option is disabled, MIP mapping won't be available in any new textures you create, but existing models will retain any MIP mapping already present.

- **End of rendering/frame sound.** When a rendering or frame of an animation finishes Strata 3D can play a sound to let you know it's done. The pop-up menus display sound files that are placed in the Sounds folder. The Sounds folder can be found in the Strata 3D application folder on your computer's hard drive.

Supported sound file formats for the Macintosh include: WAV, AIF, and MP3. For Windows any system supported formats may be used.

Windows tab

These settings determine how new Modeling windows are displayed.



- **Initial view.** This allows you to specify the directional view that is used by default when you create a new file. There are several choices that correspond to the cardinal directions and the Isometric view, which is a view above and slightly off center of the center of the 3D world.

- **Initial display.** You can specify the display method used when a new model window opens. There are several choices in the Initial object display field's pop-up menu.

For the fastest redraws, use the PointCloud, Outline, Wireframe, or Hidden Line options. Flat speeds up redraws, but retains some of the color and lighting information in the Modeling window. Smooth lets you take advantage of all of Strata 3D's interactive rendering features, but takes a little longer to redraw. Toon rendering methods are also available for a stylized look at your model.

You can change the display method later from the Display Method pop-up menu located at the top of the Modeling window.

- **Window updates.** When you perform an action in any window, this option determines how the other windows in your model update. Multiple windows may include Modeling windows, Camera windows, or Spotlight windows. (If views are split, all views within a single window update simultaneously, regardless of this setting.)

- **None.** Windows only update when they become the active window.
- **Auto.** When you let go of the mouse button, all inactive windows update.
- **Live.** All windows update as the action is performed in any window.

If you find that your video card cannot keep up with a large model you may want to select None or Auto from this menu.

- **Initial perspective.** The default perspective used when opening new Modeling windows is set by the Initial Perspective field. The pop-up menu allows you to choose from three settings: Orthographic, Normal, and Wide Angle.

These settings correspond to the three-position perspective control located at the top of each Modeling window. The three choices indicate how the views in the new window present objects in the model. They indicate how much perspective is in the display.

Orthographic displays present the parallel lines of objects in the model as parallel lines in the views. There is no vanishing point, no convergence of lines with distance. Orthographic displays preserve the absolute dimensions of objects, so they can be sized accurately relative to each other.

The **Normal** and **Wide Angle** settings provide perspective and produce more realistic views, but do not maintain actual or relative dimensions. Distant objects appear smaller than those closer to the viewing plane, even when they are the same size.

This setting can also be changed at any time in each individual Modeling window.

- **Initial grid.** You can specify the default grid that appears each time you open a new model.

- **New document.** You can specify the default window arrangement that appears for all new documents. Some users find it helpful to model in three or four views at the same time. This setting allows you to automate the creation of these split views when you create a new document.

- **Interactivity limit.** This pop-up menu allows you to set the speed at which a selected object reverts to a simple outline (bounding box) while in motion.

- **Anti-aliasing level.** This feature allows you to set the level of OpenGL anti-aliasing that will occur in the modeling windows. This gives a smoother (less jagged) display of the objects in the modeling window.

OpenGL anti-aliasing is dependent on the 3D graphics card installed in your computer. Some graphics cards may not fully support this feature. In these situations the anti-aliasing option will be disabled.

In situations where the OpenGL hardware renderers cannot be used, Strata 3D

relies on the system supplied software renderer. Software rendering typically does not provide the necessary support for this Modeling window anti-aliasing.

- **Backface culling.** When this option is enabled, the back side of objects don't appear in the Modeling window. This results in much faster redraw times for the interactive renderer(s), because the inside surfaces of objects aren't calculated.

When this option is enabled and modeling is done in Wireframe, only the front side of the wireframe is displayed. However, you can still see "through" the wireframe, and objects behind other objects are visible; but the inside surfaces are eliminated from any of the calculations. Also, the inside surfaces of objects without endcaps won't be visible in the Modeling window.

This option applies to interactive renderers only, it does NOT affect final renderings.

- **Show textures.** When this box is checked, a representation of the texture appears on objects in the Modeling window. Only Image Textures are displayed; solid textures (Solid Marble, Solid Stone, etc.), and other procedural textures appear as a single color in the modeling window. If multiple textures are applied to an object, and they use UV mapping, a composite of all the textures appears. If any of the textures use any mapping style other than UV, only the top texture is displayed.

For more information about using textures, mapping styles and special texture types, see Chapter 4, Texturing surfaces.

- **Shade hidden line.** When this option is enabled, objects displayed in Hidden Line appear with surfaces, similar to Flat, except the lines are also visible.

- **Depth cueing.** When this option is enabled, the farther away an object is from the view plane, the less visible it is. The effect is similar to a fog that is the same color as the background applied throughout the scene. This effect is to aid in visualizing depth, and does not appear in renderings.

- **Show object/world tridents.** You can choose to show object tridents, world tridents, or both. Tridents provide a visual indication of the orientation of grids and objects in your model. With these tridents enabled you'll find it much easier to keep track of an object's orientation. This is especially true when using the Transform tab of the Object Properties palette to move, scale, or rotate objects.

When you change views, the tridents make it much easier to establish the object's orientation. Changing grids becomes much easier also. You need only

glance at the world tridents in the lower right corner of the window to determine which grid you want. When views are split, each view displays its own world trident.

- **Zoom new windows.** When this box is checked, new windows fill the entire screen space up to the locations of the palettes of Strata3D. The windows can be resized manually after their creation.

- **Auto grid.** When this box is checked, switching views automatically switches the active grid to the face-on grid. For example, if you switch to a top, bottom, or isometric view, the Y grid becomes the active grid. If you switch to a front or back view, the Z grid becomes the active grid. And if you switch to a right or left view, the X grid becomes active.

This does not in any way restrict you to a particular grid. You may still change to any grid you want, but this option automatically activates the grid that's easiest to model on from your current viewing orientation.

- **Wire Color/ Window Color.** You may specify the Wire and Window color using the color picker. The Window color is the background color used in the modeling window in your interactive display. Don't confuse the background color with the background applied to the model on the Environment palette. This field is for specifying the background color used in the Modeling window only and will not effect renderings from this or any other view.

Wire color is the color of lines and wireframes displayed in your view windows. It is best to choose a very different color from the Window color so that the contrast makes the thin lines of the wires visible.

NOTE: If you have multiple monitors installed on your computer, Strata 3D will always open the system color picker on the monitor with the most color depth available.

If you change the Wire and Window color, this change applies immediately to the current model when you click the OK button, as well as for all future models by default. The Wire and Window colors are not saved with the model, so saved models will also open to the colors specified in this preference.

Saving preference settings

Once you click **OK**, changes in the Preferences dialog box take affect immediately in the current model, and Strata 3D updates its Preference file on the hard drive. All of your Preference settings will thereafter be the same every time you launch the program, until you adjust them again.

The File Menu

The File menu provides functions for handling complete scene files within Strata 3D CX, similar to the File menu in most other computer applications. This includes opening, closing, saving and importing other files.

Each File menu item name that ends in an ellipsis (three periods or dots) such as “Import...” indicates that an additional dialog box will be opened by invoking this tool. Typically this dialog provides either a file browser window and/or additional options for the tool.

Keyboard shortcuts for all File menu items also follow operating system standard conventions. The keyboard shortcut for each item is listed on the right side of the File menu itself.

New

Command-N (Mac) or **Control-N** (Win)

Creates a new, empty Strata 3D CX Scene file with an open Modeling window. This is the proverbial “tabula rasa” or blank slate to start your projects in. The settings in the Strata 3D CX Preferences, under the Window tab, will greatly effect the shape, layout, perspective, grid and shading of this New scene file.

For more information on these options, see also the section on *Preferences* in this PDF - linked here.

By default, all New scenes include a single Directional Light and Ambient light enabled, as well as other settings in the Environment palette to set up a “neutral” scene. This cannot be overridden or changed, but a new, empty scene with different Environment attributes can be created and then Opened and Saved under a new name to act as a template when starting your projects.

Open...

Command-O (Mac) or **Control-O** (Win)

Opens a File Browser for browsing through the files and folders on the hard-drive (or all connected resources) to find a compatible file type to open in Strata 3D CX. This is not limited to Strata 3D files, but also includes all supported 2D and 3D file types.

A drop-menu allows for “filtering” of files by the selected file or resource type. Unsupported files (as determined by file extension) will be greyed out in the File Browser. (NOTE: Movie files and rendered animations will be opened by the QuickTime player installed on the system.)

Open As...

Similar to the basic Open... command, except that **all** files will be available for the Open command, regardless of file extension. The file loader to be used on each file can be determined from the drop-down menu of supported file types. If a file does not have a file type extension, or is mislabeled, this can “force” the opening of a file with a certain loading module.

Open Recent

The Open Recent command is a sub-menu of all of the files recently opened or saved from Strata 3D CX. Selecting any file by name from this menu will open it immediately in a Modeling window (or windows) identical to the file when it was last saved.

Close

Command-W (Mac) or **Control-W** (Win)

Closes the currently selected window. This command works not only for Modeling windows, but also for Camera, Light, and Rendering windows as well. If the Modeling window to be closed is the last (or only) Modeling window open for that file, a Save prompt will come up unless the file was just Saved.

Save

Command-S (Mac) or **Control-S** (Win)

Saves the file under its current name, and in its current location on the computer hard-drive. If the file has not already been saved and given a name, it will open a File Browser window and provide the same options as the Save As... command.

Save As...

Opens a File Browser dialog allowing the choice of a location to save the currently active Image or Scene file on the hard-drive. If the file to be saved is a rendered Image file, then the File Browser will include a drop-down menu of possible file types for the image. All Strata 3D CX scene files are saved as “.S3D” file extension types.

Save a Copy...

Opens a File Browser dialog to select a location on the hard-drive to save a **copy** of the currently active Scene file. Because this is a copy of the current Scene, any further Save or Save As... functions will not replace the copy, but rather the original file.

Revert

Reverts the currently active Scene file to the last saved state. This is identical to closing the file without Saving it and then Opening it from the previously Saved version immediately. This is useful when you want to simply discard all changes made since the last Save or Save As... action.

Import...

See the special section on *Import and Export* in this PDF - [linked here](#).

Export...

See the special section on *Import and Export* in this PDF - [linked here](#).

Page Setup...

Opens the standard Page Setup dialog for printing on the computer system. This dialog will vary widely based on installed printer drivers and options. The simplest is the operating system-provided Page Setup for setting page size, scaling, and orientation.

Print One

Automatically prints the currently active window once, using the current settings from the Page Setup, and the defaults from the Print dialog.

Print...

Command-P (Mac) or **Control-P** (Win)

Opens the standard Print dialog to print the currently active window. (If a view is Split, only the currently active or selected view will be printed.) This dialog will vary widely based on installed printer drivers and options. The simplest is the operating system-provided Print dialog for setting the page range, number of copies, and destination printer.

All printed Modeling windows will fill the horizontal width of the page as set in the Page Setup. If an **Image** window is selected, the resolution of the image (and its dimensions in real-world units) will be used to determine the printed size. This can be set in the **Render Image** dialog box under **Units** and **Size**.

Edit Menu

The Edit menu provides many standard editing features common to most computer applications, and some very specific editing tools unique to Strata 3D CX.

Undo

Command-Z (Mac) or **Control-Z** (Win)

Steps back in History, or reverses/“un-does” the most recent command. Typically the name of the command to be Undone will appear in the menu as well. This works for as many History States as are kept in the **History tab** of the **Status palette**, until you have reached the numeric limit of actions that can be undone. Some actions cannot be undone, and they will not show up as a History state or as the named action to Undo in the Edit menu.

NOTE: *Entering an Edit or Reshape session will erase all previous History states (or possible undos) to allow for that session’s own History states to be built up. Once you Exit the Edit or Reshape session, all of that session’s History states will then be cleared to allow for new History states outside of the session.*

Redo

Command-Shift-Z (Mac) or **Control-Shift-Z** (Win)

Advances in the History, or “re-does” a previously undone action. When the History list has reached the last action taken, the Redo command will not be available.

Just like the Undo command, Entering or Exiting a Reshape session will erase the History states, so no more Redos can be advanced through after this action is taken.

Cut

Command-X (Mac) or **Control-X** (Win)

Removes the currently selected item(s) and places it on the application Clipboard, replacing the current contents of the Clipboard. This is different from a Clear or Delete because it retains a “copy” of the Cut object for possible reinsertion by Paste. You can also Cut by clicking the **Cut button** on the **Button Bar**.

You can Cut anything that you can select. This includes the objects in a model, as well as text in a dialog, surface maps in a texture, rendered images, etc. Objects that are Cut, then **Pasted** back into the same Modeling window will be placed in the exact same location, as if they had not been Cut at all.

Copy

Command-C (Mac) or **Control-C** (Win)

Copies the currently selected item(s), placing a copy on the application Clipboard. Copy does not remove anything from the document, but replaces the previous contents of the clipboard with the copied items. You can also Copy by clicking the **Copy button** on the **Button Bar**.

You can Copy anything that you can select. This includes the objects in a model, as well as text in a dialog, surface maps in a texture, rendered images, etc. Objects that are Copied, then **Pasted** back into the same Modeling window will be placed in the exact same location - you won't be able to tell by looking that you have two or more objects in the same location.

Paste

Command-V (Mac) or **Control-V** (Win)

Pastes the contents of the Clipboard into the active document, keeping all of the data intact (including the location and orientation of the original when copied). This command is available as long as the clipboard contains an appropriate item. You can also access this command by selecting the **Paste button** on the **Button Bar**.

Items that you Paste must be in the same format and context as the place from which you copied them. For example, you can't paste a 3D object into a text field in a dialog, or text from a dialog into an Image Texture window.

Clear

Backspace/ Delete (Mac) or **Delete** (Win)

Removes or deletes the currently selected item(s) from the scene. This **does not** move the items to the Clipboard, so once they are Cleared, they cannot be pasted back into the scene. The Clear action can be Undone to reverse it.

You can Clear anything that you can select. This includes the objects in a model, as well as text in a dialog, surface maps in a texture, rendered images, etc.

Show Clipboard

Shows the current items on the Clipboard in a new Clip window. This window is resizable, and will show geometry, text, images, etc. - whatever is on the application Clipboard. **Copying** or **Cutting** an item from the scene, a dialog, or another application will remove the current Clipboard contents and replace it with the Cut or Copied item. This item can now be Pasted into Strata 3D CX,

NOTE: *Items copied from most other applications use the same Clipboard as Strata 3D CX, so this is a useful way to determine if you still have the same items on your clipboard before Pasting or replacing the item.*

Showing the Clipboard window can display geometry, images, text, even lights and cameras. However, these are non-interactive elements and must be **Pasted** into the scene, a dialog, or a selected text entry area for the items to be used again. Geometry on the Clipboard is shown, by default, from the Front orthographic view in Smooth Shaded form, with textures.

Duplicate

Command-D (Mac) or **Control-D** (Win)

Creates a copy of the selected object slightly offset (0.25 inches or equivalent unit) from the original, by default. The copy becomes the new selected object.

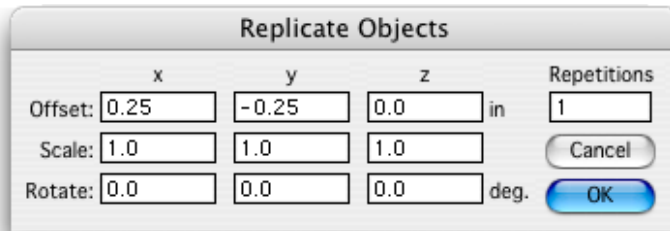
NOTE: *This action does not use the Clipboard, and so it does not replace or clear the Clipboard contents, and can only be used on items within your 3D scene.*

Repeating the command will Duplicate the object again, but allows a different offset. To change the default offset, first select an object and choose Duplicate from the Edit menu. Then drag the newly duplicated object the desired distance from the original. The distance you drag the duplicate from the original becomes the new offset each time you use the Duplicate command, regardless if you Duplicate other objects. This is a quick way of creating copies at regular intervals.

If more than one model is open, each model can have its own offset value which remains in effect until the model is closed. However, each time you open a model, the original default offset of 0.25 inches (or equivalent unit) is restored.

Replicate

The Replicate command can create multiple copies of a selected object, group or shape, all at the same time with pre-set conditions. The dialog box lets you input numeric values for each replication setting. The values are in the same units as defined in the Preferences settings.



The fields in this dialog are arranged vertically by function, and horizontally by axis. They perform the following functions:

- **Offset:** These fields allow you to specify the offset distances along one or more of the three axes for each successive copy. If the units are set to inches, the default value of the offset is 0.25 inches on all three axes.
- **Scale:** These fields let you specify the size of each copy relative to the original. A value of two will double the size of the object(s) with each repetition. A value of one, which is the default value, will make all copies the same size as the original. A value of 0.5 will result in half the size with each repetition.
- **Rotate:** These fields allow you to specify the amount (in degrees) on all three axes by which each repetition should be rotated from its predecessor. The default value for rotation is zero degrees on all axes.
- **Repetitions:** This field specifies how many times the Replicate command should copy the object(s). The default setting for this field is one.

Any settings you enter in the Replicate dialog are retained until you change them or until you close the model. The settings in the Replicate dialog apply to the current model only. If more than one model is open, the replicate settings in each model can be different. However, the original default settings are restored each time you open a model.

Grid Management Commands

Snap to Grid

Select this command if you want objects to snap to the active grid when you draw or move them. Snapping occurs in the increments that you've specified in the Set Units dialog. The Snap to Grid command is a toggle that applies to any active, visible grid in your model, and allows snapping objects, points, and vertices to the points where the gridlines intersect in all views. If a grid is hidden or inactive, the Snap will not apply to that grid. When the command is active (toggled ON), a checkmark will appear next to it in the Edit menu.

Hide Grids

When this command is enabled, the View grid becomes the active grid, even though it is hidden. When the grids are hidden, a check appears beside the Hide Grids command in the menu.

To display the grids, select the Hide Grids command again. The grid that was active when you chose the command becomes the active grid again, and the check is removed from beside the command name in the menu.

Active Grid

You can use the Active Grid submenu from the Edit menu to change active grids. You can also use this submenu to determine which grid is active if you are unsure. A checkmark appears next to the name of the active grid. Only one grid can be active at a time.

The Active Grid command is available only if the **Hide Grids** command is disabled. When you select the command a submenu appears, and each grid in the model appears in this list. The default grids of the X, Y, and Z axes are listed, and any User Defined Grids will also appear in this submenu by their given names.

NOTE: *If you select a grid that is currently hidden (determined by using the Visible Grid command), that grid becomes visible only while active. Then, when you choose a different grid from the submenu, the current grid returns to its hidden status.*

You can also switch between active grids using the **Grid hotkeys:**
X - selects the grid perpendicular to the X axis (**purple** colored grid).
Y - selects the grid perpendicular to the Y axis (**blue** colored grid).

Z - selects the grid perpendicular to the Z axis (**tan** colored grid).

“+” - **cycles forward** in the list of all grids, including User Defined.

“-” - **cycles backward** in the list of all grids, including User Defined.

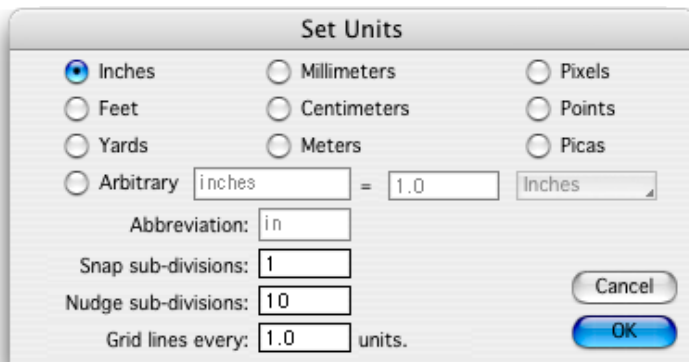
Visible Grids

When you select the Visible Grids command, a submenu appears that allows you to specify which grids to display in the Modeling window. To view individual grids, select them by name from this submenu. Any number of grids may be designated as visible at a time, or none at all, but the active grid is always visible unless Hide Grids is enabled.

Grids that are visible in the Modeling window appear with a checkmark in front of their names. To turn off a grid that is currently visible (checked), select the grid again to de-select it. This will remove the check from beside its name and toggle its visibility in all active Modeling windows.

Set Units...

Choose the Set Units command from the Edit menu to select the default units of measurement. This command displays a dialog box which allows you to choose from pre-defined units of measure. Set Units is available whenever a model is open. If no model is open, the command name changes to Set Default Units, and any changes you make to the dialog become the new default settings.



You can set the Units you wish you use in the current Scene or as a default value by clicking on any of the **Units of Measure** designations at the top of the dialog. These units are arbitrary inside your scene, because the entire 3D environment is “virtual,” but using these designations can be useful when exporting files or measuring and plotting a real-world object.

NOTE: *Strata 3D CX scenes and models do not save the units in which they were constructed. If you change the default units, and then open a model that uses another scale, the current units and scale are adopted by the opened model.*

There are additional settings as outlined below:

- **Arbitrary:** this setting allows you to specify your own units of measure. You can also specify the abbreviation that's used for the units you define.
- **Snap subdivisions:** this field allows you to specify the number of subdivisions within each unit. This value is then used when the Snap to Grid option is enabled. You can enter any integer value greater than zero in this field.
- **Nudge subdivisions:** this field allows you to indicate the number of subdivisions within each unit to use for nudging objects in your model. Enter any integer value greater than zero in this field.
- **Grid Lines every:** allows you to specify how often grid lines are displayed. You can enter any number greater than zero in the Grid Lines field and the visible grid lines will be this many world units apart in all directions.

About Nudge

Nudge works to move the selected object, so long as one of three selection tools is active (Object Move, Rotate, or Scale). All nudge operations are relative to the active grid. The arrow keys nudge the selected object along the grid in the direction indicated by the arrow.

Command-Shift (Mac) or **Ctrl-Shift** (PC) along with the **Up** or **Down** Arrows nudge the selection perpendicular to the active grid.

Nudge Speed Modifier Keys.

Holding down the modifier key **Command** (Mac) or **Ctrl** (PC), while using the nudge arrow keys, nudges the selected object at a faster rate. The speed acceleration factor while using the modifier key is 10. In other words, a Nudge sub-division setting of 10 - ten nudges per unit - would translate to 1 unit step per nudge.

Holding down the modifier key **Option** (Mac) or **Alt** (PC), while using the nudge arrow keys, nudges the object at a slower rate. The speed deceleration factor is 10 or 1/10 the default speed. In other words, a Nudge sub-division setting of 10 - ten nudges per unit - would require 100 nudges to move the object one unit.

Customizing Hotkeys

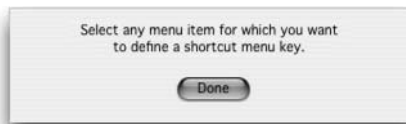
All menu items in Strata 3D CX can have their keyboard shortcuts customized. In the Scripts menu, even the items listed in that menu can be modified by the user to make it easier to customize your workspace and access frequently used commands.

Customize Menus...

Strata 3D CX ships with a default set of keystrokes for many commands and tools, but with the **Customize Menus** command you can define your own hotkeys to use for menu commands. It is important to note that this is applicable to items accessible through the drop-down menus at the top of the workspace, so you cannot assign a hotkey to a non-menu item or tool (such as a modeling tool that is not in one of the menus, like the Spotlight tool).

These user-defined hotkeys require a system-specific key held down: **Command-"key"** (for Macintosh) or **Control - "key"** (for Windows), but you can also add the **Option** (Mac) or **Alt** (Win) modifier to create a three-stroke hotkey. This requirement is because most of the single-key hotkeys are assigned to non-menu items in Strata 3D CX. Many of these single-key hotkeys will also change based on the active state or context of the modeling environment. This makes it extremely difficult to select and keep track of them.

After selecting the Customize Menus command, a dialog opens instructing you to choose the command to which you want to add or change the keystroke shortcut.



Select a menu command to change from the top drop-down menus just as you would normally select it. During this time the command won't perform its normal function; instead, a second dialog appears:



Here you can type the letter or keyboard symbol that will be combined with the system-specific key to create your new hotkey combination. In the example above the dialog is showing the **Command-B** hotkey being defined for the **Convert...** menu item. By simply entering the letter “b” (unshifted) in the dialog box and pressing “OK” this new hotkey is defined.

The original dialog remains open, allowing for many more menu items to be selected and new hotkeys to be defined for all of them. When you are finished defining hotkeys, press the “Done” button in the original dialog and all of the menu items will return to their active state. Any new hotkeys you have defined or altered will now show up in the drop-down menus next to their associated menu items.

Selection Menu

The Selection menu commands help you handle complex models and control how objects are selected. You can hide/show objects in your model to make it easier to work with other objects, designate Construction objects, and also hide or show your animation paths.

Select All

Command-A (Mac), **Control-A** (Win)

Selects all objects or points in the scene or points in the active Reshape window. Use the Select All command to select all of the visible objects, light sources, and cameras in your model. Select All is available when a model is active and there is at least one object in the model.

Selection handles appear around all selected objects. Any objects or shapes that are hidden are not selected with this command. See “Hide Selected” in this section.

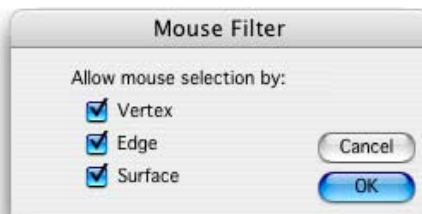
Select None

Command-1 (Mac), **Control-1** (Win)

Deselects all objects in the scene. The Select None command de-selects all currently selected objects. Using this command is the same as clicking the mouse button while the cursor is in the active view, but away from any objects.

Mouse Filter...

The Mouse Filter command displays a dialog with options for selecting objects. These checkboxes allow you to select surfaces only, vertices only, or edges only; or you may use any combination of the three. The mouse filter settings are retained between sessions or until you change them.



Sometimes it's difficult to select objects, either because they are inside another object or behind an object in the active view. Each time you click the mouse,

Strata 3D checks to see if this point matches any of the mouse filters you've selected. If the point matches, the object is selected. If no match is made, no selection is made.

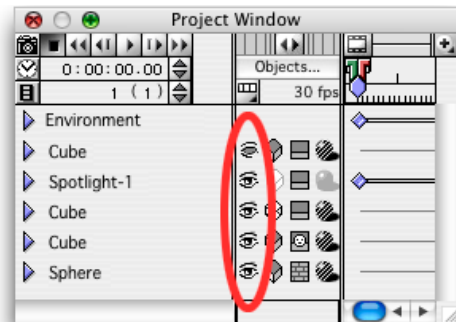
If you turn off ALL three selection filters, clicking on an object will never select it, since no condition exists to match the settings. However, you can still select objects in the Project window, or by dragging a selection marquee around the objects in the Modeling window.

Hide Selected

Command-3 (Mac), **Control-3** (Win)

Hides all selected objects from view in the interactive Modeling views. Hidden objects don't appear in the Modeling window, nor do they render while hidden. You can use this command when you're trying to select objects behind, or inside, other objects. This command may also be useful when you want to temporarily hide objects. Hiding complex objects may decrease the time required for rendering and re-drawing.

When you select the Hide Selected command, the "hide" icon (a closed eye) appears next to the name of the selected object(s) or group in the Project window. This icon can also be used to Hide or Show any object in the scene.



Show Hidden

Command-4 (Mac), **Control-4** (Win)

Returns all Hidden objects to visibility in the interactive Modeling views. These objects are then made the active selection.

When you select the Show Hidden command, the "show" icon (an open eye) appears next to the names of all previously hidden objects in the Project window. This icon can also be used to Hide or Show any object in the scene.

Make Shy

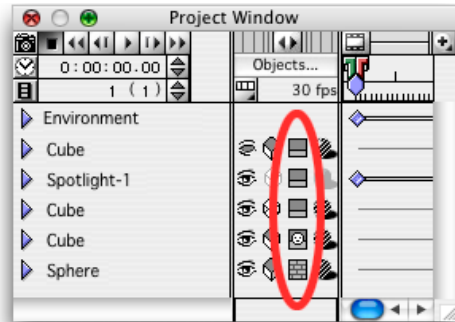
Command-5 (Mac), **Control-5** (Win)

The Make Shy command allows the object(s) to be visible when rendered, but shy objects do not appear in the Modeling window. This feature is useful when

you've finished working on an object in the model. You can remove the object from the Modeling window so that it doesn't obscure other objects or interfere with the modeling process.

If the object you've selected is an instance of a shape, then only the instance is hidden. Other instances are still visible. You can still access the shape for editing. Shapes are covered in greater detail later in the *Strata 3D CX User Guide*.

When you select the Make Shy command, the "shy" icon (a small face) appears next to the name of the selected object in the Project window. You can also click on this icon to make objects shy, instead of using the menu command.



Make Shy Normal

Command-6 (Mac), **Control-6** (Win)

Use this command to make objects that were previously designated as "shy" appear in the Modeling window, as well as in renderings.

When you select the Make Shy Normal command, the "normal" icon (split grey) appears next to the names of all objects that were previously shy in the Project window.

Make Construction

Command-7 (Mac), **Control-7** (Win)

Use the Make Construction command when you want the selected object(s) to display in the Modeling window only. Construction objects are used as an aid during the modeling process. They do not appear in renderings.

When you select the Make Construction command, the "construction" icon (brick wall) appears next to the name of the selected object(s) in the Project window.

Make Construction Normal

Command-8 (Mac), **Control-8** (Win)

Use this command if you want all of the previously-designated construction objects to appear in rendered images.

When you select this command, the “normal” icon (split grey) appears next to the names of all objects that were previously specified as construction objects.

Hide Animation Paths

Command-9 (Mac), **Control-9** (Win)

Use this command to hide all animation paths in the Modeling window. Animation is covered in greater detail in the chapter on “Adding animation” in the *Strata 3D CX User Guide*.

Show Animation Paths

Command-0 (Mac), **Control-0** (Win)

Selecting this command displays the animation path of the object selected in the Modeling window, if that object has an animation path. Animation is covered in greater detail in the *Strata 3D CX User Guide*.

[illegible]

Command-L (Mac) or Control-L (Win)

Command used to enter a special “editing session” to change the shape of an object through modification of sub-parts or components. This is also called **Edit** for certain objects. You can Reshape polygon objects, spline objects and some specialty objects with the Reshape command. If the object you select cannot be reshaped, the command is dimmed. Some object types need to be converted to another type of geometry before they can be reshaped.

You can begin a Reshape session in many different ways:

- By double-clicking on an editable object.
- By pressing the hotkeys: **Command-L** (Mac) or **Control-L** (Win)
- By selecting the object and then choosing the **Reshape** command found in the Modeling menu.
- By pressing the **Edit** button at the top of the main Tool palette.
- Select the **Edit** command from the **Plus menu** of the Object Properties palette for the selected object.

You can end a Reshape session in these ways:

- By closing the Reshape window.
- By pressing the hotkeys: **Command-E** (Mac) or **Control-E** (Win).
- By toggling the **Edit** button at the top of the Tool palette.

Reshape location and windows

If you choose to use the Reshape command from the Modeling menu the object will be reshaped directly in place in the Modeling window. If you double-click on the object (using any of the three Object Manipulation tools) it will open in a separate window where it can be edited by itself in isolation.

To reshape an object that belongs to a group or shape, you can double-click on the group or shape. The group or shape opens in its own window, allowing you to select a single object. You can then reshape the object in this window, or double-click to edit in a separate window.

Reshape Tool palette

Different object types are reshaped in different ways. When in Reshape mode the tool palette changes to a special Reshape Tool palette. The tools available on the Reshape Tool palette depend on the type of object that you're reshaping.

The top six tools are the same in all Reshape modes - just as they are in standard modeling. These include Object Move, Rotate, and Scale tools and the View Move, Rotate and Magnify tools. The Object Manipulation tools apply to objects only, not to individual selected elements within an object being reshaped. Tools directly below the top six tools are specific to reshaping the type of object being edited.

Reshaping different object types

There are basically three types of objects that can be reshaped: polygon objects, spline objects and specialty objects. Polygon objects are defined by a series of flat sections (polygons) that can approximate a curved surface. Spline surfaces are defined by spline curves which can be 3D or 2D. Specialty objects can come in many forms such as Deformation Lattices and IK Objects. Each type of object has its own reshape mode and tools.

If the object you are attempting to reshape is a primitive (a sphere or cube, for example, created using the 3D drawing tools), the Convert dialog will appear first to allow you to change the object type to one that can be edited.

Edit Placement

You can edit the texture placement of the selected object by clicking the Edit Placement menu command. The mapping mode of the texture you select from the drop-down menu will effect the type of placement and editing controls that are offered.

If UV mapping is used, the Position Texture dialog box will appear. You can change the location, rotation, and scale of the Texture across the U and V parameters of the surface of the object that is selected. This is only for the selected object, and not all objects that have this texture applied.

When a non-UV mapped texture is selected and you select the Edit Placement command, the Tool palette changes, similar to modeling reshape modes. Tools are provided for moving, rotating or scaling textures on the object. Handles appear on the selected object. You can move, rotate, or scale the texture as desired. The handles display "+" and "-" symbols to indicate up/down, front/back and left/right.

For textures applied with the Decal projection, the front and back handles (in the “Z” axis to the texture) are also used to determine the depth or distance that the decal penetrates the object.

Some procedural and Volumetric texture types (Wildlife and Mist for example) don’t offer a way to position the texture.

Edit Selected

The Edit Selected submenu displays the textures applied to the currently selected object and allows quick access to editing them. Choosing one of the textures from the Edit Selected menu opens the appropriate Texture editing window.

End Reshape/ Edit

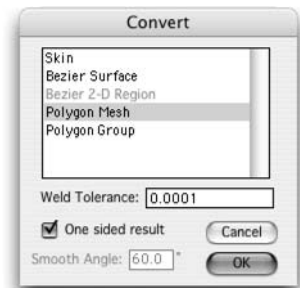
Command-E (Mac) or **Control-E** (Win)

Finishes a Reshape or Editing session and returns the Edit Tool palette to the general Tool palette, and closes any opened Reshape windows. This is the closing command for any Edit or Reshape session, including editing Texture placement, modifying Bezier Spline surfaces, Polygon Reshapes, and any other “in window” or “new window” Edit or Reshape.

Convert...

The Convert command allows you to change an object from one type of geometry to another by selecting a new Object Type from the Convert dialog. Select the object(s) you want to convert then select the Convert command from the menu to display the Convert dialog. The Convert command can also be accessed using the **Convert** command button on the **Button Bar**. All of the allowable conversions appear in the dialog. Those that don’t apply to the selected object(s) are dimmed and unavailable.

Some objects can be automatically converted by simply double-clicking on the object. For these objects, such as 3D primitives, the Convert dialog appears after the double-click, allowing you to select which kind of object type you wish to convert it to.



The dialog offers the following options:

- **One sided:** This checkbox allows you to specify whether the object becomes one-sided or two-sided. If you are planning to apply a transparent texture with refractive properties, or a volumetric effect such as Fog or Mist, it must be created as a solid, one-sided object.

- **Smooth Angle:** The Smooth Angle field only applies when converting objects to Polygon Mesh. It sets the maximum angle between adjacent polygons that will produce a smoothly rendered effect. If the angle of incidence is greater than this value, no smoothing occurs at this particular boundary, and the surface appears creased. The range for this field is from 0 to 180 degrees. Generally, the higher the value, the smoother an object appears. Lower values result in a more angular appearance of the surface.

Object types

The conversions available depend on the type of object(s) selected:

- **Skin:** Objects created with the Lathe, Extrude, or Path Extrude tools can be converted to Skin objects.
- **Bézier Surface:** The types of objects that can be converted to a Bézier surface are: 3D primitives (spheres, cones, cubes, rounded cubes, cylinders); Skin objects (may convert into a group containing both a Bézier Surface and Bézier Region endcaps); filled or unfilled 2D rectangles, rounded rectangles, and discs created with the Oval tool.
- **Bézier 2D Region:** Filled, two-dimensional objects created with the Rectangle, Rounded Rectangle, or Oval tools. Objects created with the Polygon tool must be converted to Polygon Group first, and then converted to Bézier Region.
- **Polygon Mesh:** Almost any object can be converted into a polygonal mesh. This includes all of the 3D primitives, any filled 2D primitive, Bézier surfaces, and Bézier regions. If the object being converted has a complexity slider in its Object Properties, this slider can affect the polygon count in the polygon mesh created.
- **Polygon Group:** Anything that can be converted to a Polygon Mesh can be converted to a Polygon Group. Polygon Groups can be Ungrouped to get access to the individual polygons (be sure the Project window is closed if you do this as it can make for lengthy redraws of the Project window). Polygons can be re-grouped and converted into a Polygon Mesh.

Conversion Changes

All conversions occur on a one-to-one basis. That is, if five objects are selected and converted to Bézier Surface, the result will be five Bézier surfaces. If the five objects are grouped together first, the result will be one group with five Bézier surfaces.

However, if five objects are grouped together and converted to Polygon Mesh, the result is **one** mesh. When converting to Polygon Group, the result is one group with all of the polygons. This allows you to combine multiple meshes together.

When objects are converted, all of the properties listed under their Base Properties in the Project window are lost during the conversion process. All of the

properties listed under Object Properties in the Project window (which includes textures) are maintained. However, once you group an object, the object and **all** of its properties - both Base Properties **and** Object Properties appear under the Group's Base Properties.

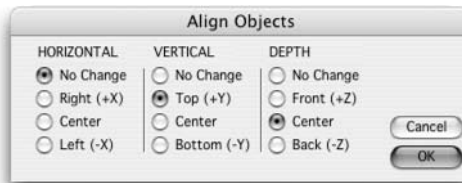
So, if you group an object **before** converting it to another object type, **all** of its properties are lost. This is a way of eliminating any information that may become unnecessary later.

Align...

Command-/ (Mac) or **Control-/** (Win)

The Align command allows you to align selected objects on the horizontal, vertical, or depth axis, either separately or in any combination of the three. Align is available whenever two or more objects are selected. The Align command can be started by selecting it from the **Modeling** menu, or by pressing the Align icon in the **Commands** tab of the **Extensions palette**.

In all cases, the Align dialog will open. This dialog allows you to specify which combination of alignments you want. When you first open the dialog, the settings default to No Change on each axis, so to make any alignment at all, you must choose an option for at least one axis.



The alignment options in the dialog box (left, center, top, front, etc.) are relative to the **Front** view in world coordinates. You can align the objects horizontally by either their left or right sides, or by their centers. The vertical alignment can be by the tops, bottoms or centers of objects, and depth alignments are by front, back or object centers.

If none of the selected objects are locked, the location of the outermost object on each axis determines the boundary for the edge alignment point. If the position of one of the selected objects is locked (on the Transform tab of the Object Properties palette), the command uses the outermost dimensions (extents) of the locked object(s) as the alignment boundaries.

Re-center

The Re-center command positions the object's origin point back to its geometric center after the origin point has been moved. The Re-center icon is found in the **Commands** tab of the **Extensions palette**, and also in the **Modeling** menu. The Re-center command is only available whenever an object is selected.

The object origin point is the point that the object rotates around. This point is usually, but not necessarily, at the geometric center of the object. When the display method is set to Wireframe, Outline, or PointCloud, you can see the object origin point whenever an object is selected. It appears as a small blue diamond about the size and shape of the red handles of the object.

When you first create an object, the origin point is located at the geometric center of the object. However, you may want to move the origin point to a new location. The position of the origin point can affect the object in the following ways:

- It sets the axis for rotation on the object.
- It is where a child object is linked to its parent.
- It locates the object on its animation path.

To move the origin point without moving the object itself, hold down the key **Command** (Mac) or **Control** (Win) while dragging the origin point to its new position. This position now becomes the point around which the object rotates. Instead of grabbing the origin point, if you hold down the Command key (Mac) or the Control key (Win) and grab the object, the object moves and the origin point remains stationary.

You can move the origin point in any direction on the active grid or in a plane parallel to the active grid. To move the origin point perpendicular to the active grid, you must switch to a perpendicular grid.

The Re-center command is the easiest method for putting the origin point back in the geometric center of an object, although you can reposition it back to its center manually, as well. The origin point of objects imported from other applications may not be located in the geometric center. You may need to use the Re-center command on objects after importing them into your model.

You may need the Re-center command in these situations:

- After Joining two objects. For example, you might want the child-object to rotate about its own geometric center rather than the parent's. (When you Join one object to another, the child's origin point moves to the position of the parent's origin point.)
- After lathing or extruding a 2D object. Otherwise, the origin point remains in

the center of the template.

- After manually moving the origin point for some operations. This is often done for special rotation needs.

Group

Command-G (Mac) or **Control-G** (Win)

Grouping does just what the name suggests - it allows you to group objects together so that they can be selected, moved, rotated, scaled, textured, animated, (etc.) as a group. The Group command can also be accessed through the **Group button** on the **Button Bar**.

This command is available whenever any objects, groups and/or shapes are selected. You can group any combination of any type of objects you have in your model, and even group together multiple groups to create “sub-groups.” Once you’ve grouped them, they act as one object. You can perform the same basic operations on a group that you can perform on a single item. When a group is established, its coordinate system is aligned to the active grid.

When selected, groups normally appear within a single bounding box. However, if the group’s Base Properties is opened (turned down) in the Project window, individual components of the group can be selected individually. (See Editing Groups, below.) A group can contain other groups; for example, two or more groups can be grouped together.

This command can also be used with single objects. There may be times when you want the object’s coordinates aligned to the grid. Once you rotate an object, for example, its own coordinates and bounding box may no longer be aligned to the grid, and moving the object perpendicular to the grid may be difficult. When you group an object, a new set of coordinates is established for the group, with its new coordinates aligned to the active grid. Therefore, once you group the object, you can grab the handle parallel to the active grid and move the object away from (perpendicular to) the grid. Then, after you’ve moved the object, you can ungroup it to restore its previous coordinates.

Ungroup

Command-U (Mac) or **Control-U** (Win)

Use the Ungroup command to split Grouped objects into separate objects again. You can access this command anytime one or more grouped objects are selected. You can also select the **Ungroup button** on the **Button Bar**. When a group contains other groups, only the outermost group is affected by the Ungroup command, but each time you use this command, the next level is ungrouped.

Editing Groups

You can access the individual objects within a group in two ways:

- **Double-clicking** on the group in the Modeling window. It may be easier to work with a group in its own window. You can open a group in its own window by double-clicking on the group.

For example, you may want to change the relative position of the individual objects within the group. If the model is complex, it may be difficult to access parts of the group without affecting other objects. You can double-click on the group so it opens in its own window, then change the position, scale, etc. of the individual components within the group. You don't need to ungroup the group first.

- Open the Group in the **Project Window**, then open (turn down) the Base Properties triangle. Any time the Base Properties field of a group (or shape) is in its "open" position in the Project Window, the individual objects that make up the group can be edited and otherwise manipulated in the Modeling window.

Shapes within Groups

Even when you can't access individual objects within a group, you can still access shapes that are part of a group in their own shape windows. Any changes you make to a shape in its workspace will appear in any instances of the shape, even if it is inside of a group at the model level.

Nested Nodes

A nested node happens when an attribute is applied to a group, and then the group is ungrouped. During the Ungroup operation, the software applies each attribute that was applied to the group to each individual object. This information is then stored under a "nested node" entry in the Object list in the Project window.

Nested nodes may not always cause problems, but in general it is best to avoid them. Problems can occur when you try to change or move an object that contains a nested node. The information in the nested node may override other

changes and interfere with what you are trying to do. Nested nodes are especially problematic with textures. It's best to apply textures to individual objects, not to groups.

Avoiding Nested Nodes

Use group windows to apply attributes, including textures, to individual objects. Double-click on the group to open the group in its own window. Or have the Base Properties for the group open in the Project window. This is the same as editing in a Group window: when the Base Properties arrow is turned down, all the objects can be edited individually, either in the Project window or in the Modeling window.

NOTE: *With Booleaned objects, do not apply textures until you are through with the Boolean and UnBoolean operations. Nested nodes can also occur with objects that have had a texture applied, and then Booleaned and UnBooleaned. You can avoid nested nodes by selecting the “Auto repair nested nodes” checkbox in the Preferences dialog.*

Deleting Nested Nodes

To remove attributes in nested nodes, delete all of the numeric values from the fields under the Nested node in the Project window. This means you must turn down every arrow and delete every numeric entry. With the object's name selected and highlighted in the Project window, select **Delete Attribute>Empty Attribute** from the **Plus** menu. If the Nested node does not disappear from the Project window, make sure you have deleted all the information from all of the fields.

- **Nested Textures:** Textures cannot be deleted from nested nodes, and nested textures are always the main texture that will render on the object, regardless of any other textures applied to the object. However you can negate the effect of a texture: In the nested node, you will see a subcategory titled surface shader. Turn down the arrow and find the texture name and Edit button. Click the edit button to summon the texture editing dialog. Set the stencil field to 0 percent.

If there is a map in the stencil map field, you need to remove it. Click on the map in the editing dialog to summon the image map dialog, then hit Delete, then OK. This makes the nested surface shader invisible. However, this texture will also be invisible on all other objects that it is applied to.

Modeling menu Tools

At the bottom of the Modeling menu (and taking up much of its size) are the various modeling and animation tools and commands that are also found on the **Extensions palette** in either the **Tools tab** or the **Commands tab**. This includes Meld & UnMeld, Align & Unalign to Path, Unboolean, Burn UV, Drop a Curve, Hull & Unhull, Fillet, Flip Faces, Explode, Shatter, Smooth Mesh, Subdivide & Unsubdivide, and Thickness.

They are described individually in the *Strata 3D CX User Guide*, in **Chapter 3 - Constructing Models**, and in **Chapter 9 - Adding Animation**.

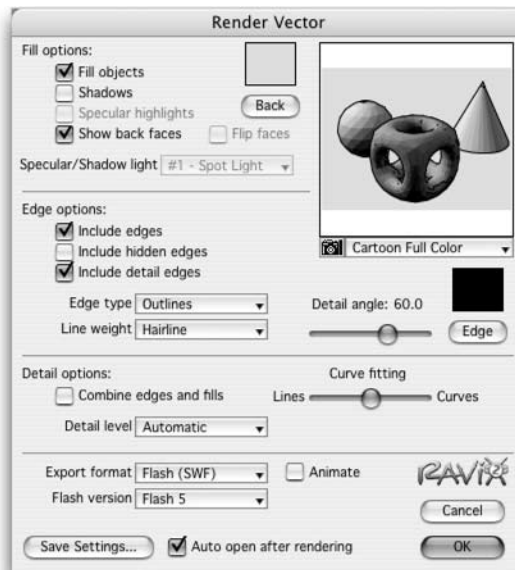
Rendering Menu

Render Image and Render Live3D are covered in depth in the *Strata 3D CX User Guide*, but Render Vector... and the Rendering Queue are not. These are covered in more depth here

Render Vector...

If a copy of Strata's rendering extension, **Strata 3D Vector**, is installed on your system you will find the Render Vector... command available in the Rendering menu. A Vector rendering is composed of line-based art, not pixels. The renderings created in this way are saved directly to disk, and not shown on screen, except in the Preview.

When you choose the Render Vector... command, the Render Vector dialog opens, allowing you to choose the rendering settings, fill options, edge options, detail options and export format. The settings in the Render Vector dialog can be preset for you if you start the rendering using the Rendering tool and one of the pop-up menu Vector settings.



Strata 3D Vector stays true to colors, lighting, camera views and animations. You can choose among several vector output options, including three levels of outlines, five levels of cartoon shading, two levels of gradient shading; shadows, and specular highlights. Strata 3D Vector can handle models containing

well over 200,000 polygons and the rendered files are fully optimized.

Renderer settings

The Rendering Settings pop-up menu is located just below the Preview Area. You can select from five Cartoon settings and two Gradient settings. Further customization can be achieved using the additional settings in the Render Vector dialog.

- **Cartoon single color:** This is the most primitive fill type. Although it produces the smallest files, the image quality may be poor. However, there are several situations where this choice could work for you- if you have models that are broken up into several smaller sections with different textures applied to them, the exported colors will often give you a better sense of shape, or if you are exporting with outlines, this fill level is greatly enhanced. The outlines will define the surfaces, while the fills will give the image solidity.

If you are looking for a true “cartoony” look, this can be an effective output choice. However, you may still find adding Outlines necessary to give your characters and objects more definition.

- **Cartoon average color:** This is usually a good choice overall, especially for files containing a lot of geometric shapes. When you use this option, the vector renderer separates your objects into groups of polygons that occur on similar surfaces and applies a flat fill to each of the surfaces according to its angle towards the light sources. This is especially apparent in an animation, because the vector renderer records each surface’s brightness for every frame. When you play the animation back, your eyes are tricked into seeing gradients when none are actually present.

Cartoon Average is less useful with smooth, organic models, because there are very few surfaces defined by hard edges.

- **Cartoon two color:** This option is the next step up in quality from the Cartoon One Color. The addition of another color begins to really define the 3D look. Because there is more information going into the file (additional color fills), your files will be larger than the One Color option. If you compare the two side-by-side, however, you may find the sacrifice to be worthwhile.

- **Cartoon four color:** At this level, you will start to see some realism in your model. Again, the vector renderer is calculating each surface’s relative angle to the light source, and filling in four different colors. Unfortunately, file size becomes an issue. Depending on the animation’s length and the target audience, you may find Cartoon Four Color Fill to be too much.

If file size is not an issue, or your project is going to be distributed via CD, DVD, locally on a network, or via print media, you will like the details that

start to come out with this option.

Gradient fills

Gradient fills produce smoothly shaded and realistic looking vector renderings.

- **Area gradient shading:** With this setting the vector renderer looks for groups of polygons that occur on similar surfaces, and applies one radial gradient to each surface. It determines those surfaces by the presence, or lack of, hard edges in your model. This can generate some nice looking content with fairly small file sizes, most of the time. This works well with models that are more geometric than organic.

NOTE: *You may find some discrepancies between the gradients you see in the preview, and what appears in your actual saved file. Also, you can enhance the gradients in your exported file by placing your selected light closer to your objects.*

- **Mesh gradient shading:** This option produces the highest quality vector export. Each polygon in your animation receives a linear gradient fill, and the result is comparable to a raster rendering. However, there is a big difference: scalability. You can show this export at any size and it will always be identical.

As with Area Gradient Shading, you may find some discrepancies between the gradients you see in the preview, and what appears in your actual saved file. Also, you can enhance the gradients in your exported file by placing your selected light closer to your objects.

Preview area

You can preview your vector rendering at any time by clicking on the camera icon at the top left corner of the preview area. Only the current frame of your animation will be previewed.

Fill Options

The Fill options include five checkboxes, the Specular/Shadow Light pull-down menu, the Background color box, and the Preview / Fill Type area. The Fill options provide a colored surface for your objects. Textures applied in Strata 3D are averaged to a single color when vector rendered.

NOTE: *The Preview/Fill Type area serves a dual purpose, and works differently than other Strata 3D preview renderers. It works as both a Fill Type selector AND a preview area for all of the choices in the entire dialog.*

- **Fill Objects:** This checkbox enables the Fill Type menu in the Preview section, and allows your objects to be filled. If you leave this unchecked, you will not get any fill inside your objects. If you leave this unchecked and do not enable Include Edges in the Edge Options part of the dialog, your previews will be blank - nothing will show up at all.

- **Shadows:** Check the box to enable shadows, and then choose a light from the Specular/Shadow Light drop down menu. When you render your scene, you will have a shadow - as long as there is something to cast that shadow on. Using a simulated ground plane in your model will work for shadows, or you can get shadows on your object cast by the object itself.

NOTE: Use an object such as a rectangle in your model to form a ground plane. Do not use the Strata 3D ground plane found in the Environment palette. It will increase the render time excessively.

You can also have shadows cast on other objects - the shadows will adjust to the shape of those objects. If the shadows don't look quite right, try adjusting your light source in Strata 3D.

- **Specular Highlights:** Adding specular highlights to your export can really improve its appearance. With Cartoon Single or Cartoon Average Color Fills, that little glint of light on an otherwise flat fill can add a lot.

- **Show Back Faces:** This option has to do with the "normals," - the direction polygons are facing in your Strata 3D model. In general, you should leave this checkbox enabled (checked). You should only disable it if you are trying to get every last bit of performance out of the vector renderer; because it does speed up rendering slightly.

- **Specular/Shadow Light:** This pop-up menu is used to choose the light that will define the specular highlights. If you also choose to cast shadows you must use the same light source to perform both functions. If you do not have any spot or point lights in your model, the vector renderer designates a global light as the default.

NOTE: To modify the amount of specularity of your models, you'll need to change the Micro-polish channel of your applied textures. Textures applied in Strata 3D are averaged and become a single color in the vector renderer.

Edge Options

You can export edges only, or combine them with any of the fill options. Remember that the additional edge information will increase your file size.

- **Include Edges:** This checkbox controls whether or not you include any edge information in your file. Not including edges can give you a more realistic look, while using edges gives the objects in your exported files a more defined look. Disabling the Include Edges checkbox disables all of the options in this part of the dialog.

- **Include Hidden Edges:** This is an extension of the Wireframe concept in that it exports the front and the back edges of your model, giving it a "transparent Wireframe" look.

- **Include Detail Edges:** The lowest level of edge detection comes when you are only looking for an outside edge - essentially an outline around the object. Enabling Include Detail Edges tells Swift 3D to start looking for interior edges, giving more detail to your exported file.

Edge Type

You have two options when choosing the Edge Type feature: Outlines and Entire Mesh.

- **Outlines:** This option looks for the hard edges on your exported objects in order to draw the outlines. Depending on how your model is constructed, you can control the point at which you will start to see the internal detail by adjusting the Detail Angle. (To use Detail Angle, make sure Detail Edges is enabled).
- **Entire Mesh:** This is similar to a Wireframe rendering option. Entire Mesh exports the outlines of every polygon in your model or scene. The tighter the mesh, the more polygons are exported, and the larger the file size. You can only alter the detail of your exported image by reducing the number of polygons in your model. Very smooth (high polygon) objects will appear almost black with lines, while very low polygon objects will begin to look like they were exported using the Outlines options.

Line Weight

This option lets you set the weight of your lines when rendered. Because of the nature of the Flash Player, the difference between different line weights won't be noticeable until you get above one point of line weight.

Detail Angle

Checking Include Detail Edges (above) enables the Detail Angle slider.

This option controls how sensitive the vector renderer is to the Edge Detail detection. The lower the threshold angle, the more edges will be detected. Conversely, the higher you go, the fewer edges will be detected. It depends on the angle differences between the different faces of your objects, i.e., how the model is constructed. You may need to experiment a little to get the results you want.

Edge Color

This opens a color picker dialog, where you can select the color of your edges.

Detail Options

These settings help to determine the level of detail that your final Vector rendering will have.

- **Combine Edges and Fills:**

As the name indicates, this checkbox tells the renderer to combine both edges and fills together in the final rendering.

- **Detail Level pop-up:** Select a Detail level from the pop-up list. Setting the Detail level to high will make your exported file look better, while setting Detail level to low will give you a smaller file. Generally, it's a good idea to leave the setting on Automatic, unless the image quality becomes unacceptable, or the file size becomes too large.

- **Curve Fitting slider:** In theory, curves should give you better results, and mathematically, they require less memory to describe. But in practice, curves

may not be the best choice. Because of the way Flash geometry is calculated, it often results in irregular curves. If you take a semi-smooth object in Flash and optimize its curves as much as possible, you will probably get some distortion of your outline. The same holds true for vector output.

There are two things you can adjust while balancing accuracy and file size. The first is the Curve Fitting slider and the second is the Detail Level (see Detail Level above). The optimal settings will vary, but generally, you should leave the slider where it is unless you don't like your output or the size of the file.

Export options group

Choose your file type for export by selecting it in the Export Format pop-up menu. Then enable the Animate checkbox to tell Strata 3D Vector to render an animation. The options in this section of the dialog will differ, depending on the file type you choose. These are your choices for file format:

- **Encapsulated PostScript (EPS):** these files can be used for print, but can also be used as an intermediate step before converting files to Adobe LiveMotion. You will notice that when you choose EPS or AI as an export option, the two gradient shading fill options become unavailable. This is because Level 3 EPS is not currently supported by the vector renderer. If you are going to be using EPS renders for print media, see the next section on Adobe Illustrator.

- **Adobe Illustrator (AI):** The vector renderer can render your 3D files accurately enough so that when you import it into a 2D vector drawing program, it's like it was hand-drawn. The ability to create scalable 3D images is a powerful option, since raster 3D exports have limitations.

- **Scalable Vector Graphics (SVG):** this is a newer format that is not yet widely used. When writing to the SVG file format, you have two extra options: Animation Level and Compressed:

- **Animation Level** refers to how you want your SVG files to be built. This can either be **Native**, which means that the scripting that drives your animation is included within the SVG code itself, or **Script**, which generates two files for you - one SVG file that contains the frames of your animation, and one HTML file that contains a JavaScript that drives your animation.

One difference you may want to pay attention to is if you have a long animation (more than 40 frames) you will start to see the file size increase when exporting with the Native Animation Level.

- **Compressed:** The Compressed option reduces the file size by eight or nine times over no compression. The obvious advantage is that it's easier to publish to the web when a file is compressed. The disadvantage is that you lose the ability to edit your file. Therefore, if you are planning to incorporate your SVG animation into another SVG file, you'll want to leave it uncompressed.

Macromedia Flash (SWF)

The Flash Player is widely available, and Macromedia Flash has become the standard for vector graphics on the Web. It has become the low-bandwidth

solution for creating animations and interactivity. Now 3D graphics can be displayed across all browsers, on all platforms.

One limitation of Flash is that there is no support for 3D natively within the Flash Player, i.e. an internal rendering engine. Therefore a keyframe must be exported for every frame of your animation. And since Flash doesn't know how to tween 3D objects between key frames, long animations can produce quite large file sizes.

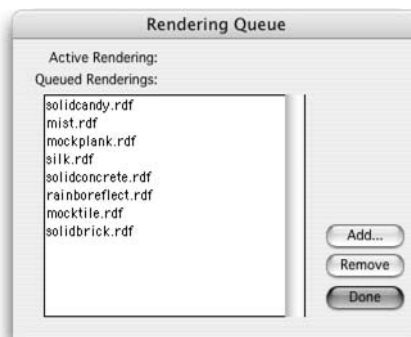
You must consider where you will be publishing a file. If it's going on a CD, or displayed on a network, file size is not an issue. But most users are using Flash to display their 3D content over the Web, where file size is a big factor in deciding on a design.

- **Flash Version:** Here you can choose between Flash version 3, 4, or 5. Although the exported files are fairly equal, an extra bit of information is necessary for Flash 4 files. When you export to Flash 4 using the Area or Mesh Gradient Shading option, you will have to have a “dummy” frame at the beginning of your animation. Once imported into Flash, you just need to delete the extra frame and save your project.

Otherwise, the Flash file types are the same. No matter what you save your file as, it will play back in any of the versions of the Flash Player, and will import into any of the versions of the Flash authoring tool.

Rendering Queue

The **Rendering Queue** command, found in the **Rendering** menu, lets you add suspended renderings to a rendering queue. A rendering queue is a line-up of suspended renderings waiting to be started. When one finishes and saves to disk, the next one in line begins, until the queue is finished.



You can add multiple suspended renderings to the job list in the **Rendering Queue dialog**. Only one rendering is active at a time. The order in which you add the jobs to the queue determines the order in which they are rendered. When you close a queued rendering, either because it has completed and been

saved or it has been terminated by clicking the close box, the next rendering in the queue (if any) loads and begins rendering.

The rendering queue cannot support multiple renderings at one time. Remember, with more than one rendering in progress at a time, you must send them all to the background so they will share CPU time.

If you quit Strata 3D while renderings are in the queue, they are deleted from the queue. The queuing of renderings between sessions is not retained. An alert is displayed informing you that renderings are still present in the queue, and asking if you are sure you want to quit.

Suspend Rendering...

Use the Suspend Rendering command, from either the **Rendering** menu or the **Plus menu** from the rendering window itself, to save a rendering in progress. You can then restart it at a later time. The Suspend Rendering command is available when a rendering window is the active window, and the rendering is in progress.

When you select this command, the Suspend Rendering file browser dialog is displayed, allowing you to specify a name and location for saving the suspended rendering. Strata 3D automatically adds the .rdf suffix to the end of the file name.

Suspending single frames

If you suspend a still image (single frame), the dialog allows you to specify a name, location, and file format for the suspended rendering. The Collect checkbox is unavailable when suspending single frames.

Suspending Animations

If you suspend an animation, the name, file format, and location of the file would have been already set when the rendering was initiated. The Suspend Rendering command creates a suspension file containing all of the information necessary for continuing the rendering process. The dialog allows you to specify a name and location for the suspension file. This is the file that you need to restart when you're ready to continue rendering. Suspended renderings can also be added to the rendering queue.

- **Collect existing frames:** When this box is unchecked, any frames that have completed rendering remain in the location previously specified. If this box is checked, all frames of an animation are collected and copied to the same location as the suspension file. The files are renamed with the same name as the suspension file and the file type is appended to the end. The original frames remain in the previous location.

You can specify a new location each time you suspend the rendering. This option allows you to save groups of frames to different volumes, and can be extremely useful when disk space is limited on any one volume.

Suspend and Continue

Use this command to save the rendering in its current state of completion, and then automatically continue on with the rendering process. This command is available from both the Rendering menu and the Rendering window's Plus menu.

Windows Menu

The Windows menu includes commands to control which windows and palettes are displayed on the screen. There are also commands to adjust the views within the Modeling windows.

New Window

Command-⌘ (Mac) or **Control-⌘** (Win)

The New Window command opens a new window with the same configuration as the active window. This command is useful because it allows you to view your model through another window with a different focal point - or View Set Center as its known in Strata 3D. New Window is available whenever a document is open.

Once the new window is open, it can be modified. For example, you can split the window into multiple views, delete or resize views, change the view orientation, or change the display scale - all without affecting the previously open Modeling window.

Dock Palettes

This command “docks and collapses” many of the floating palettes, and arranges all palettes at the edges of the current main monitor window. (This does not include the Project window or Modeling window - only Palettes.) This is the equivalent to carefully collapsing each palette (that can be collapsed) and then moving it to the top or bottom of the screen so that you can see your Modeling window, Project Window, and other windows clearly. Docked palettes can be freely moved and arranged after being docked. Collapsed palettes can easily be expanded again by clicking on one of their tabs, or choosing the Expand Palette command from the palette Plus menu.

Stack Palettes

This command “stacks” many of the floating palettes along the right edge of the screen (and expands them if they are collapsed), places the Resources palette along the bottom of the screen, and moves the Tool palette back to the upper left side of the screen. This is the equivalent to resetting the palette arrangement to the application default for your screen size.

NOTE: *Some palettes will still overlap each other based on your monitor resolution. When you click on or in an individual palette, it will be brought to the front. Some palettes also expand automatically and may cover parts of “lower” palettes.*

Show/Hide Palettes commands

This section of the Windows menu provides controls to show and/or hide your palettes. Palettes can also be managed using the palette management buttons at the bottom of the Tool palette through the mini-icons.

These commands control the display the palettes. If the palette is already open, the command changes from Show to Hide. You can also press the hotkey listed to open the palette. If the palette is already open, the hotkey will collapse the palette.

Show/Hide **Environment** Palette
Hotkey "e"
Show/Hide **Extensions** Palette
Hotkey "t"
Show/Hide **Status** Palette
Hotkey "i"
Show/Hide **Object Properties** Palette
Hotkey "o"
Show/Hide **Resource** Palette
Hotkey "r"

Show/Hide Tool Palette

This menu item will toggle the visibility of the Tool palette. While many of the functions of the Tool palette remain accessible through hotkeys, many tools and settings require the Tool palette, so it is not typically hidden. There is also no hotkey for hiding the Tool palette for this same reason.

Show/Hide Project window

Hotkey "p"

Only one Project window is displayed at a time, even if you have more than one model open. However, when you change the active model, the Project window redraws to reflect the current model. If the Project window was showing when you quit the application it will be open when you re-launch the application.

Fit Views to All

Command-="" (Mac) or **Control-=""** (Win)

The Fit Views to All command adjusts all views in the active Modeling window to include all objects in your model, excluding the grids. Fit Views to All is available anytime a model is open.

When you select this command, the distance of all views in the active window from the View Set Center is adjusted and repositioned, if necessary, so the entire model is displayed. The magnification settings are also reset so that all of the objects in the model will appear in all the views. This is useful when you have lost your place in your model.

This command allows you to automatically move to a larger view of the model or shape. The location of the active View Set Center at the time you select this command determines the extent to which the view must be modified. Only the views of the active window are affected.

Modifier keys that apply to Fit Views to All command:

Option (Mac) or **Alt** (Win)

Holding down this modifier key while selecting the command will include animation paths, as well as all objects, in the view fit. Without the Option or Alt key, this command extends the view to include only the objects in the model. Determining the extents of all the animation paths of all the objects so they can be included in the views takes longer to calculate, so this command operates noticeably slower with the Option or Alt key held down.

Fit Views to Selection

Command-"." (Mac) or **Control-"."** (Win)

Use the Fit Views to Selection command when you want to adjust all views in the active window to include only the selected object or set of objects. It does not include any grids which may be associated with the object. Fit Views to Selection is available whenever an object is selected.

The command adjusts the distance of all views in the active window from their View Set Center and, if necessary, repositions the View Set Center to fit around the selection. The magnification settings are also reset so that any objects you have selected will appear in the views.

This command allows you to automatically move to a tighter view of a specific area within the model or shape. Depending on the location of the View Set Center at the time you select this command, the affected views may need to be relocated. You can also shift the views and viewing scale manually by using the tools on the Tool palette. Only the views in the active window are affected.

Modifier keys that apply to Fit Views to Selection command:

Option (Mac) or **Alt** (Win)

Holding down this modifier key while selecting the command will include animation paths of the selected object, as well as the objects, in the view fit. Without the Option or Alt key, this command fits the view(s) only to the selected

objects. Determining the extents of the animation path for the selected object so it can be included in the views takes longer to calculate. This command may operate noticeably slower with the Option or Alt key held down.

Fit Views to Active Grid

Command-[(Mac) or **Control-[** (Win)

The Fit Views to Active Grid command will ignore the geometry, lights and all other elements in your scene (whether selected or not), and instead fit the view to the currently active Grid.

If the Grid has been re-sized using the Grid tool, then all of the visible Grid will be fit into the view. If the active Grid is “edge on” then this command will fit the view to the only visible dimension of that grid.

Reset Views

Command-] (Mac) or **Control-]** (Win)

Reset Views will reset the view (or views if you have split the view to two more) for the active window. Specifically, this means the views will be reset to standard viewing orientation and magnification.

For example, set a view to the Front viewing position by selecting “Front” from the View Orientation pop-up menu at the top left of the view. Next, rotate the view using the View Rotate tool - the pop-up will read “Custom.” Now change the magnification level of the view using the View Magnify tool. Selecting Reset Views will return the view to the Front position with no magnification.

Reset Views does not change the position of the view, such as if it has been moved using the View Move tool or by using one of the “Fit Views” commands described above. Reset Views will, however, clean up any corruption to the modeling view that may have occurred while zooming or adjust the view position and/or rotation.

Camera Windows submenu

This submenu gives you access to the windows associated camera objects by listing the names of the Camera objects in the scene. If you haven’t inserted any camera objects in the active model, the Camera Windows submenu is dimmed.

When you select one of the camera objects in the list, that camera’s window becomes the active window. You can also open a camera window by double-clicking on the camera object directly in the Modeling window. A check mark appears in front of the camera window’s name when it’s the active window. To

make another camera window the active window, select that camera's window from the list.

Camera windows are a special type of window. Each one contains a view of the model from the position of the camera object. It is not attached to any view set, as are the views in Modeling windows. Camera objects (and their windows) are free to move anywhere and to have any orientation in the model.

Spotlight Windows submenu

The Spotlight Window submenu displays a list of all the spotlights that are present in the active model. Each spotlight has its own spotlight window. Spotlights are placed into your model using the Spotlight tool from the Tool palette. Spotlight windows make it possible for you to “see” exactly where the spotlight is illuminating the model.

Spotlight windows are always square, and represent the area of full illumination. If the spotlight is selected in the Modeling window when you select its window from the submenu, the ring representing the area of full illumination is also visible and fits exactly in the window. This window also provides controls that help you aim the spotlight in the Modeling window.

When you select a spotlight from the list, the window associated with that spotlight opens and becomes the active window. You can also open a spotlight window by double-clicking on the spotlight icon in the Modeling window. When a spotlight window becomes active, a check appears in front of the spotlight window's name in the submenu. If no spotlights are present in the active model, the Spotlight Windows submenu is dimmed and unavailable.

Snapshot/Image Windows submenu

This submenu displays a list of all open rendering, snapshot, and animation windows. This command is available when one or more of these windows are open. If none are open, the command is dimmed. When a rendering, image, or animation window is the active window, a check mark appears in front of the window's name. In the active window, select that window from the list.

Open Scenes/ Files list

At the bottom of the Windows menu is a list of all currently open Scenes, or individual Strata 3D model files. Because Strata 3D CX can have multiple files open at one time, they are listed here to allow easy selection and switching between them by name. The currently active scene file has a checkbox next to its name.

Help Menu

The Help menu provides access to learning and reference material, as well as the entire Strata.com website.

Web Resources

This command is a live link to the Strata.com website. This is your hub for learning about Strata products, getting support, and entering the community portal for Strata enthusiasts. Clicking this command will open the web site in your systems default web browser if you are connected to the internet.

User Guide

This command links directly to the PDF version of the *Strata 3D CX User Guide*. Clicking this command will open the User Guide in the Adobe Acrobat reader, or other default PDF reader on your operating system

This is an electronic version of the full printed manual that ships with the boxed software. The PDF version includes hyperlinks and bookmarks to allow for quick access to various topics, almost as fast as flipping physical pages. The standard Acrobat Search function can also be used to find key phrases or words.

All references to the Reference Manual made in the PDF version of the User Guide are hyperlinked to this Reference Manual PDF as well.

Reference Manual

This command links directly to the PDF version of the *Strata 3D CX Reference Manual* (this document). Clicking this command will open the User Guide in the Adobe Acrobat reader, or other default PDF reader on your operating system

The PDF includes hyperlinks and bookmarks to allow for quick access to various topics, almost as fast as flipping physical pages. The standard Acrobat Search function can also be used to find key phrases or words.