<< Back

Houdini

Unit length = 1m
Unit mass = 1kg

Houdini Help pages

Houdini

SCENEVIEW SHORTCUTS

TOOLS

Select	s
Move	t
Rotate	r
Scale	e
Animate	Ctrl-R
Show Handle	Enter
View	Esc
Tool Menu	Tab
Custom Radial Menu	c
Repeat Last Tool	q

VIEW

Tumble	Space/Alt + LMB
Track	Space/Alt + MMB
Dolly	Space/Alt + RMB
Home Grid	Space + h
Home All	Space + a
Home Selected	Space + g

VIEW RADIAL MENU

Selection Tools	v →
Selection Options	v ↑
Viewport	v ←
Shading	v ↓

SELECTION MODES

Objects	1
Points	2
Edges	3
Primitives (Faces)	4
Vertices	5
Select Groups/Connected Geometry	9
Toggle Objects/Geometry	F8

SELECTING

Select	LMB
Add to Selection	Shift + LMB
Remove from Selection	Ctrl + LMB
Toggle Selection	Ctrl + Shift + LMB
Select All/None [OBJ]	a/n
Select All/None [SOP]	n/Shift-n

SNAPPING RADIAL MENU

Grid Snap	x →
Primitive (Curve) Snap	x ↑
Point Snap	x ←
Multi-Snapping Snap	x ↓

VIEWPORTS

Expand Viewport	Space + b
Select Viewport	Space + n
Perspective View	Space + 1
Top/Bottom View	Space + 2
Front/Back View	Space + 3
Right/Left View	Space + 4
UV View	Space + 5
Toggle Wireframe/Shaded	w
Display Options	d

VIEWPORT LAYOUT

Single View	Ctrl + 1
Two Views Side by Side	Ctrl + 2
Three Views Split Left	Ctrl + 3
Four Views	Ctrl + 4

NETWORK VIEW SHORTCUTS

VIEW

Pan	Space+ LMB or MMB
Zoom	Space+ RMB or Scroll Wheel
Show all Nodes	h
Show Selected Nodes	g

CREATE

Node Menu	Tab
Add File Node	=
Create Subnet	Shift + c
Add/Edit Background Images	Shift - i

NOTES AND NETWORK BOXES

Add Network Box	Shift + o
Add Sticky	Shift - p
Minimize Selected Notes/Boxes	Shift - j
Expand Selected Notes/Boxes	Shift - k
Shrink box to fit contents	Shift - m

WIRING

Connect Nodes	LMB on Connector
Connect Multiple Nodes	J drag over nodes
Insert Node	RMB on Connector
Cut Wire	Y drag across wire
Disconnect from Wires	Shake Node

DOTS

Add Dot	Alt + LMB on wire
Pin/Unpin Dot	Alt + LMB on dot

TOOLS

Toggle Parameter Pane	p
Toggle Tree View	Shift + w
Toggle Network Overview	o
Toggle Color Palette	c
Toggle Shape Palette	z

CLICK AND DRAGS

Select	LMB
Add to Selection	Shift + LMB
Remove from Selection	Ctrl + LMB
Start Wiring from Node	Alt + LMB
Select Node + Inputs	Alt + Shift + LMB
Select Node + Output	Alt + Ctrl + LMB
Select Inputs + Outputs	Alt + Shift + Ctrl + LMB
Move Node	LMB-Drag
Move Node + Inputs	Shift + LMB-Drag
Move Node + Outputs	Ctrl + LMB-Drag
Copy Selected Nodes	Alt + LMB-Drag
Copy Node + Inputs	Alt + Shift + LMB-Drag
Copy Node + Output	Alt + Ctrl + LMB-Drag
Reference Copy	Alt + Shift + Ctrl + LMB-Drag

NAVIGATION

Enter a Node	Double-click or Enter or i
Go up a level	u
Radial Menu	n
Create a Quickmark	Ctrl + <# 1-5>
Go to a Quickmark	Shift + <# 1-5>
Go to Previous View	` (Backtick)
Select the Node Upstream	PgUp
Select the Node Downstream	PgDn
Select Previous Sibling	Shift + PgUp
Select Next Sibling	Shift + PgDn

ORGANIZE NODES

Layout all	L
Align	a + LMB-Drag Down/Across

DISPLAY FLAGS | SOP LEVEL

Render	t + LMB
Display	r + LMB
Template	e + LMB
Selectable Template	w + LMB
Bypass	q or b + LMB

[vex functions]

Handy Nodes

geo
Assemble
Connectadjacentpieces
Peak
Creep

Good to know

A dotted line means that it's referencing a certain node (so for example, no extra particles will be added(check with the middle mouse))

Shortcuts

Navigation

Action	Shortcut
Toggle render view	shift r
Split window	alt [
Split window	alt]
Close window	ctrl w
Dashbox	ctrl d
Focus	ctrl alt s

Viewport

Action	Shortcut
Create	c
View mode	v
Select everything	n
Toggle quad view (orthographic and perspective)	b
Selection group	Enter 9

Network editor

Network editor

Action	Shortcut
Group nodes	shift z
Merge nodes	shift click multiple outputs, alt click to merge
Switch between workspaces	n
Create duplicate	alt-drag
Create referenced duplicate	ctrl-shift-alt-drag

Action	**Shortcut**
Switch input wires around	Shift R
Connect nodes with drawn line	hold J
Organizing	
Notepad	shift p
Underlay	shift o
Line out	l
Wiring style	shift s
Create re-route	hold Alt
Align selected nodes	Shift a

MPlay

Action	**Shortcut**
list shots	alt l

Task Operators

Action	**Shortcut**
Cook node	Shift g
Dirty node	Shift d
Dirty and Cook node	Shift v

General

Action	**Shortcut**
Switch inputs	Shift r
Select	s
Scale	e
Rotate	r
Translate	t
Handles Tool	enter
View mode	spacebar
Snaping pie menu	x
Wire only	q
Wire over shaded	shift w
Parameters	p
Cut wires	y
Enlarge parameter box	Ctrl e
Color nodes	c
Perspective	spacebar 1
Front	spacebar 3
Sticky note	shift p
Network overview	o
Go up in node hierarchy	u
Clean up the network/layout all	l

Action	Shortcut
Full screen	ctrl b
Focus on object	ctrl click on geometry
Zoom in/out	alt right mouseclick
Graph editor	v
Network Box	shift o
Change node shape	z
Home	g
Display options	d (In viewport)
Transformation mode	m
Render selection view	Shift drag
Place key	Alt click
Remove key	Ctrl click
Open external (word/VEX) editor	Alt e
Split viewport	space b
Grow selection	Shift g
Shrink selection	Shift s
Make font bigger	Ctrl +
Make font smaller	Ctrl -

Different types of context

Object = Object type nodes in an Object type folder. These Object nodes allow you to build transform constraint hierarchies. Geometry type Object nodes contain SOP nodes that construct and modify geometry that inherits any transforms at the object level.

SOPs = Surface OPerators or geometry nodes that are inside an object folder. These are used to construct and modify geometry. Any kind of geometry from polygons to volumes.

DOPs = Dynamic OPerators or simulation/solver nodes that are used to construct simulations. Simulations read in geometry from SOPs and pass this data into the DOP solvers.

SHOP = SHading Operators are materials that represent a shader to apply to geometry. Some are hard-coded with vex and others are folders that you can dive in to and modify the VOPs inside.

VOPs = Vector OPerators inside VOP network nodes are used for everything from building shaders to modifying geometry, volumes, pixels, and more.

VEX = Vector Expression Language, a custom language loosely based on the C language, but takes ideas from C++ as well as the RenderMan shading language. VEX is not an alternative to scripting, but rather a smaller, more efficient general purpose language for writing shaders and custom nodes.

VOPs are wrappers around VEX code snippets.

CVEX = Context agnostic Vector Expression Language. This has replaced all the VEX specific contexts throughout Houdini. It is a generalized language that uses the same environment and functions anywhere inside Houdini.

COPs = Composite OPerators in composite type folders. Used in image compositing operations.

ROPs = Render OPerators in side ROP Output directories that are used to create render output dependency graphs for automating output of any type of data and for triggering external processes like rendering. Commonly used to generate sequences of geometry, simulation data and trigger Render tasks that generate sequences of images to disk.

CHOPs = CHannel OPerators used to create and modify any type of raw channel data from motion to audio and everything in between. Most users safely ignore the CHOP context, and so can you, for now. Put it on the “get to it later” list when learning Houdini. But definitely keep it on the list.

Add-on's

Name	Description
Supercharged R7	GUI & Workflow Enhancements
MLOPs	Machine Learning Plugin for Houdini
GSOPs	Gaussian splatting in Houdini

HDAs/OTLs

Operator Type Library (or Houdini Digital Asset library)

Link	Description
qLib	A collection of tools
BoomBox	Fracturing and art directing RBD sims
Wrinkle Deformer	OpenCL wrinkle deformer
Auto Rig Lite	Auto Rigger
BoxCutter	BoxCutter Demo Houdini
DASH	Quality of Life utilities package
IPOPs	Geometry AOVs for Karma CPU & XPU
Asset Handler	Generate HDA's with thumbnails & copy external files
Material builder	

Manual changes

General

First, download ImageMagick
In C:\Users\flori\Documents\houdini20.0\houdini.env file, add

```
PDG_IMAGEMAGIC = "C:\Program Files\ImageMagick-7.1.1-Q16-HDRI\magick.exe"
PDG_FFMPEG =  "C:\Program Files\ImageMagick-7.1.1-Q16-HDRI\ffmpeg.exe"
```

Python

Houdini shelf tool for fast theme switch
TextToMtlX

Expression functions

centroid(surface_node, type)
detail(surface_node, attrib_name, attrib_index)

VEX

Remove Points by ID

```
if (rand(@id*ch('seed'))>chf('ratio'))
{
removepoint(0,@ptnum);
}
```

Create vector based on relative location from point 2nd input

```
vector a = point(0, "P", @ptnum);
vector b = point(1, "P", 0);
@v = (a-b);
@v *= chf("mult");
```

Point normals outward

```
vector a = set(0,0,0);
@N = normalize(a + @P);
```

Change particle size in LOP's
In Primitive, select “All Geometry Primitives”
Also tick on “Run on Elements of Array Attributes”

```
@widths = ch("pscale_mult");
```

Links

Premium

Houdini School
Theory accelerated
Particles
Rohan Dalvi

Vex

VEX-snippets
JoyOfVex
VEX for artists

General

CG Wiki
Houdini Resources
The Vault Manual
Applied Houdini
HoudiniSimon
Nick Taylor
Houdini Blueprints
Convert hipnc to hip files
Getting Started With Houdini
Nitzan Tregerman
Jake Rice Blog
TOPs
Blooming flowers
Simulate Paint Smearing
Unwrapping
Pixelfondue
Konstantin Magnus
Andreas Kjær-Jensen
Creating an CGI Crystal

FX

Creating Lightning with VEX

Terrain

Labs project Dryad Biomes
Terrain Handbook
Procedural Rocks
Integrating a Road into a Heightfield
Project Pegasus
Procedural racetrack tool

Volumes

Intro to Houdini Volumes, Clouds, and Volume VOPs

Rigging

Spiral skinning
Rig fur dude with KineFX
Apex rig
Generating folder structures
Process Multiple Objects with TOPS
2D animation
Animating Characters

Programming

How not to suck at Python

DemoScenes/HDA's

richlord
superphotoreal.gumroad
Examples of Neural Networks built with VEX

CHOPs/Touchdesigner

What I Found

SOPs

SOP Quicktips
PathSequencer - The Easiest Way to Instance & Retime

COPs

COP Quicktips
Crystal Fluorite in Houdini 20.5
How to Create Organic Textures
SOPs to COPs to Karma
Draw geo and material modification

TOPs

Product Proceduralization
TOPs Masterclass

LOPs

Solar Eclipse
MultiShot Workflows
Intro to Solaris

UI

John Kunz UI Customizations for Houdini 19

Pipeline

Files in the packages folder

Preferences

```
{
    "env": [
        {
            "HOUDINI_USER_PREF_DIR": "P:/Houdini__HVER__"
        },
        {
            "HSITE": "P:/Houdini"
        },
        {
            "HOUDINI_DESK_PATH": "P:/Houdini/desktop"
        },
    ]
}
```

Imagemagick

First, download ImageMagick
In C:\Users\flori\Documents\houdini20.0\houdini.env file, add

```
{
    "env": [
        {
            "PDG_IMAGEMAGIC": "C:\Program Files\ImageMagick-7.1.1-Q16-
HDRI\magick.exe"
        },
        {
            "PDG_FFMPEG": "C:\Program Files\ImageMagick-7.1.1-Q16-
```

```
HDRI\ffmpeg.exe"
        },
    ]
}
```

Houdini.env $HOME Houdini Environment Setup Houdini Setup HSITE

Assets

Megascans Karma USD