

Controlling Radiosity

When you are dealing with Radiosity solutions, there is no right and wrong, it is what you perceive to look right! You might have the wrong numbers but the right look or the right numbers but the wrong look. Experimentation will always be needed to achieve the ultimate look. This is a quick beginners tutorial on setting up an interior to be illuminated solely by a Daylight system. **In the image below, on the left is what your final results should look like after this exercise; the one on the right is what can be achieved by adding some textures and furnishings.**



Open the scene labeled **Room.max** inside of **VIZ 4**. This scene is linked to Room.dwg, which was created in Architectural Desktop 3.3. You will notice that materials have already been applied to everything in the scene. For the doors and windows I selected the item and went into VIZBlock sub-object, I selected the glass and then opened the materials editor and created a glass material. Once the glass material was created, I dragged and dropped it to the window geometry that was selected in sub-object mode. I did the same for the door and window molding. I extruded the ceiling and flooring in the sub-object VIZBlock mode. A Camera as well as a Daylight system exists already in the scene. *Furniture, molding and textures are **not** included in this file.*

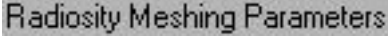
Right-Click in the Camera viewport to make it active.

Open the **Radiosity**  panel and set the **Initial Quality** to **35%** and press **Start** .



Notice how flat and strange everything looks in the scene. This is not due to the quality but a few other items that will be addressed further in this exercise. The "quality" refers to the accuracy of energy distribution, not to the visual quality of the solution. Most of the brightness is distributed in early iteration during the solution the iterations that follow help reduce the variance between different surfaces in the scene.

In the *Interactive Tools*, **Enable Display Radiosity in Viewport** and set the *Filtering* to **4**.

Using this allows you to see the solution in the Viewport, the Filtering helps reduces the amount of noise between surfaces.


Open the **Radiosity Meshing Parameters**  group. **Enable** the *Global Subdivision Settings* and set the **Meshing Size**: to **1'**.

*VIZ calculates the lighting of the scene by "meshing" or sub-dividing the geometry into elements. The smaller the Meshing Size, the more accurate the lighting solution will be at the same time the solution will take longer and more time to solve. The **Subdivide** modifier can be used to "mesh" specific objects instead of the entire scene or you can adjust this under the Radiosity Tab in the properties dialog of an object.*

Press **Start** , after the solution is calculate press **Quick**  **Render**.


Notice how there are more variations in color but the scene still "glows" this is caused by the amount of energy or Reflectance the materials are giving off.

Open the **Materials**  **Editor**.

Select the first Sample Slot, which is labeled "Walls". Press the **Standard**  **button** and choose **Radiosity Override. Enable** *Keep old material as sub-material*, press **OK**.

*This material allows us to control the amount of Reflectance, Transmittance and Color bleed of a material besides other things. **This material will only be seen through a radiosity solutions. This material does not always have to be used** but some of us like to be able to control the materials with ease. The Reflectance of a color can be controlled by adjusting the amount of HSV or if it is a bitmapped material, adjust the RGB values. In certain situations, this material can actually improve the solution. To check the recommended values for Materials, browse through your help file for **Reflectance and Transmittance Display**, there you will find a chart.*

Set the **Reflectance Scale: .5** notice how the Reflectance Avg: is reduced to 29%.

Select the third Sample Slot, which is labeled "Flooring". Press the **Standard**  **button** and choose **Radiosity Override. Enable** *Keep old material as sub-material*, press **OK**.

Set the **Reflectance Scale: .3** notice how the Reflectance Avg: is reduced to 22%.

Open the **Radiosity**  **panel** and press **Start** . Once the solution is done press **Quick**  **Render**.

If you are doing a static image, I suggest the following:

Open the **Radiosity**  **panel** and set the **Initial Quality** to 1% and press **Start** . Do not adjust the Meshing Parameters.

Open the **Rendering Parameters**  **Group**.

Enable Regather Direct Illumination

This gives you the best look with shadows from all objects, correct artifacting and shadow leaks but it will take a considerable amount of time to render. This calculates direct lighting and indirect lighting from the existing Radiosity solution.

Set the **Rays per Sample: 25**

This is the number of rays (light) that VIZ disperses randomly in any direction to calculate the indirect illumination of a scene. The more rays, the more precise the image will be but it will take longer to render.

Set the **Filter Radius (pixels): 15**

Use this to reduce "noise" or blotches that the samples produce in conjunction with its neighbors. This number will vary depending on whether you are outputting to NTSC or print.

Bump mapping issues?

One of the things that I did notice when using Bump maps was the poor Anti-Aliasing or smudging effects associated with that material. Notice on the left image below how poor the floor and the chair look versus to the image on the right. This effect was only occurring on Radiosity solutions, which obviously calculates indirect lighting. Just by reducing the **Indirect Light Bump Scale** the image became more desirable.

