

Axis Tools

Documentation – v007

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Shelf Tools

Select Keyframed

Will select all time dependent objects in the entire scene, allowing you to shift keyframes at the same time.

Reverse Keyframes

Reverses selected keyframes selected in the animation editor.

Keep in mind that the script looks for the first animation editor pane. So if it isn't working that is most likely the issue.

Vellum Setup

Creates a standard Vellum DOP Network setup and connects the correct inputs if you have a Vellum constraint selected.

Compiled For Loop

With what ever points you have selected create a for each loop that powers a copy to points. The points will randomly switch which you can change the seed of in the Point Wrangle that is generated.

Extract Selected

Will take the object you have selected and bring it onto /obj/ level.
Instance mode will keep the name the same so you can easily reference in VEX
Extract packed will use the assemble SOP to single out connected geometry. When it is extracted the axis is centered on the object as well.

Merge Geo Nodes

Will take object level geometry and combine it into 1 object – bringing over your materials that are on the object along with maintaining the same object positioning, even if the object was transformed by a parent.

Merge Null Children

Certain FBX's I have come across group objects under nulls. This tool will take all the children of the nulls you select and object merge them into a separate geometry object.

Project Setup

Will take objects and separate them into the categories; lights, geometry, DOPs & cameras.

Network Box

Creates a network box with padding for the text. Will generate a random colour and prompts you to enter a name/ description. Once confirmed there will be a sticky note added to the network box with your description.

Useful for working in networks with a lot of moving parts. Available in the 'tab' menu for quicker access.

Focus Pick

When selected if you are actively inside a camera, Houdini will bring up a prompt for you to select a position to focus on.

To make this more persice you can go into the object you want to focus on and turn on snapping. Makes selecting a point much easier.

'Ctrl' or 'CMD' clicking on the shelf tool script will edit the camera and add the 'focus object' parameter to the cameras 'sampling' tab. You can then add object level operators to focus on.

Append Copied

Paste single or multiple nodes onto each selected node. If the selection has outputs it will drop it on the wire inbetween.

Holding 'shift' while pasting will prepend the nodes instead of appending them.

Having nothing selected will paste normally, so you could use this as a replacement for regular paste. Just make sure you keep 'Ctrl+v' as a shortcut as it is used for pasting text in Houdini.

All network types are supported including VOPs

Place Points

Creates a prompt to select a position in the viewport. Once selected it will spawn a point and object if the user specifies it.

To get out of this mode, just go over to your network view and set a display flag. Alternatively click 'esc' to cancel this operation.

Mass Group

Works on /obj level. Will append a group SOP of your specification to the active object inside the geometry.

The UI allows you to specify the name and the type of group you want (point,prim,edge)

Copy Parm

The first object you select is the object you will copy parms from.

Every object after the first is the destination for these parms.

If the script finds matching parameters in the destination nodes it will paste values/ expressions.

Drop H18

Houdini 18 has introduced some bugs for external drag and drops. This is a work around that creates an overlay that catches any drops you make.

You can either launch the overlay manually via the axis tools shelf OR you can ctrl click on the shelf tool to create a window that can be dragged over to initiate the overlay for you. This window is also available as a panel that can be saved as part of your Houdini desktop(layout).

I'd recommend creating a shortcut for the shelf tool if you plan on opening it manually.

Once the overlay is up just drag and drop as you normally would into the correct networks for the format you're importing.

Go to [Drag & Drop](#) for a full run down on what's possible.

'Esc' will close the overlay.

Update Mode Switcher

Simply a one click solution to change Houdini's update mode. Best utilised when assigned a hotkey.

Extract 2

Will extract your SOP geometry in a direction of your choice.

Preferences:

- Turn on/ off null creation
- Close after extract: when turned off you can extract multiple difference SOPs with different names in succession.
- Add out: adds '_out' after or '_out' before your extract name. Only affects null name.
- Shift position: distance your extracted geo node is moved on x/y.

Incremental Save

Increments your hip file's version. Supported version formats include '_V' and '_v'.

It finds the highest version of the file and adds 1 so for example if you're on my_hip_v002.hip and the highest version is my_hip_v020.hip incremental save will save my_hip_v021.hip.

After saving you can use the '\$VERSION' environment variable in cache files within the hip file. If you save your file normally and it has the correct version formatting this variable will be added also.

Tip: add a shortcut to this script by right clicking>edit script>hotkeys.

Vrsn Jump

If you're using a file with the correct version formatting (described under incremental save) then this tool will list every version inside your \$HIP folder. Allowing you to quickly load older or newer versions of your file.

Highlight Prefs

Controls for the network editor rings that are enabled by default. Go to [Highlight Rings](#) for more.

Promote HIP License

When in a hipc/hipnc file this tool will create a new file with your highest available license.

If you have a commercial license it will save a .hip file and prompt you to load it.

If the file already exists it won't overwrite it.

Take Manager

UI tool to better deal with takes and creating variations.

Tip: use the python panel instead of the shelf tool – you can drag and drop parameters this way.

Method:

Switch: generate takes from the number of inputs in a switch.

Menu: generate takes from the total number of items in a menu parameter.

Node Changes: record all parameter/flag changes to nodes like traditional take recording. You need to select any nodes you want to record prior to changing anything – if you forget and you get the popup, just undo your change. After you finish recording you can add these new node changes to any number of selected nodes and you can reset your edited nodes back to their prior state.

Take creation:

Take names: *METHOD* will give you the switch input name/index or the menu item/index. *PARENT* will give you the name of the parent node.

Add to current take: will add any changes to the current take – only works for 'Node Changes' tab.

Create child of selected: will create a new take under every selected take using the 'Take Name' you have specified.

Take Actions:

Node copies per take: select a node such as a render ROP, then select the takes you want to render and click this option. You will be prompted for the 'take parameter' which most likely will be 'take' but the options there if you need it.

Quick Place Generator

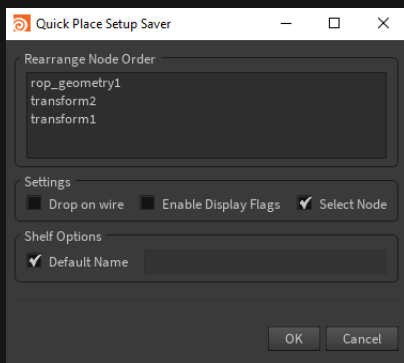
Allows you to create nodes to 'quick place'.

The tool will generate new shelf tools and add them to the 'Quick Place' shelf. After this you can append this node to your selection.

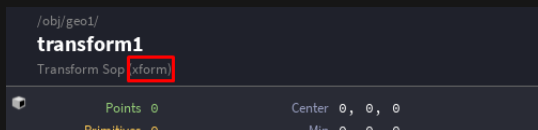
Shortcuts can be set by right clicking on your shelf tool>edit tool...>hotkeys

Interface:

- If you have nodes selected before you start the generator, the 'node names' box will be populated.



- The node names can be found by 'middle clicking' on the node. Shown Below



Checkboxes:

- Drop on wire: if the node(s) you have selected have children, the quick place object will be placed on the wire in between them when this box is checked. Otherwise a new wire will be created.
- Enable display flags: sets your quick place objects display and render flags on after placing.
- Select Node: selects the node allowing you to quickly change parameters.

Quick Place Setup Saver

Just like the 'Quick Place Generator' this will create new shelf tools.

Instead of just allowing you to append 1 node to your selection, the setup saver allows you to place multiple and will remember the name you gave the original nodes, their parameter values and their parameter expressions.

Its made for users that have a group of nodes with specific parameters that are used constistantly.

This tool only loads if you have 1 or mode nodes selected

Interface:

- Rearrange node order: you will see your nodes in the 'rearrange node order' list. You can drag and drop these to change the order.

Settings:

- See the 'Quick Place Generator' settings – they are the same.

Shelf Options:

- Name: Set a custom name for your shelf tool, otherwise the node type will be used.

Assign Material

Quickly assign a material in a number of contexts:

- OBJ level: will add the new materials path to the render tab.
- SOP level: if a material SOP is not selected, the tool will create one under each of your selected SOP objects. Will 'drop on the wire' if your selection has any children. If a material SOP is selected the new material will be added to the material parameter.
- Houdini node presets (in the cog wheel menu) can be added too.
- Remembers your last selection when you reopen the script.
- Works when used with a hotkey.
- Supports mat/shop nets at any location.
- Generate and assign a single material or a material for every node you have selected.
- Starting the script on top of the scene view with geometry selected allows you to quickly apply to geometry selections/groups.
- Create new network boxes or add to existing network boxes.

Shortcuts

- Ctrl + 1–5 (hover over the drop down menus to see shortcuts) cycles through each menu.
- Tab to toggle node name mode.
- Enter to assign the material or Ctrl+Enter to assign the material and close the dialogue.

Material to Output

While inside an Arnold or Redshift material this tool will connect your selected shader to the output, so you can quickly preview it. I'd highly recommend creating a shortcut for this by right clicking(on the tool)>edit tool...>hotkeys.

Clean unused Materials

Deletes any unreferenced materials in your scene.

Redshift RenderView

This already exists in the Redshift shelf, but its a bit fancier.

If no Redshift ROPs exist, the tool will create one.

If you are in an active camera it will add that to the ROP. Otherwise it will find the most recently created camera in your scene and add it to the ROP.

Then it will open the RenderView without starting the render.

Set AOV Paths

Works for Arnold & Redshift.

* Won't start unless you have an Arnold or Redshift ROP selected with 1 or more AOV's present.

The textbox is there if you want to manually enter your path or edit it after you have selected a location.

'Expand Houdini Path' will expand '\$HOME, \$JOB, \$HIP' if they are present.

Set Active Camera

Works for Arnold & Redshift.

If you are inside a camera in your Scene View, the camera's path will be added to the selected ROP's camera path.

Arnold Physical Sky

Quickly creates an Arnold Sky, following the process on [their website](#).

Clean VOP Network

Works best in material networks. Basically if there are objects not connected to an object shown below (an with no outputs), it will destroy them.

Available in the 'tab' menu for quicker access.

Expand/Minimize VOP

Will expand or collapse groups. I find this super useful in arnold because by default they are minimized.

Texture Manager

UI Based file/ texture manager.

Rows display if the file exists, the files path and the node(s) that the file is in.

Replace Tab:

File Path: path that will be used to replace your current selection.

Options drop down:

Replace Selected: Uses the file path supplied to replace your current selection.

Open Folder: open the folder(s) of your current selection. Only works if the file exists

Select Nodes: will select all nodes in your current selection. You can also double click on the table.

Clear Selection: deselects all columns.

Full Refresh: reloads all paths in your selected network.

One Row per Node: collapses duplicate files into one row when unchecked.

Filter Tab:

Starts with: only shows file paths that start with your entry.

Find term: only shows files containing your entry.

Notes: *case sensitive.*

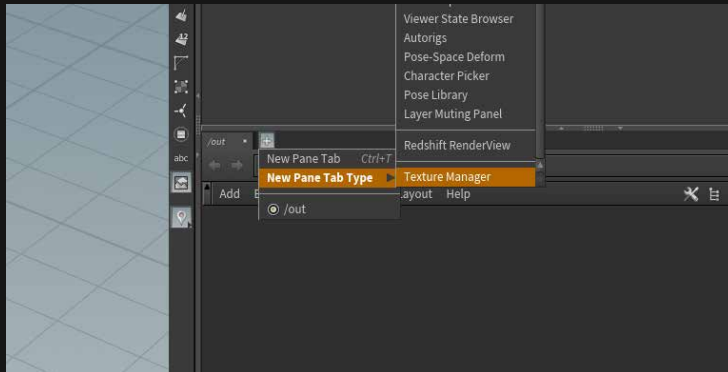
Replace Term Tab:

Find: the term that you want to replace.

Replace: what you want to replace the above term with.

Notes: *case sensitive.*

Available in the render shelf or as a Python Panel.



AOV Loader

UI tool for loading and saving of AOVs for Mantra, Redshift and Arnold.

- Save location can be set, allowing for teams or studios to have a library of AOVs on their shared server.
- AOVs organized into render engine and saved under the current users name.
- Can be loaded to replace current AOVs or add onto the existing AOVs inside a ROP.
- Saves all details of the AOV including light groups and output locations.
- Manage saved AOVs within Houdini – preview the number of definitions inside a file and delete unused files.

Digital Assets

Term Replacer

Replaced a term in a string. Useful for mass updating a new version of a texture, or changing the LOD of a model.

Node Type: Specific node type to look for. (default is a file SOP).

String Parameter: The parameter name, hover over the parameter to get the name.

Find term: term to be replaced.

Replace with: term to take its place.

Node list: the list of nodes to scan over. You can use bundles with this or to scan through an objects children you can use /obj/geo/*/ or /obj/geo/* for sub children. This way you don't have to update the list every time.

Use Selected: Uses your currently selected nodes rather than the list.

File exist check: a failsafe to make sure that the new paths file actually exists.

Variation Spawner

If you have a bunch of variations of an object or a cache, this will spawn as many as it can find with the information you specify. It iterates up so make sure you start with the lowest number you have.

Iterate Name: the text that comes before the iteration number.

Number padding: this is the number of digits that the number is padded to, for example 3 padding would be 001.

File path parameter: file parameter name, find this by hovering over the parameter.

Node(s): list of nodes spawn from.

Use Selected: Uses your currently selected nodes rather than the list.

WIP

Encode flipbooks into video/GIF files.

Download FFMPEG [here](#).

Add FFMPEG to your \$PATH env by linking the ffmpeg/bin folder, clicking the add path button and restarting Houdini OR link the ffmpeg.exe file and change the method.

Use 'save permanent defaults' if you always save animatics to the same location.

Note: video resolution must be divisible by 2 otherwise FFMPEG won't encode your video.

Attribute Splitter

Split attribute into a set number of equal parts.

First, set the attribute to split and then set a range. 'Find Range' will find the min and max values of the attribute for you.

Set the number of times to split.

Outputs:

By default it outputs the split as different groups. However, you also output the 'spltnum' & 'spltnum' attributes to output each split as a integer starting from 1(or 0 if you check '- 1'.

'Increasing selection' will output a group called 'grprange' that will select an increasing number of points for each split.

Visualize:

View each split selection as a group in your viewport.

Blast Generation:

Outputs and lays out blast SOPs for each split.

Blast Out of Frustum

Optimize your scene's render time by deleting all points outside of the camera's view.

By default this will select the camera you are actively in when you drop it in your scene. 'Active camera' button will also do this.

Selection:

Iso Surface: increases the size outside the camera that is selected.

Z Near/Far:

Clipping.

Ripple

Input the geometry you want to displace in the first input.

Input the points you want to ripple from in the second input.

You can control the opacity with an attribute from your second input points.

Conditional Fade

Outputs the frame and time that a condition is met for an attribute of the users choice.

You can also add a fade when the condition is met to Cd.

'Run multiple times' allows for the condition to be checked again after a certain number of frames.

Instancer

Quickly partition particles into separate instances or instancefile attributes. Useful for create varied forest floors.

– Distribution Tab

Spread (ramp): visually representing the distribution of instances. User inputs are ignored.

+ / – : add or take away a new partition in the particles. Random colours are generated for every new instance file.

Instance object: determines whether instance geometry will be read as a operator path inside the hip file or a file path read from disk.

Instance file/instance geo: path to your file on disk or your obj file in your scene.

Variations: if you have variations of your instance you can add '%i' into your instance path which will be replaced randomly with a variation number.

Spread position: determines how many particles your instance is allocated.

– Variables Tab

Distribution variable: you can either use a random attribute like ptnum(default) or a user attribute such as a noise in Cd.

Output Variables:

Visualize: the way you view your instances points/instances.

Groups: creates groups for each instance.

Split & merge groups: when 'groups' are enabled this option will create blasts for you to go in a tweak attributes per each instance.

Scripts

Drag & Drop

Improved drag and drop functionality in Houdini.

Current support:

- Textures into Arnold/Redshift materials. Also connects up inputs and names the nodes if it is a PBR material.
- COP Net image importing.
- Geometry(GEO/SOP level).
- Arnold procedural/RS proxy files.
- Paths(onto file path parameters).
- Merging nodes from other .hip files.
- Import install and create hda/otl files.
- Drop on top of a node to drop inside that network.

Holding down CTRL/CMD:

Changes absolute path to relative path if the file is in '\$JOB', '\$HIP' or '\$HOME'.

Holding down SHIFT:

PBR connections for Arnold/RS will be ignored. .vdb files will be brought in using 'arnold volume'. Allows you to merge .hip files.

Holding down ALT:

If your file is a sequence the frame number will be replaced with '\$F'. Frame number must be preceded with '_' or '.' to work.

Merging hip files:

Hold 'shift' while dropping your .hip file. Select the nodes you want to import, right click and merge.

Only .hip files work currently with merge. You will be prompted if you want to convert the file – bear in mind this will only work if you have a commercial license. You can do this manually by opening the file and using the shelf tool [Promote HIP License](#).

Houdini 18:

This version introduces many bugs with external drops. In the mean time use '[Drop H18](#)' in the 'Axis Tools' shelf. You can cancel your drop with the 'esc' key.

[Demo video](#).

ROP 'OnCreate' scripts

On creating Redshift, Arnold, Mantra and Octane ROPs the camera you are actively using in the scene viewer will be set as the ROP's camera.

Menu Additions

Main Menu

Incremental Save has been added to the file under 'Save As'.

Strings/ Directories

'Open Folder' opens the folder in your systems file explorer. Won't do anything if the folder doesn't exist.

'Drag & Drop' brings up the 'Drop Overlay', now any file you drop from outside of Houdini will be set as the parameter.

Operator Paths

'Get Active Camera' will set the parameter to the path of the camera being used in the scene viewer.

Material Nodes

Material Assignment:
right clicking on arnold, octane, rs & mantra materials gives you this option.

Displays all nodes that use this material.

You can drag and drop geo/sop nodes into this window to quickly assign the material.

Selecting rows in the window and right clicking gives you these options.

'Assign Material' brings up the shelf tool and lets you create and assign a new material for the selected nodes.

Redshift texture to sprite

Right clicking on texture shaders will allow you to convert the material to a sprite and reconnect it to your material.

Redshift normal to bump

Right clicking on RS normal shaders gives you this option. Converts the 'normal' shader into a 'bump' and reconnects it.

Network Editor

Camera

Changing the scene views camera will highlight the camera node in the network viewer.

Also works with 'switcher' cameras.

If you add a new scene viewer you will need to reload another scene for the highlights to work.

Materials

Selecting OBJ level nodes or SOP material nodes will highlight the material nodes being used.

Preference options (axis tools shelf>Highlight Prefs):

'Search Children': when enabled selecting OBJ level nodes will find children material SOPs and highlight them also. Can cause a small delay depending on the number of children so it is turned off by default.

'Search Attributes': when enabled SOP nodes with render/display flags set will be searched for 'shop_materialpath' attributes.

Lights

Enabled scene lights will be outlined with a white ring. Support for Arnold, Octane, Redshift and all first party Houdini lights.

Highlight Preferences

Available in the 'axis tools' shelf.

Allows you to turn on or off the highlight rings or change the depth of searches.

Installation

Open up 'houdini.env' in a text editor.

Create a new line at the end of the document and add:

```
HOUDINI_PATH = "$HOUDINI_PATH;C:\Users\ewand\Downloads\Axis Tools\v007;&"
```

Instead of my path, add your installation folder.

Then save the file.

