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Houdini

Unit length = 1m

Unit mass = 1kg

Houdini Help pages



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		
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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	
CLICKS 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
Modeler	Designed for fast and intuitive creation and editing of polygonal and subdivision meshes
SDFM	A free, open source SDF Modeling Toolset for 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
IPOP's	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](#)

[Extending Houdini with C++](#)

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](#)

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