

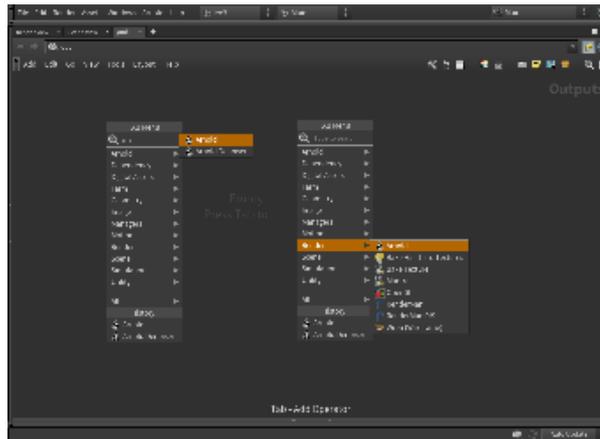
# Rendering Your First Scene

This topic leads you through a simple example of how to render a scene in Houdini using Arnold. It assumes you have already read about how to install HtoA, and how to set up [licensing](#) (if you don't want [watermarks](#) in your renders).

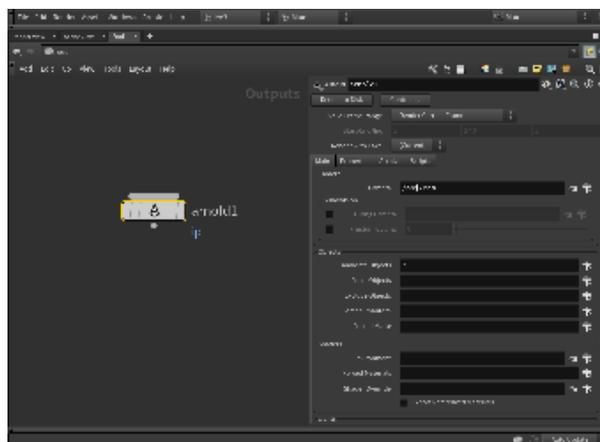
The scene file can be found [here](#).

## Create a Render Output

- Once HtoA has been installed, start Houdini. A good way to check if the Arnold For Houdini plug-in is working is to create the **Arnold ROP** (Render Output) as this sources many scripts in its creation. In the Houdini network editor go to **Outputs** and create an Arnold ROP by tab-typing "arnold" or **Tab > Render > Arnold**.



This node contains all the render properties and is organized into tabs. These are all discussed further in the sub-topics of the Arnold [Render Settings](#) section. It is possible to have multiple Arnold ROPs with different settings in each for individual render situations.



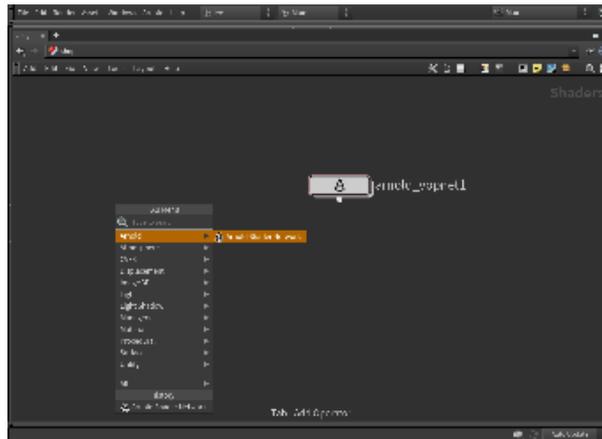
Arnold ROP

## Create the Floor

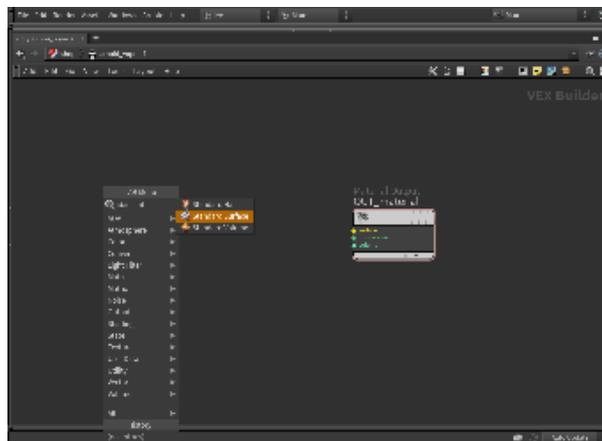
- Let's create some geometry for the scene. Create a grid to act as a floor. Click on the **Create** tab of the Houdini shelf, and Ctrl+click the **Grid** icon.

## Add a Material to the Floor

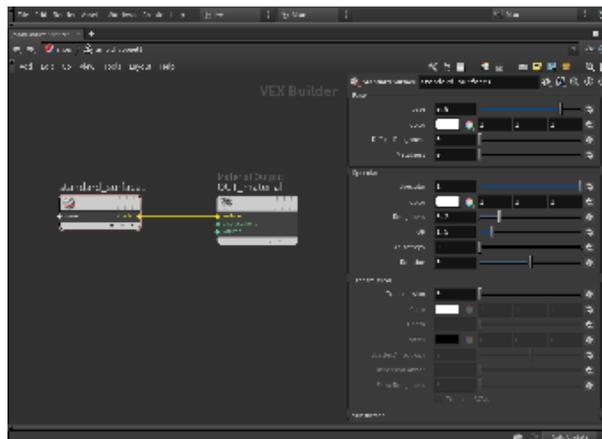
- Let's add a material to our floor. Go to the *SHOP* context (Shader Operators) and create an *Arnold Shader Network* (**Tab > Arnold > Arnold Shader Network**).



- Select the newly create **arnold\_vopnet** and either press enter or double click it. Inside you should see the **OUT\_material**.
- Press **Tab** and type **Standard Surface**.



- Connect the **shader** parameter of the *Standard Surface* to the **surface** of the **OUT\_material**.



- The **Standard Surface** shader can be used to create many types of materials and as such has a lot of parameters. The parameter interface is divided into groups (discussed in detail in their own sections). For now, let's just change the **Base Color** to a nice blue. To assign the shader, left-drag the *arnold\_standard1* node from the SHOP onto the Grid geometry or select it from the **Material** parameter of the grid object.

 More information about shaders can be found [here](#).

## Create a Sphere and Add a Shader

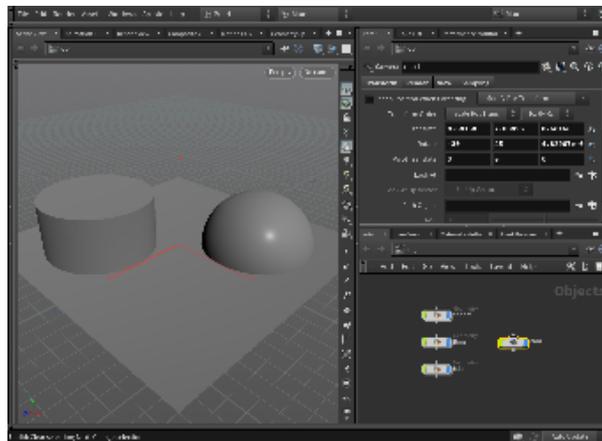
- Next, create a sphere, again by choosing from the **Create** tab of the Houdini shelf, and place it on the floor plane. By default, the sphere will intersect the floor plane in the y-axis (this will be obvious in shaded view, which you can switch to by pressing the 'w' key while in the main view). This is fine but scale up the sphere slightly and move it over to the right.
- For this object, let's assign another material but do it a slightly different way. Go to the SHOP and create an **Arnold shader network** (**Tab > Arnold > Arnold Shader Network**). Double click this material to enter VEX Builder. This is where the Arnold shaders can be connected together to create networks. Create a **Standard Surface** shader (**Tab > Custom > Standard Surface**) and connect it to the **surface** input of the **Material Output** node. Change the **Base Color** to a green. Assign the shader *arnold\_vopnet1* to the sphere object.

## Create a Tube and Add a Shader

- Next, we'll create another object... let's choose a tube this time. Again, scale it up slightly and place it in the scene to the left of the sphere.
- Assign another new **Standard Surface** shader using either of the methods above. This time, set the **Base Color** to red.

## Create a Camera

- To render the scene, you will need to create a camera from the yellow box in the top right of the viewport. Zoom this camera in slightly to get a closer view.

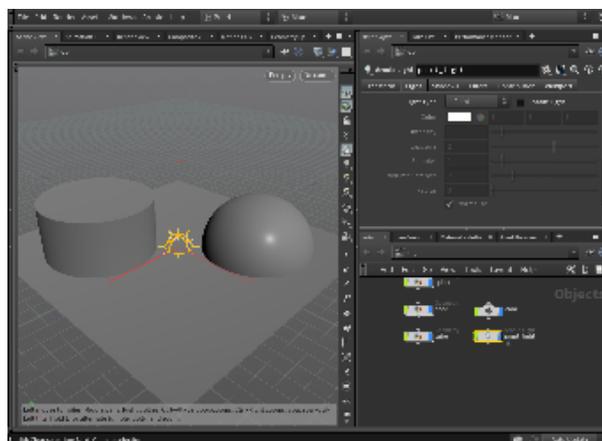


## Create a Light

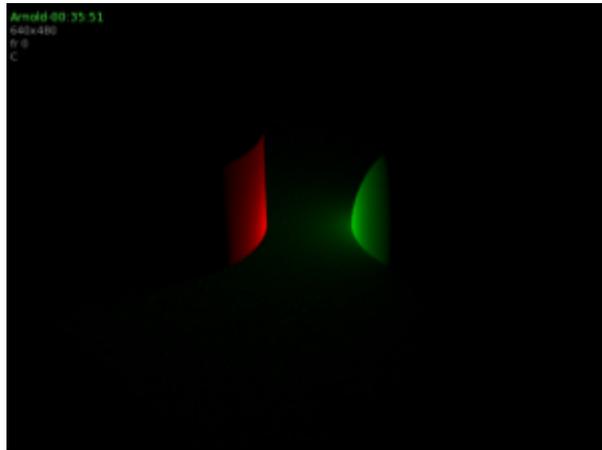
- To add some illumination to the scene we need to create an **Arnold Light**. This node is used for all lights in Arnold for Houdini. By default, the **Light Type** is set to **Point**. Increase the **Exposure** to 2.



The native Houdini lights will not be translated, you can only use Arnold Lights.

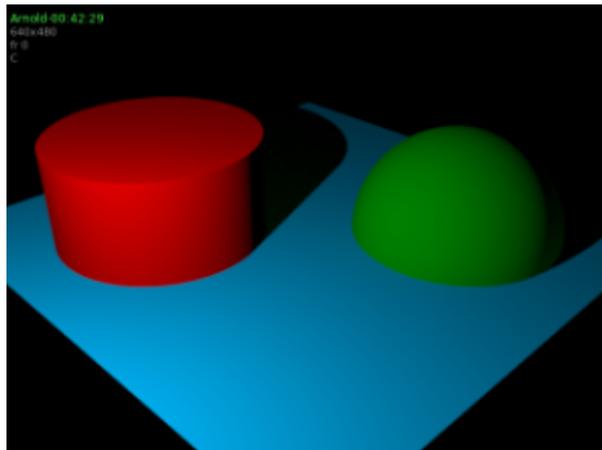


By default, the point light will be located at the origin of the scene, and if you render, you should see that some light is coming through.



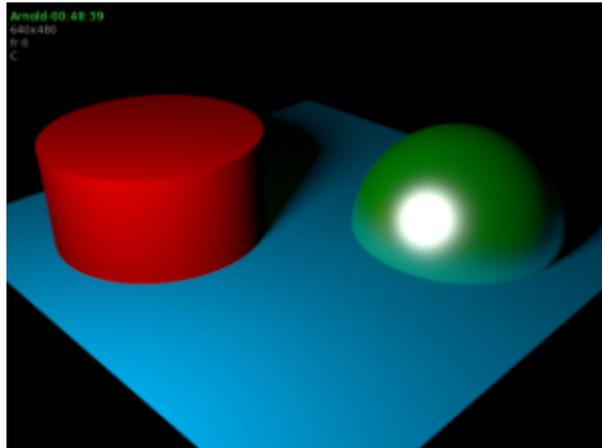
### Move the Light

- You may need to move the light to see the shadow better. You may still find that the scene is darker than what you usually get with other renderers. That's because lights in Arnold have **quadratic decay** by default. So go ahead and increase the exposure of the light to 7.



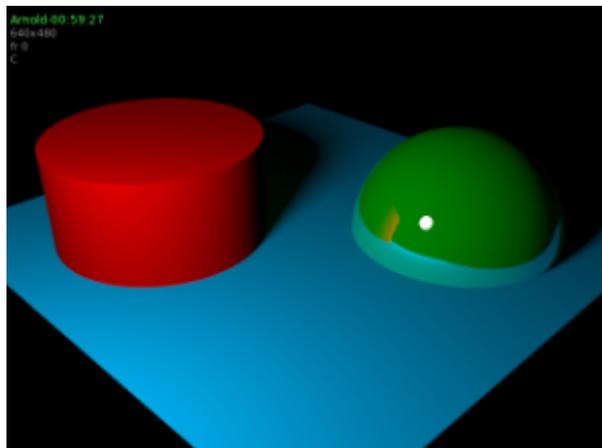
### Change to Soft Shadows and Make the Sphere More Shiny

- Increase the **Radius** of the light to 1 to get soft shadows.
- Select the attached Standard shader and change the **Specular** attribute to 1.0.



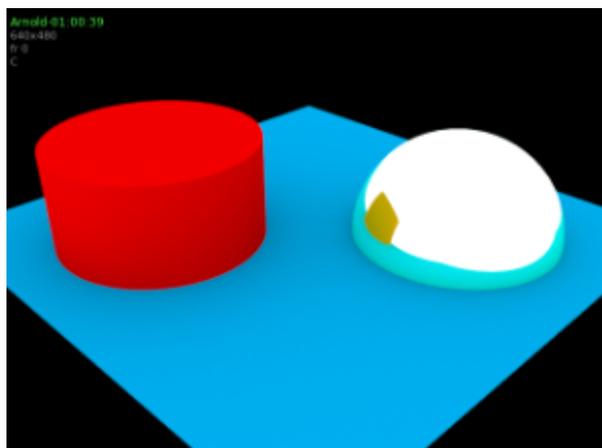
### Make the Sphere More Reflective

- Specular roughness needs to be zero for mirror reflections. Alter the **Roughness** attribute in the same area and enter a value of **0**.



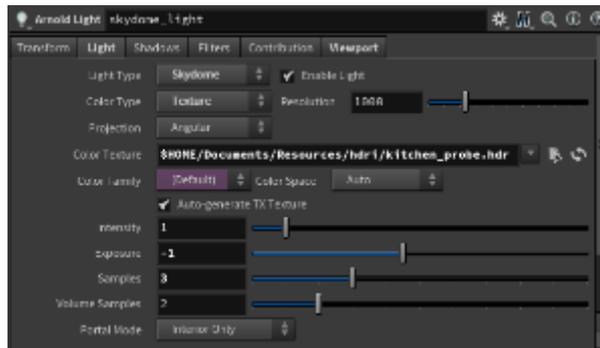
### Using Image-Based Lighting

- One type of light that will be used very often is the **skydome** which illuminates the scene with an environment texture. Change the **Light Type** from **Point** to **Skydome** and bring the **Exposure** back down to **0.5**. You will now have an evenly lit render.



- [kitchen\\_probe.hdr](#)

- An HDR image can be assigned by changing **Color Type** to **Texture** and assigning the Environment Map above to the **Color Texture**. Lower the **Exposure** to **-1**.



## Tutorial Complete

That is the end of this short introductory tutorial. Now that you know how to assign and edit Arnold **shaders** and create Arnold **lights**, it might be useful to play around with various settings for a few minutes before reading on. You may also want to try some more **tutorials**.

