Rendering In-Depth QuickStart

This page provides a detailed QuickStart guide to rendering with V-Ray in Nuke.

Overview

In this QuickStart tutorial we are going to look at extending the Nuke Script that we have already created in the previous tutorials. We will be adding a few more Render Elements, exploring the **VRayExtraTex** node, increasing samples and render quality as well as making sure that we render out all the channels we have created with **VRayRenderElements**. We'll also look at how to rebuild a comp in its most basic form and manipulate the channels after we have already rendered out the Nuke Script.

To follow this tutorial, you will need to have the V-Ray for Nuke plugin installed. This tutorial is a companion to go along with the QuickStart video posted on our YouTube channel.

Tutorial Assets

To download the files used in this tutorial, please click on the button below.

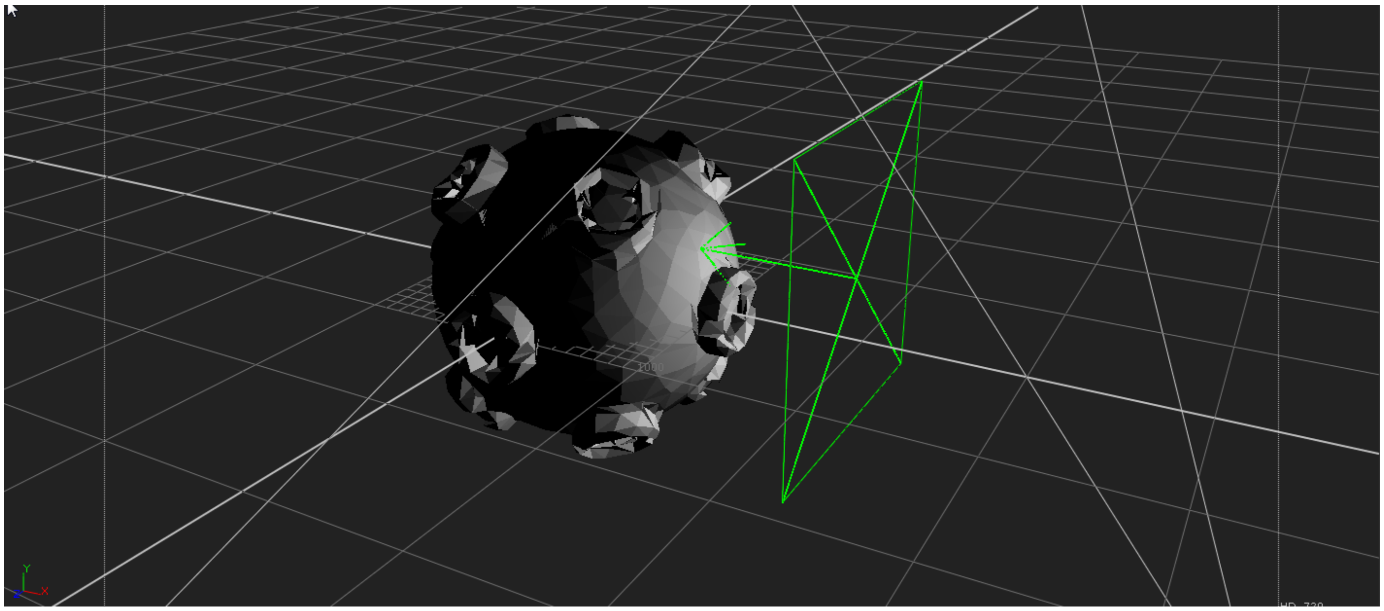
Download
Project Files

Due to licensing issues, the Road_A.hdr file used in the tutorial video is not included in the downloadable assets. Instead, please use one of the provided HDR images in its place.

Tutorial Steps

1) The Starting scene

You will be starting with the Nuke script you created in the last QuickStart tutorial on lighting, so open up that Nuke script. Let's clean this Nuke script up a bit by deleting all the lights except **VRayLightDome** and **VRayLightRect2**. In the 3D view, move **VrayLightRect2** closer to the geometry so you have a clearer view of what it is contributing to the scene. Finally, make this light invisible by enabling the **Invisible** checkbox.

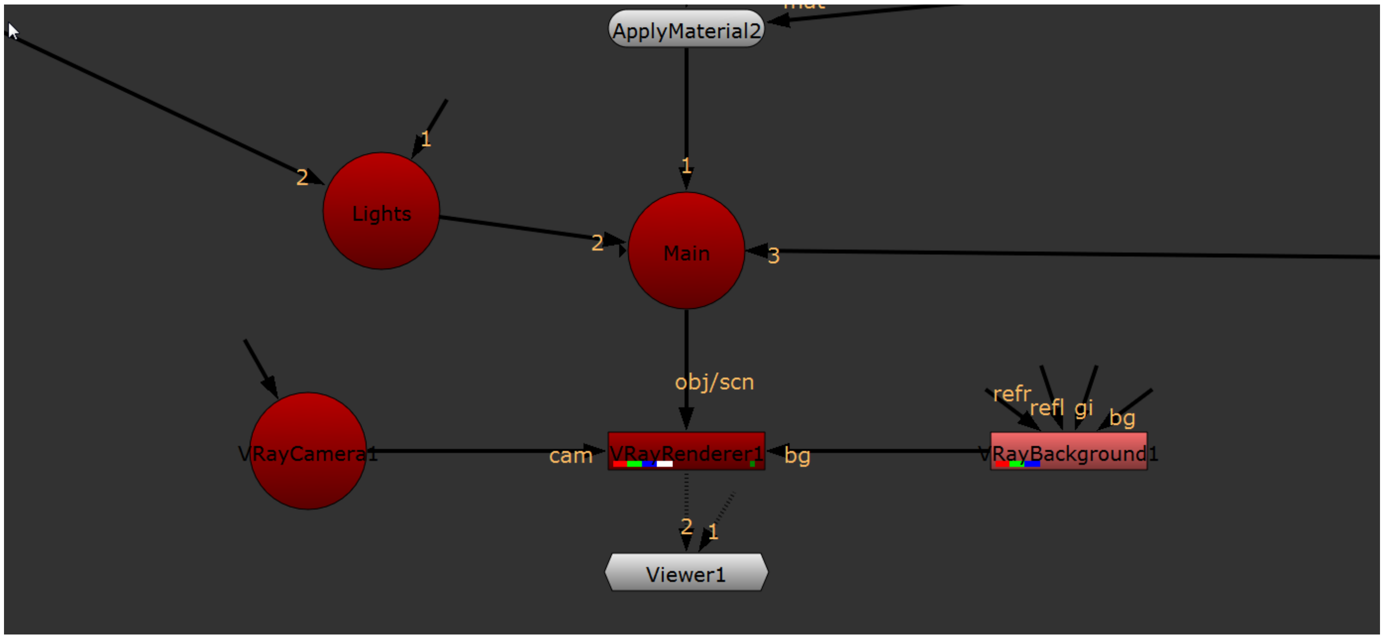

Position of VRayLightRect2 in 3D view

2) VRayBackground Node

In the last tutorial, you created a set of V-Ray render elements that consisted of Multi Matte, Diffuse, Specular, Reflection and ZDepth. We also discussed the use of the **VRayMaterialWrapper** to assign material properties that the material ID would come through in the Multi Matte render element.

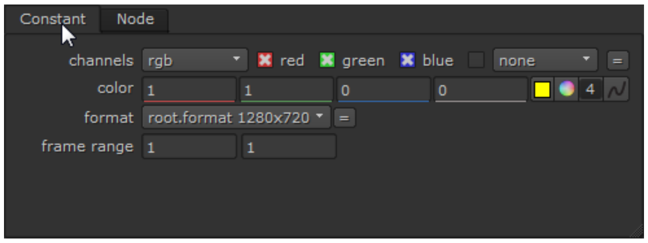
Now you're going to add a really useful node called the V-Ray Background Node. With this node, a connected texture or constant can affect the Background, Global Illumination, Reflection or Refraction across the entire scene.

Press the **Tab** key, type in the name **VRayBackground**, and add this node to the Nuke script just beside the **VRayRenderer** node. Connect the **VRayBackground** node to the **VRayRenderer** node's **bg input**.



Connection between VRayBackground and VRayRenderer nodes

Add a **Constant** node into the scene and make it yellow by setting its red, green, and blue colors to *1*, *1*, and *0* respectively.

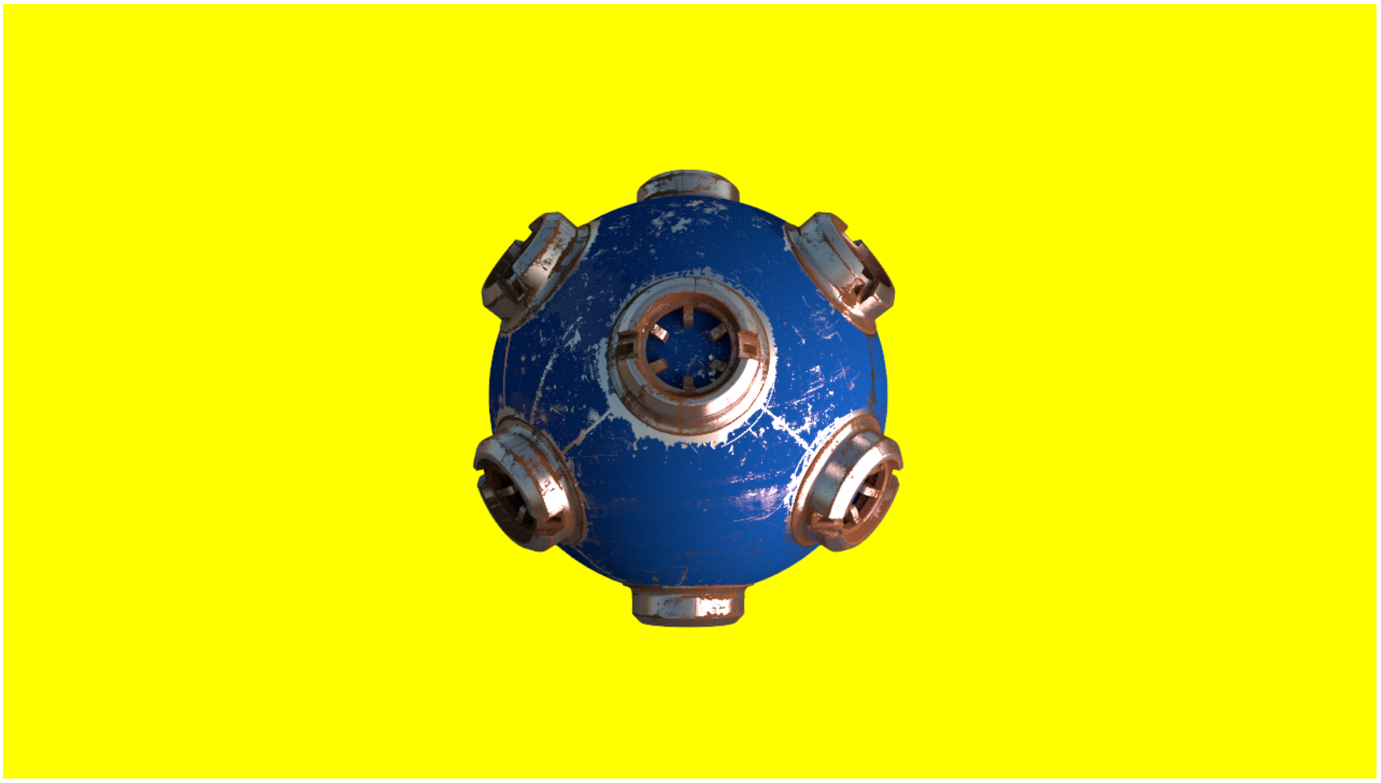


Constant | Node

channels: rgb ✓ red ✓ green ✓ blue none
color: 1 1 0 0 4
format: root.format 1280x720
frame range: 1 1

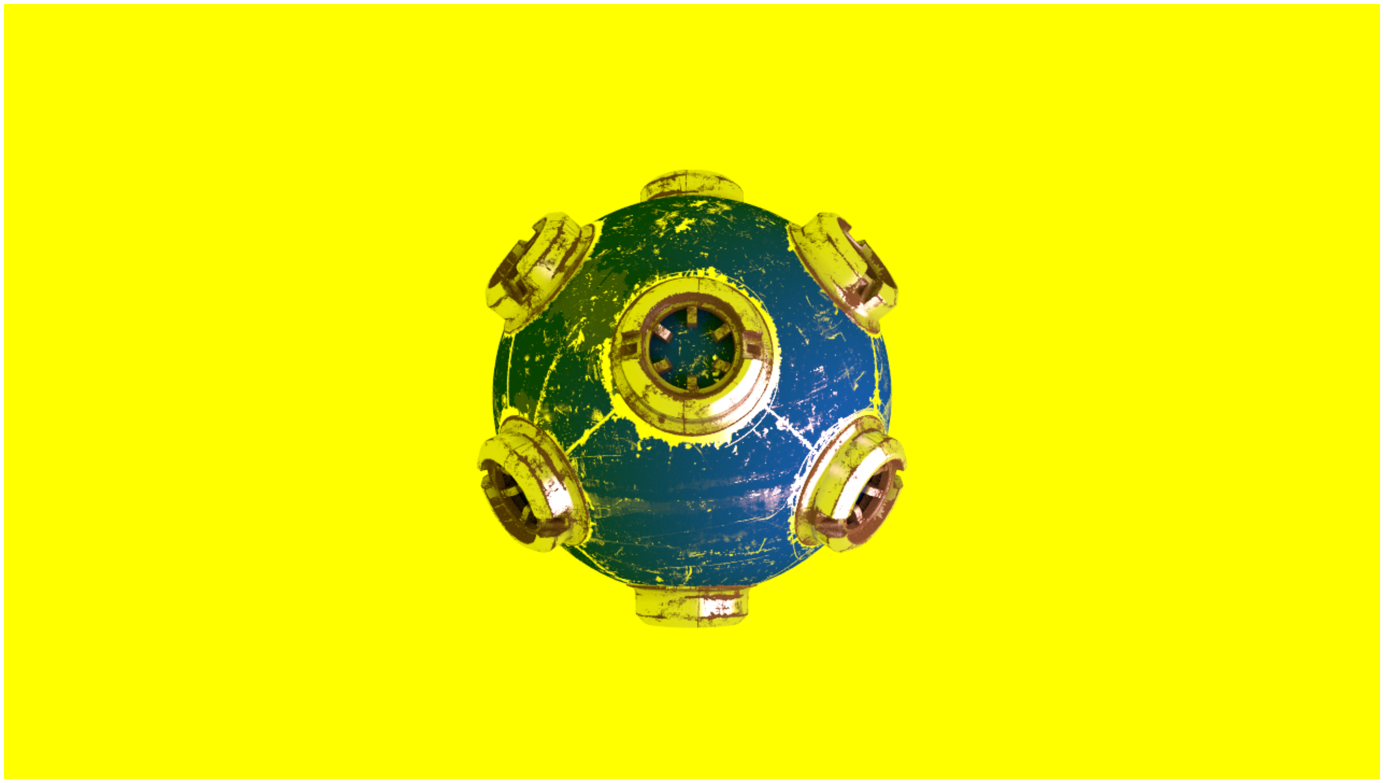
Setting a yellow Constant node

Select the **VRayLightDome** node in the Nuke script and set it to be invisible using the **Invisible** checkbox. If you connect the yellow **Constant** node to the **bg input** of the **VRayBackground** node, you will see the yellow color as the background of the render. The lighting itself is coming from the **VRayLightDo me** and **VRayLightRect2** nodes and not from the yellow **Constant** node.

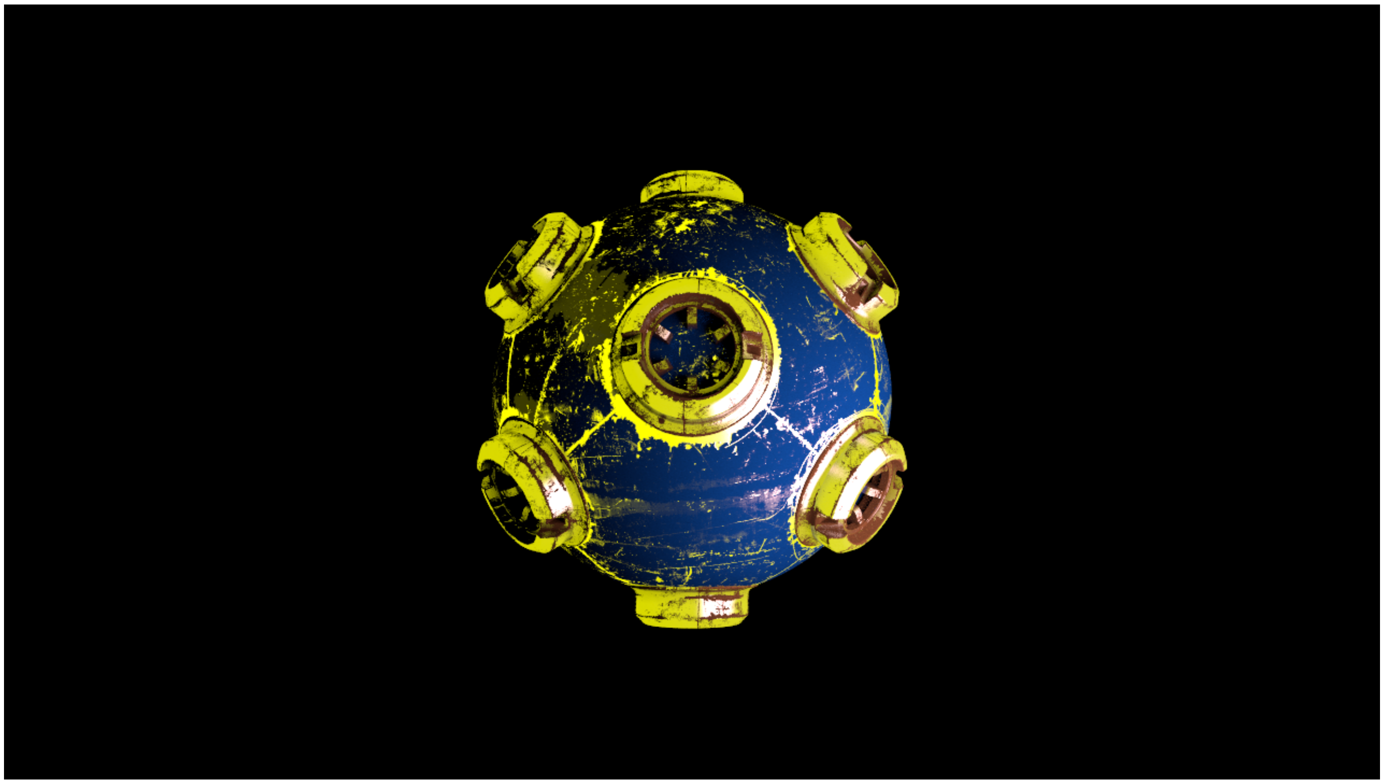


The Yellow constant node connected to the VRayBackground node's bg input

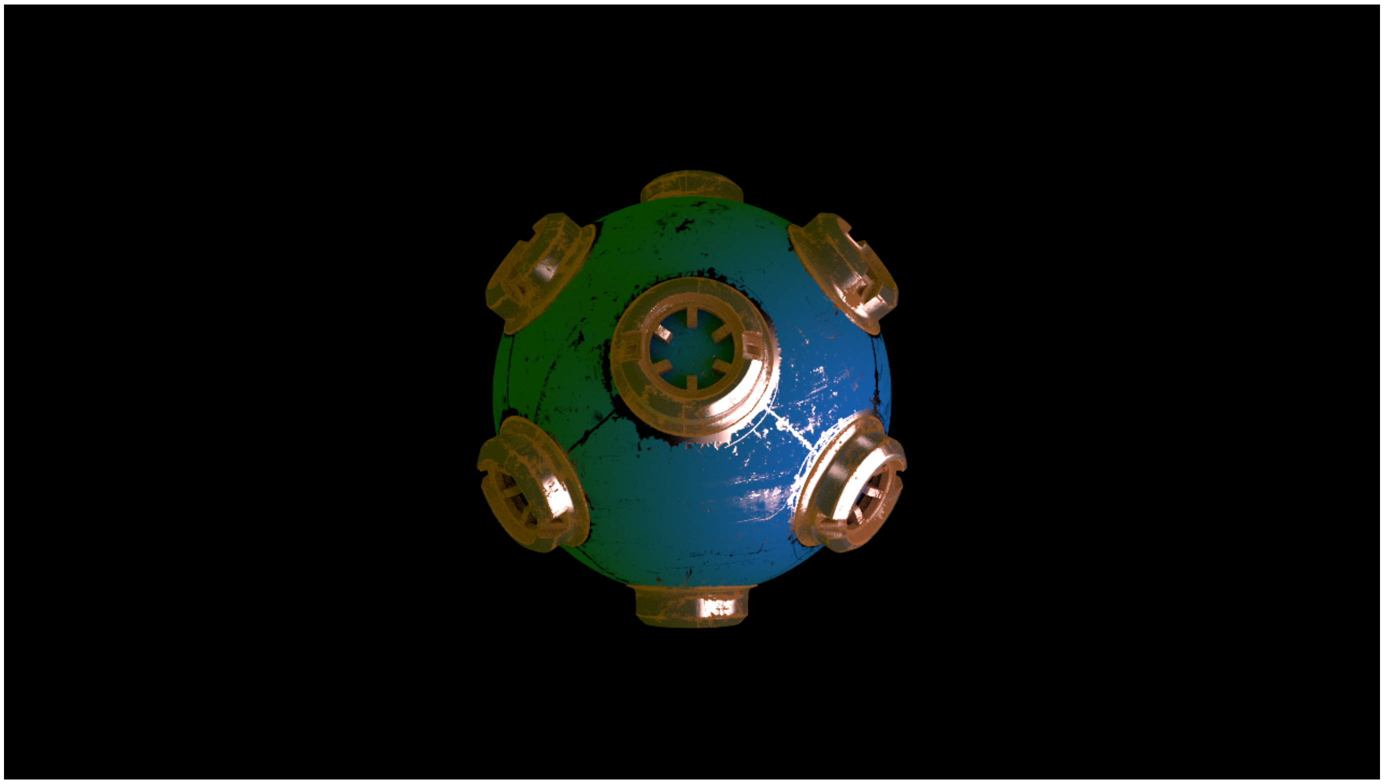
If you want the yellow color to light the scene, simply disconnect the **VRayLightDome.** You will notice that the yellow **Constant** node connected to the **VRa yBackground** node is lighting the scene with a constant yellow illumination and behaving like a VRay Ambient light across the entire scene.


The Yellow constant node contributing to the scene lighting when the VRayLightDome is disconnected

To change this so that the Yellow Constant is only acting across the entire scene as the Reflection, disconnect the yellow **Constant** node from **bg input** and connect it to the **Reflection input** instead. You will see the yellow reflecting in the glossy materials, but it isn't visible in the background of the rendering or to the lighting of the scene.


Yellow Constant node connected to Reflection input of VRayBackground node

Now let’s see how it can contribute to Global Illumination across the scene. Disconnect the **Constant** node from the **Reflection input** and connect it to the **GI input** instead. If you don’t see any effect when you make this change, select the **VRayRenderer** node and make sure that the **Global Illumination** chec kbox is enabled. You should now see the yellow color affecting the render, bouncing in the areas not lit by the **VRayLightRect2** node.


Yellow Constant node connected to the GI input of the VRayBackground node

Create a second **Constant** node and set its color to red in the **color channel** by giving it red, green, and blue values of *1*, *0*, and *0* respectively. Connect this into the **Reflection input** of the **VRayBackground** node, and you should now see this contributing to the reflection of the entire scene in the render.

At the moment we have the yellow color affecting the global illumination and the red constant affecting the reflection. If we now connect the **bg input** of the **VRayBackground** node to the **HDR** we are using in the **VRayLightDome**, you will now see this HDR image in the background of the render.

Red constant connected to reflection input , yellow connected to GI input, HDR connected to the bg input of VRayBackground node

In this way you can do some very useful and interesting things using the **VRayBackground** node by changing the inputs of the different inputs that affect the bg, reflection, refraction and GI.

3) Manipulating the channels

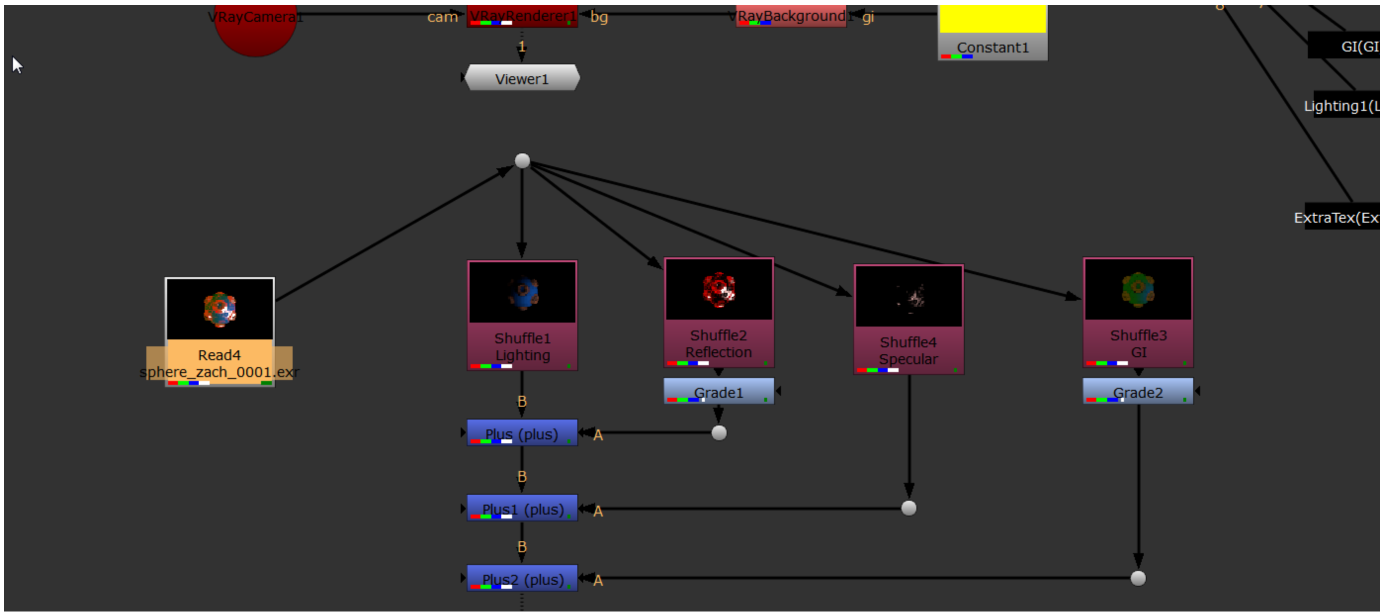
For now let's remove the HDR in the background of the render by disconnecting its texture from the **VRayBackground** node. Add a **VRayRenderElement** and connect this to the **VRayRenderElements** scene node. Set the **VRayRenderElement** you have just created to a **Render Element** type of **Lighting**. Duplicate this **VRayRenderElelement** node and set its **Render Element** type to **Global Illumination**. Connect this also to the **VRayRenderElements** sce ne node. You should now see the Global Illumination and Lighting VRayRenderElements appear in the viewer.

After the **VRayBackground** node create a **Shuffle** node and change the **in 1** drop down to **Lighting** in its properties. Under the Node tab change the **Labe l field** to *[value in].* This allows you to copy and paste this and have a nice lighting label there. Enable the **postage stamp** checkbox and you should now see an image on the node itself. This image allows you to see what layer it is and what it looks like.

Duplicate this node and change the **in 1** dropdown box to **Reflection**. Duplicate it again and change the **in 1** dropdown box to **Specular.** Then duplicate this one final time and change the **in 1** dropdown box to **GI**. Ensure that all these Shuffle nodes are connected as shown in the next image.

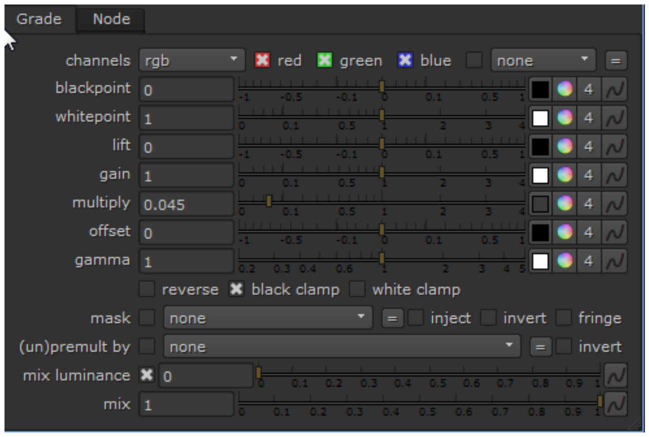
4) Merging the Shuffle nodes

To keep this example simple, you are going to merge these using a **Plus** node. Create a **Plus** node and connect its **B input** to the **Lighting Shuffle** node and its **A input** to the **Reflection Shuffle** node. Below this create another **Plus node** and connect its **A input** to the **Specular Shuffle** node. Create one final Plus node below this, and connect the **A input** of that one to the **GI Shuffle node**. If you view this last **Plus** node you should get exactly the same look as you did in the render. If it does not look exactly the same, then recheck things as it means you have missed something. This is a good time to reorganize the scene and tidy things up so that they don't get too messy.



The layout of the Shuffle nodes n the Nuke script at this stage

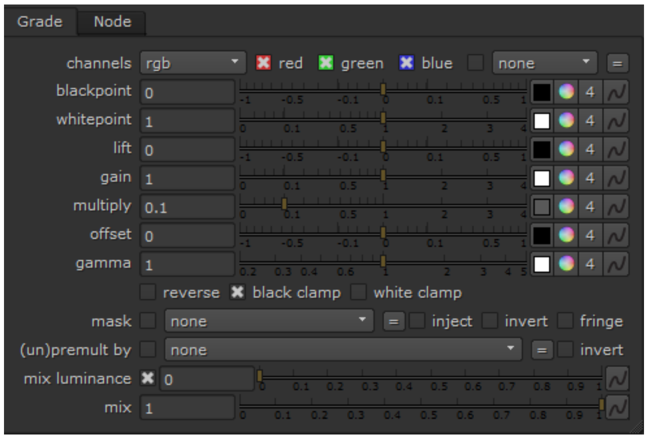
To reduce the amount of reflection contribution, place a **Grade** node below the **Reflection Shuffle** node. Change the **multiply** value of the **Grade** node to *0.045*. You will see the effects of these changes in the rendering.



channels rgb [✓ red] [✓ green] [✓ blue] none
blackpoint 0
whitepoint 1
lift 0
gain 1
multiply 0.045
offset 0
gamma 1
reverse [✓ black clamp] white clamp
mask none inject invert fringe
(un)premult by none invert
[✓ mix luminance] 0
mix 1

Parameters of Grade node under Reflection pass

Add another **Grade** node, this time below the **GI Shuffle** node. Set its **mulitply** value to *0.1* so it is only contributing a small amount.



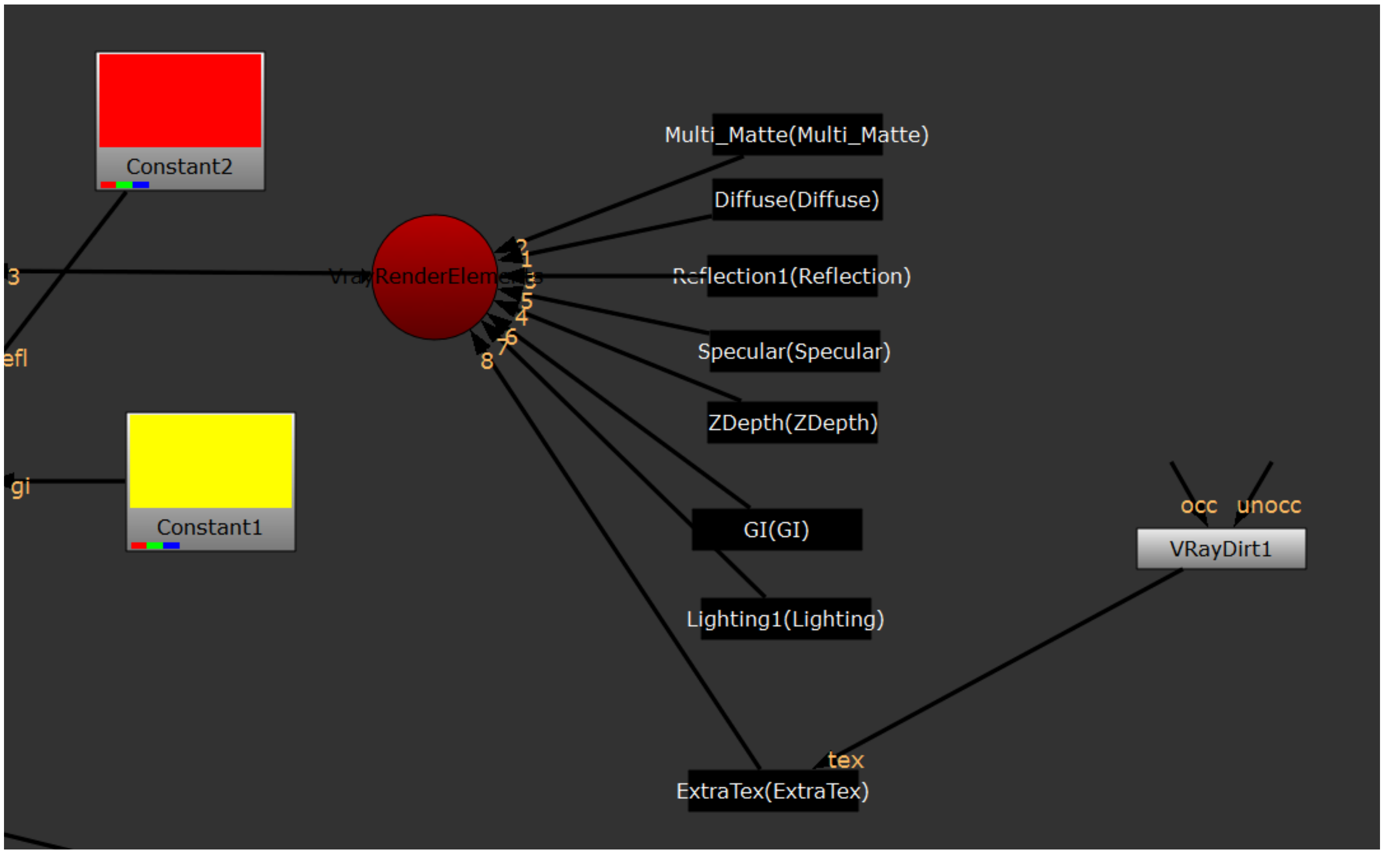
```
Grade   Node

channels          rgb   ✖ red   ✖ green   ✖ blue   none
blackpoint        0
whitepoint        1
lift              0
gain              1
multiply          0.1
offset            0
gamma             1
                  reverse   ✖ black clamp   white clamp
mask              none   inject   invert   fringe
(un)premult by    none   invert
mix luminance  ✖  0
mix               1
```

The parameters of the Grade node under the GI pass

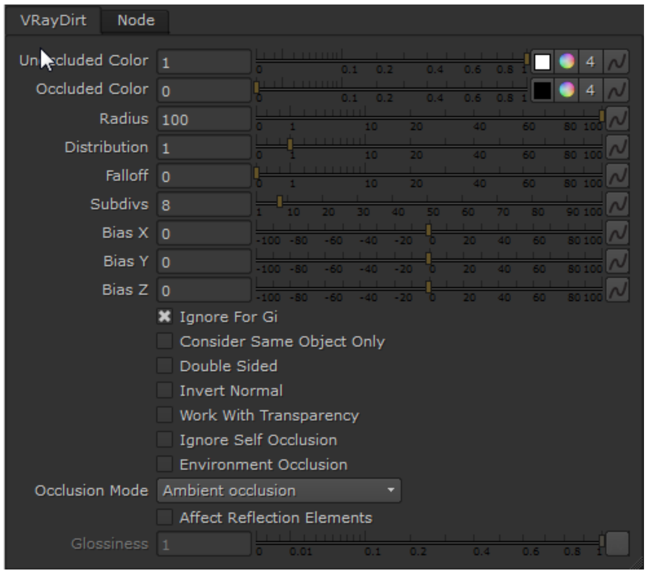
The number of channels that you break out and the complexity of the rebuild depend upon the complexity of the scene and what you're used to getting from the lighting department.

5) VrayExtraText node



The connection between the ExtraTex VRayRenderElement and the VRayDirt node

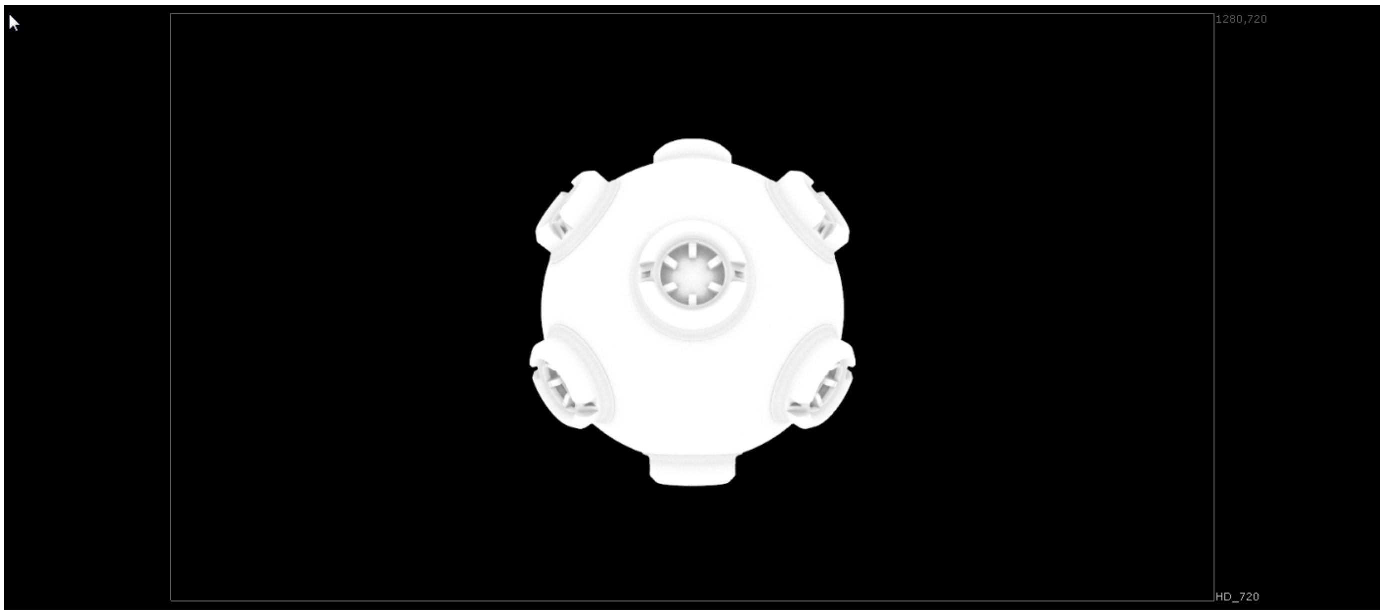
Create a **VRayRenderElement** node and change its **Render Element** to **Extratex** , and connect this to the **VRayRenderElements** scene node. You will notice that this node now has an extra input named **tex** that we can use to connect to a texture. If you view this pass in the render at this stage it will turn out black as we have not connected any texture to it.


VRayDirt | Node

Unoccluded Color 1
Occluded Color 0
Radius 100
Distribution 1
Falloff 0
Subdivs 8
Bias X 0
Bias Y 0
Bias Z 0
[✓ Ignore For Gi]
Consider Same Object Only
Double Sided
Invert Normal
Work With Transparency
Ignore Self Occlusion
Environment Occlusion
Occlusion Mode Ambient occlusion
Affect Reflection Elements
Glossiness 1

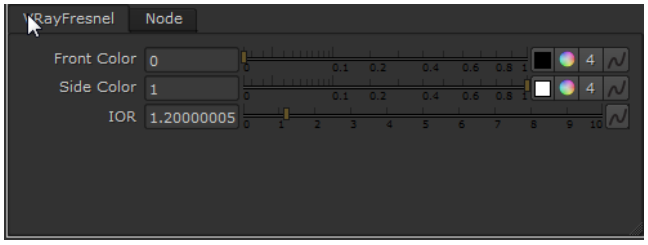
The parameters of the VRayDirt node

Create a **VRayDirt** node and connect this to the **tex** input. In the **VRayDirt** node, change the **Radius** parameter to *100*. You should now see the **VRayDirt** active in the **VRayExtraTex** pass in the viewer. This pass is not affecting the RGBA beauty in any way, but is available to you as a matte to manipulate later on.



ExtraTex VRayRenderElement , VRayDirt as tex input

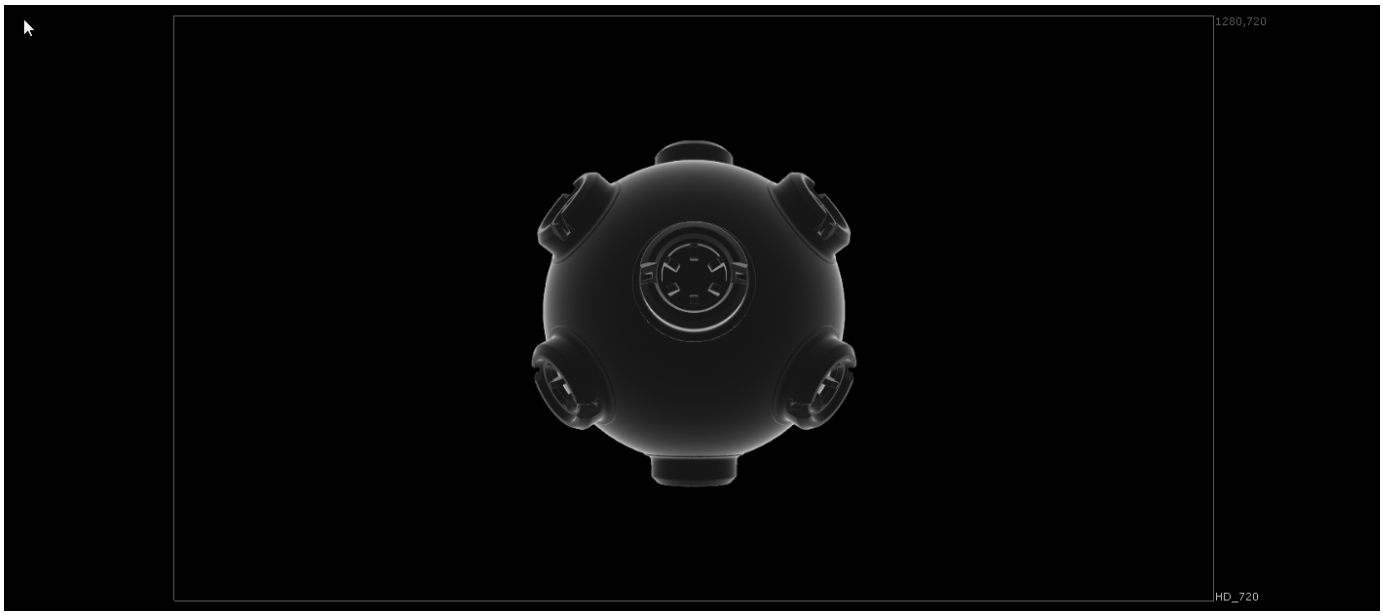
6) VRayFresnel node



Front Color 0
Side Color 1
IOR 1.20000005

VRayFresnel parameters

Many compositors commonly use a Fresnel pass. The **VRayExtraTex** node can be used to help you to produce one of these as well. Disconnect the **VRay Dirt** node from the **VRayExtraTex** node, and create a **VRayFresnel** node and connect this in its place. In the **VRayFresnel** node, we'll invert the colors so we can see them more easily by swapping the values for **Front Color** and **Side Color**. The **Front Color** should now have a value of *0*, and the **Side Color** should now have a value of *1*. This pass can give you a nice way to control falloff separately. By changing the **IOR** value you can control the reflection of the **VRayFresnel** node. In this case, let's set it to a value of *1.2*.

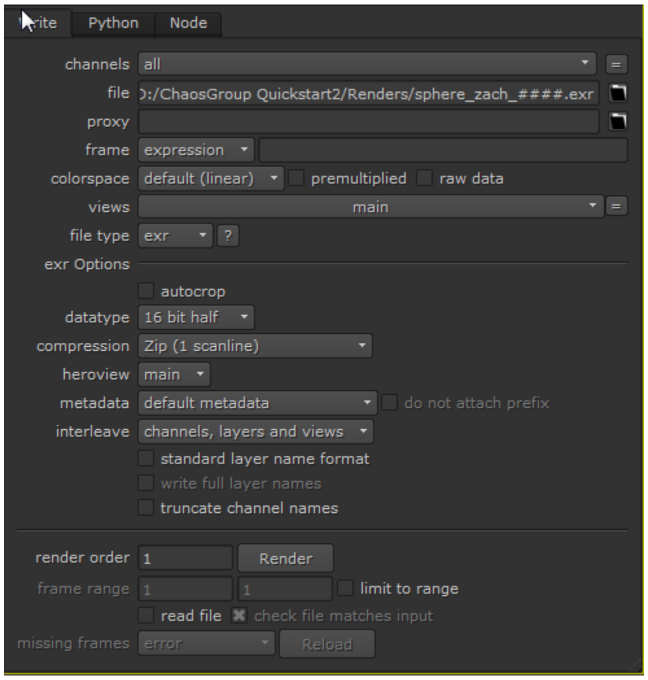


ExtraTex VRayRenderElement showing the result of using VRayFresnel as tex input

This is just the start of things you can do using the **VRayExtraTex** node.

7) Rendering out the scene

The ability to render out the scene is obviously very important. Create a **Write** node at the point in the Nuke script that you wish to render out the scene, in this case straight after the **VRayRenderer** node. It is vital that you set the **channels** parameter in the properties for the write node to *all*. If you don't do so, you will render out only as RGB and not include any of the extra channels that we have set up in the render.


Write | Python | Node

channels: all
file: D:/ChaosGroup Quickstart2/Renders/sphere_zach_####.exr
proxy:
frame: expression
colorspace: default (linear) ☐ premultiplied ☐ raw data
views: main
file type: exr
exr Options
☐ autocrop
datatype: 16 bit half
compression: Zip (1 scanline)
heroview: main
metadata: default metadata ☐ do not attach prefix
interleave: channels, layers and views
☐ standard layer name format
☐ write full layer names
☐ truncate channel names
render order: 1 Render
frame range: 1 1 ☐ limit to range
☐ read file ☒ check file matches input
missing frames: error Reload

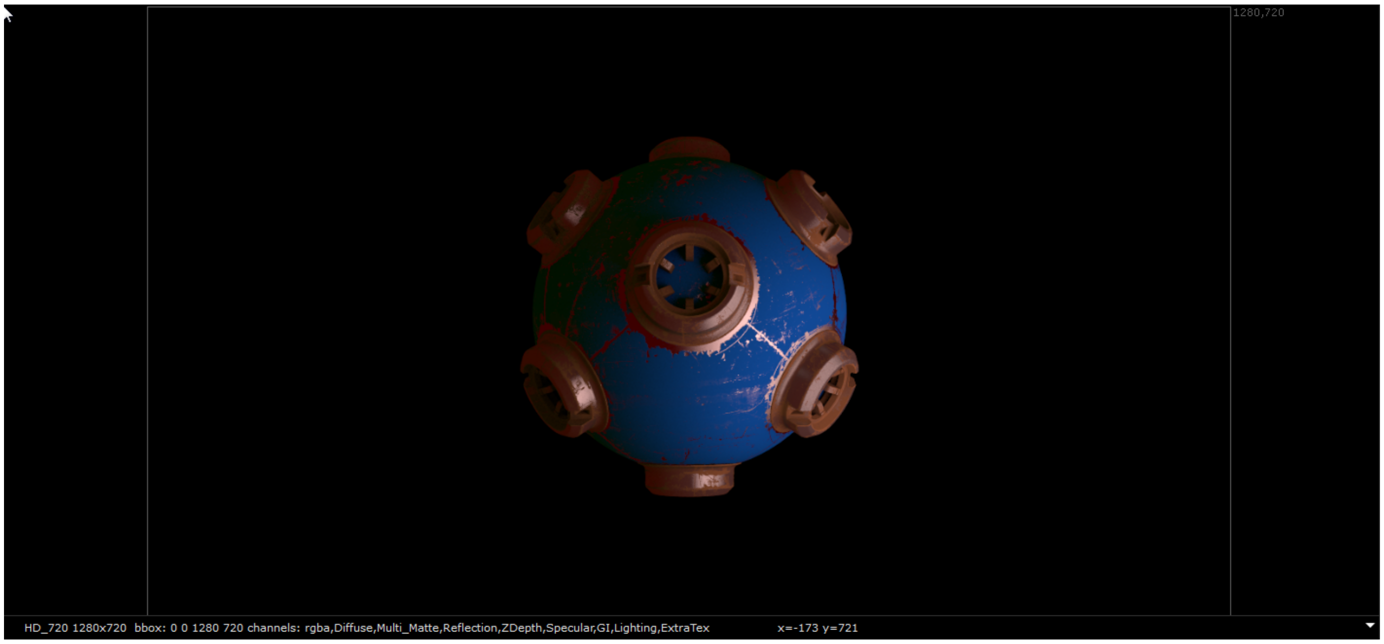
Parameters for the Write node

Set the **file** location to the folder to which you wish to render out the frames. Ensure it is set to a file type of **OpenEXR** as this retains the different passes that we can then shuffle out as needed later on. When naming for more than one frame make sure you use a naming convention of *[filename]_####.exr*. This ensures that each frame is rendered out as a sequentially numbered file sequence. When you click the **Render** button, make sure you set it to render the correct number of frames required for the sequence.

Once the see once the sequence has rendered, if you bring it back in using a **Read** node and view it, you will see that all the passes you set up are present. You can also connect this to the channel shuffle setup we used before instead of the connection to the **VRayRenderer node** and use them in the same way. This is especially useful for heavy scenes where it would be counterproductive to composite directly from the **VRayRenderer** if only purely from a time and resources point of view.

Once you are happy with the initial render and you are getting the results you need, you can then go back into the properties for the **VRayRenderer** and enable the **Antialiasing** checkbox, and increase the render quality by adjusting the values in the Antialiasing section.

In this tutorial series we have covered everything from geometry nodes to materials, material blends, bump maps, wrappers, applying materials to specific geometry, lighting, rendering, the use of render elements, shuffling and compositing. This tutorial series shows a complete end-to-end solution for image-based compositing using V-Ray for Nuke.


1280,720
HD_720 1280x720 bbox: 0 0 1280 720 channels: rgba,Diffuse,Multi_Matte,Reflection,ZDepth,Specular,GI,Lighting,ExtraTex
x=-173 y=721

The final comp