

Rendering with Maya and Houdini on the Render Farm

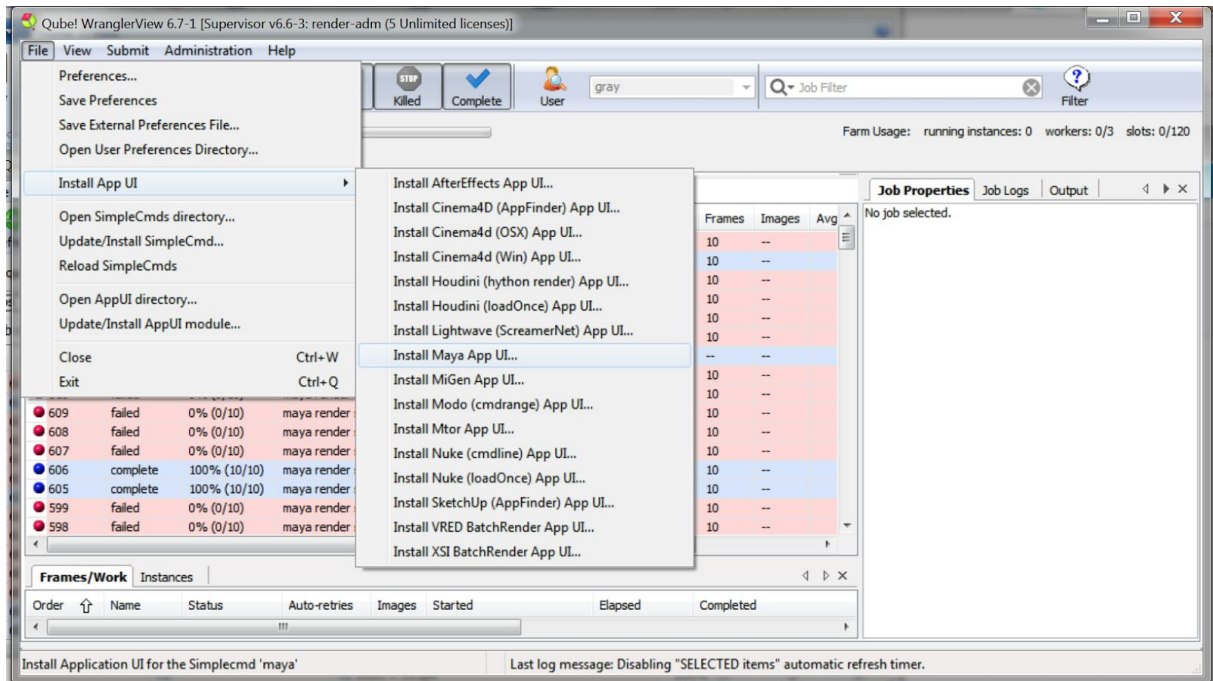
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HPC Developer at Purdue University

Configuring Qube! Submission for Maya

NOTE: You will have to do this for your ECN account at least once. If the Qube! menu doesn't show up in Maya, you will need to do this again.

Once you have installed both Qube and Maya, you can configure Maya to be able to submit jobs to the render farm. With Maya **closed** open Qube! and click File->Install App UI->Install Maya App UI. If Maya is already open it must be reloaded before the Qube plugin will appear.



Add "MAYA_DISABLE_CIP=1" to your Maya environment file (e.g. Z:\maya\2016\Maya.env)

Preparing Your Maya Scene for Submission

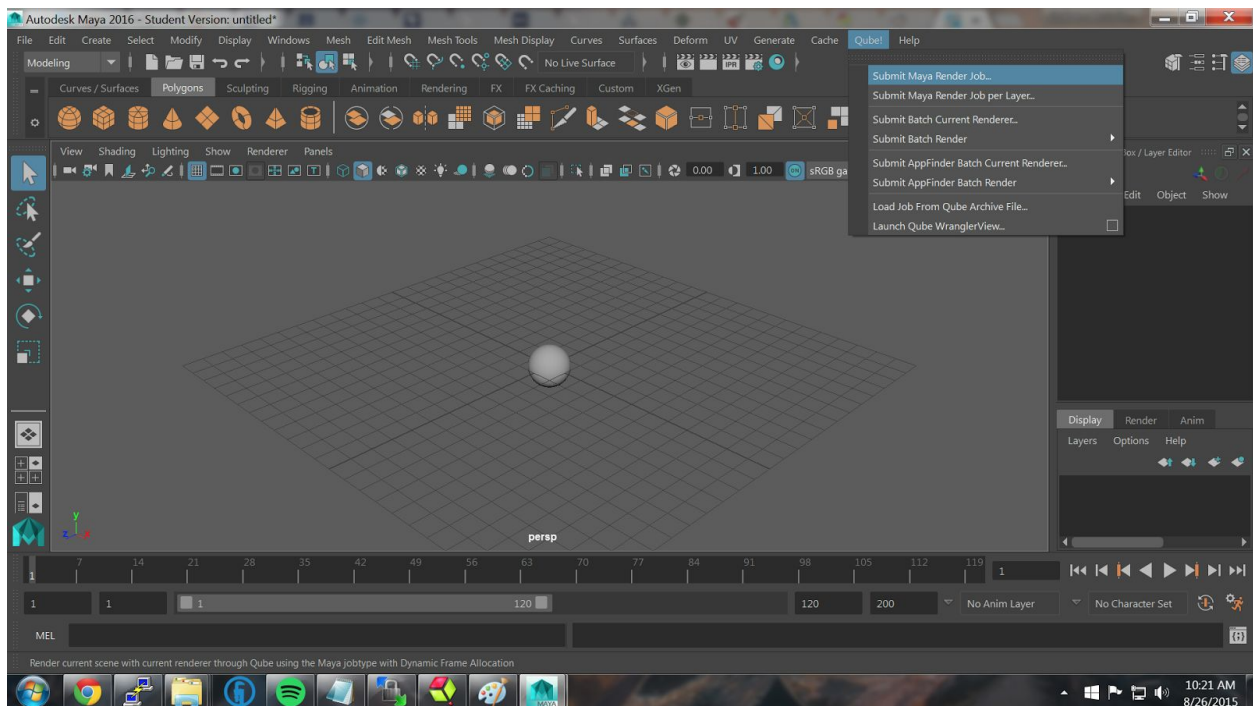
- Collect any object files, texture images, or resources that your Maya scene file uses into the same directory tree
- In your Maya scene, make sure all of the paths to resources outside your scene file point to a resource in the same directory as your Maya scene.

Submitting Render Farm Jobs From Maya

- Make sure that you are connected to the Purdue network either on campus, or using VPN to access it (instructions at <https://www.itap.purdue.edu/connections/vpn/index.html>).
- Mount your RCAC home directory (instructions at https://www.rcac.purdue.edu/compute/rice/guide/#storage_transfer_cifs). On Windows, the drive should be assigned a letter from R:-Z:.. On Mac OSX, the drive should be assigned as /Volumes/[your username].
- Create a new directory in your remote RCAC home directory and transfer your scene and its resource files into the new directory.

NOTE: Ensure there are no spaces, apostrophes, quotation marks, or other special characters (ie. ‘ “ @) in your file or directory names. Dashes and underscores are allowed.

- Open the Maya scene you just copied into your RCAC home directory.
- From inside Maya, in the menu bar you should see a new menu item towards the right named ‘Qube!’. Under the ‘Qube!’ menu item, select ‘Submit Maya Render Job’.

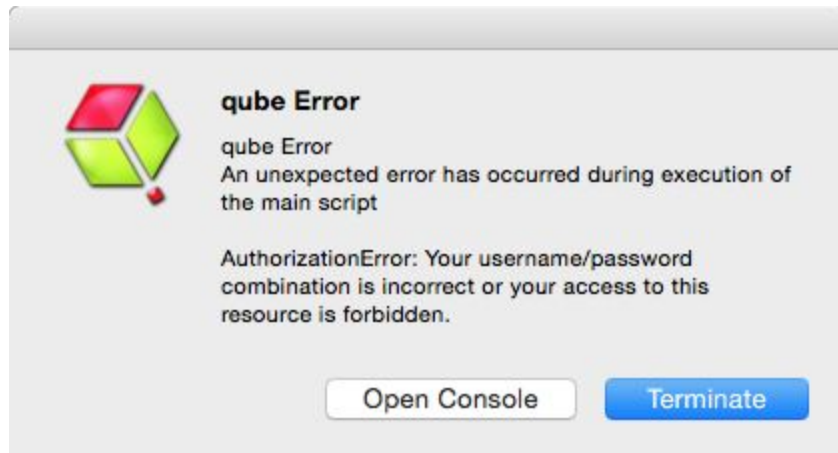


- A new window should pop up. Check to make sure that the scene file and project dir are what you uploaded to the farm, not the local path that begins with a drive designation.

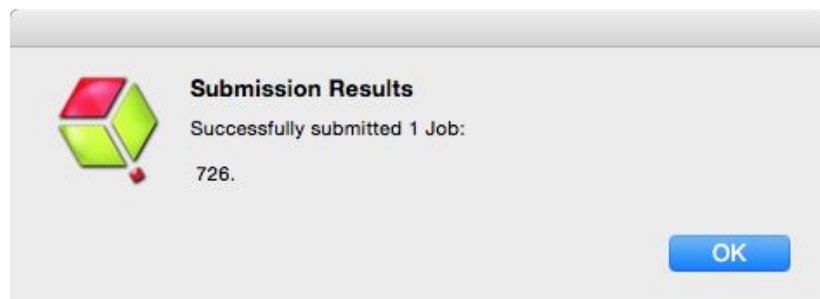
- In the 'Range' text box, enter the range of frames you wish to render. If your scene has 30 frames, enter '1-30' to render all 30. If you wish to render every other frame, enter '1-30x2'. If you wish to render specific frames, such as frame 17, 19, and 23, enter '17,19,32'.
- In the 'Scenefile' and 'Project Dir' text boxes, make sure the project directory and scenefile locations are where you transferred your files to ('Z:/maya/' and 'Z:/maya/scenes/testScene.mb', not 'C:/User/[username]/Desktop/maya').
- Under the grouping 'Purdue Authorization' is a textbox 'Purdue User Name'. Enter your career account username in this box. Do not edit the other textboxes in this group.
- Click 'Submit'. Another box will popup asking for your password. Enter your career account password and hit 'Ok'.

- Error - 'username/password mismatch or you do not have permission to use this resource', either you entered your career account username and password incorrectly, or there is an issue that prohibits you from submitting renders to the farm. If you have

entered your career account username/password correctly, talk to your professor and make sure you have access to the render farm.



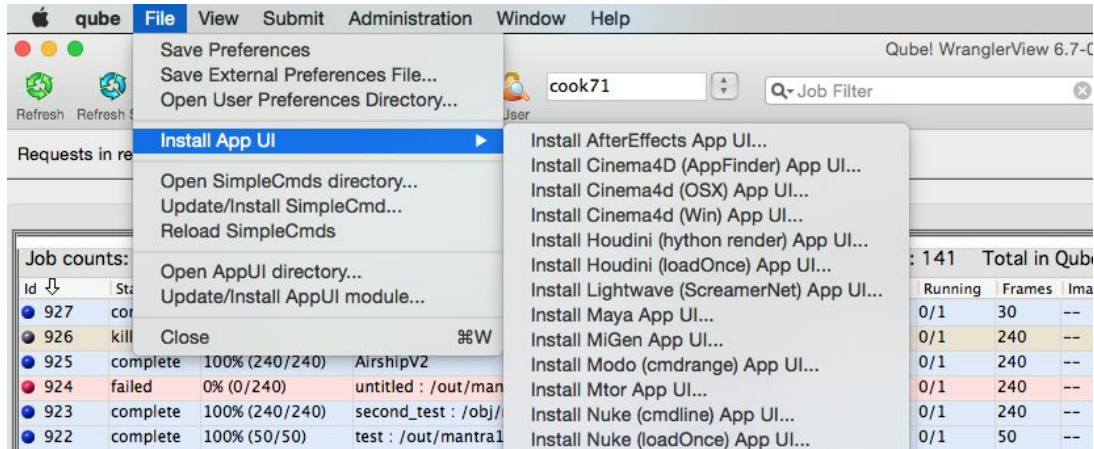
- If the job was submitted successfully, a box will popup saying 'Job submitted successfully!' followed by the id of your render job.



Configuring Qube! Submission for Houdini

NOTE: You will have to do this for your ECN account at least once. If the Qube! Submission node doesn't show up in Houdini, you will need to do this again.

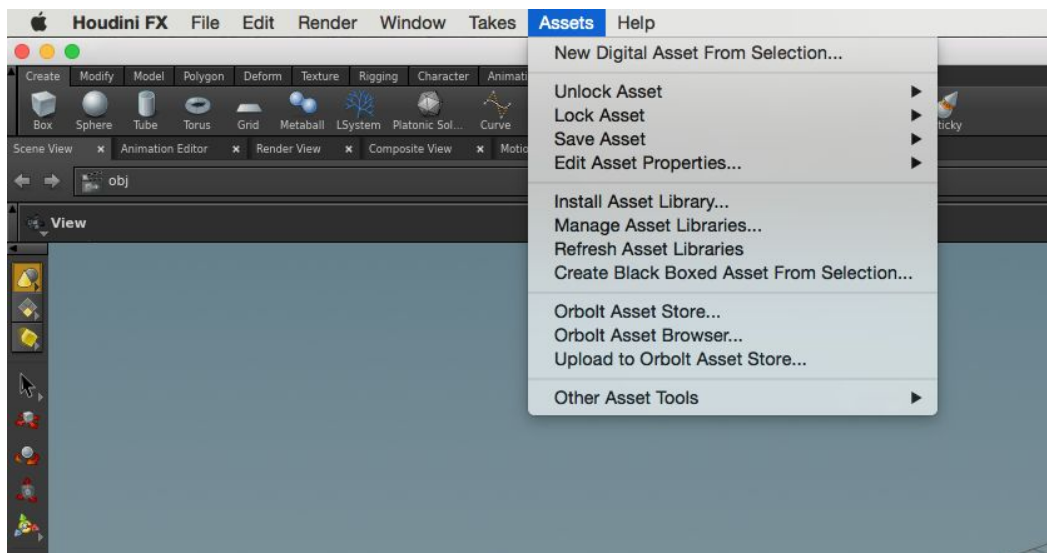
- Once Qube! and Houdini are both installed, open Qube!. Click File->Install App UI->Install Houdini (loadOnce) App UI.



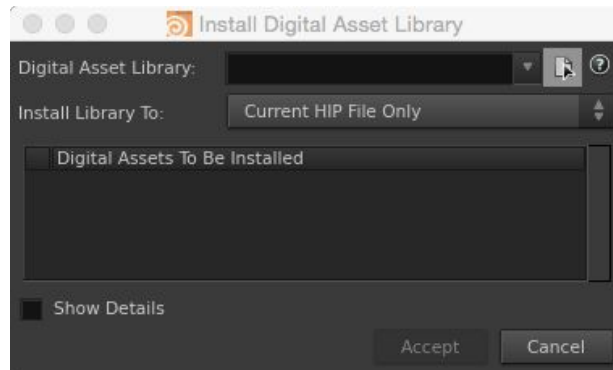
- A window will popup asking what folder you would like to save the file in. You will want to go to your User's directory and save it in the 'My Documents\houdini14.0\asset_store\otls' folder. If the 'houdini14.0' folder does not exist in 'My Documents', run open Houdini. This folder is created the first time you run Houdini as your user. Once you have selected the 'otls' folder, hit 'Ok'. Qube! will copy the Houdini Qube! Submission resource (named 'qbSubmitRop.otl') into that folder.

NOTE: If you can't find 'My Documents', try looking under 'Library\Documents'.

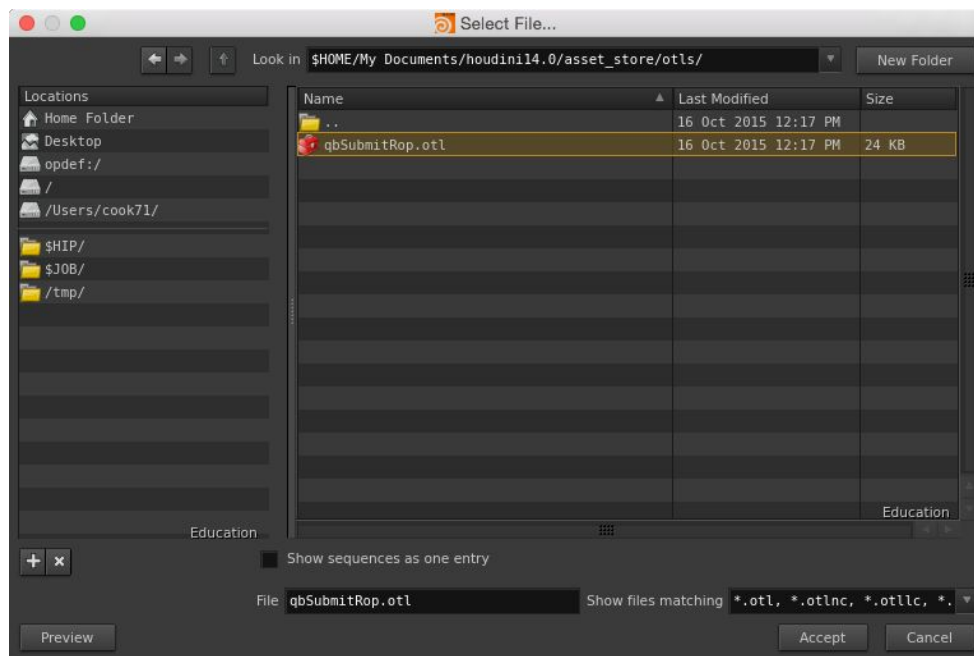
- Open Houdini
- Go to the menu item Assets->Install Asset Library



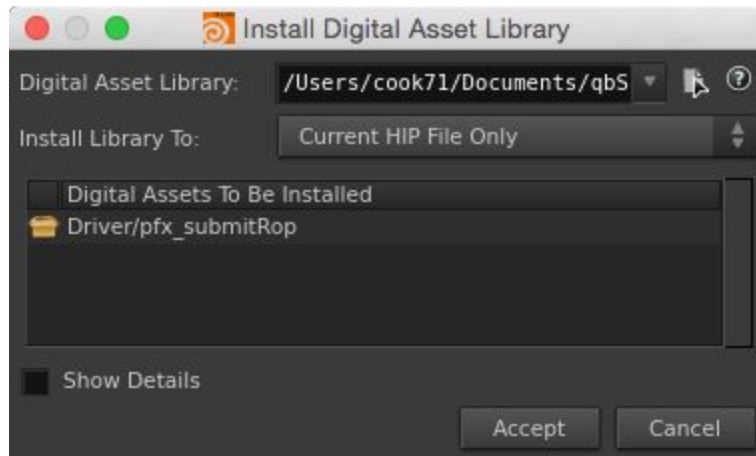
- A window will popup. At the top is a text box, to the right of the box is an icon that looks like a mouse hovering over paper. Click on it.



- Another window will pop up asking to select a file. Navigate to the directory that you saved the Houdini Qube! Submission resource from Qube! in and select the qbSubmitRop.otl file. You can find your 'My Documents' directory by clicking 'Home Folder' on the left side of the window.



- Click accept. You will be brought back to the 'Install Digital Asset Library'. It should now show the filename of the file you clicked and an asset 'Driver/pfx_submitRop'.



- Click accept. The Qube! Submission node should now be installed and can be added to the /out network at the end of your Mantra node. See **Submitting Render Farm Jobs from Houdini** for instructions on submitting your render to the farm. If you can not find the Qube! Submission node during that process, reattempt this section on **Configuring Qube! Submission for Houdini**.

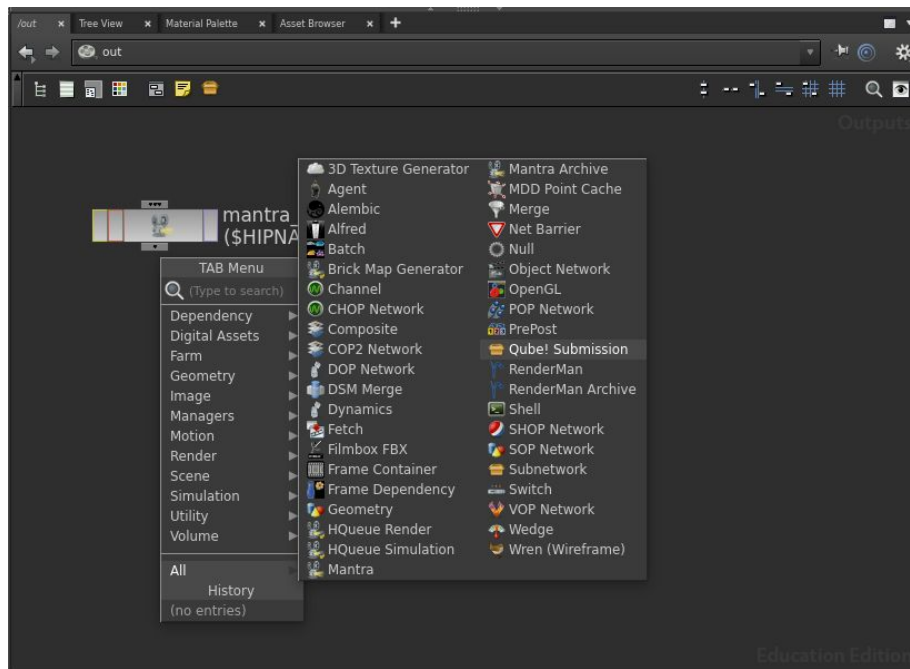
Preparing Your Houdini Scene for Submission

- Collect any object files, texture images, or resources that your HIP file uses into the same directory tree
- In your HIP file, convert the path to any resource outside the HIP file to use '\$HIP' to point to the directory your HIP file sits in. (eg. an object file '/path/to/your/hip/directory/model.obj' to '\$HIP/model.obj')
- Do the same conversion for render image/movie output files (eg. the 'Output Picture' in the Mantra node from 'path/to/your/hip/directory/render/\$HIPNAME.\$OS.png' to '\$HIP/render/\$HIPNAME.\$OS.png')

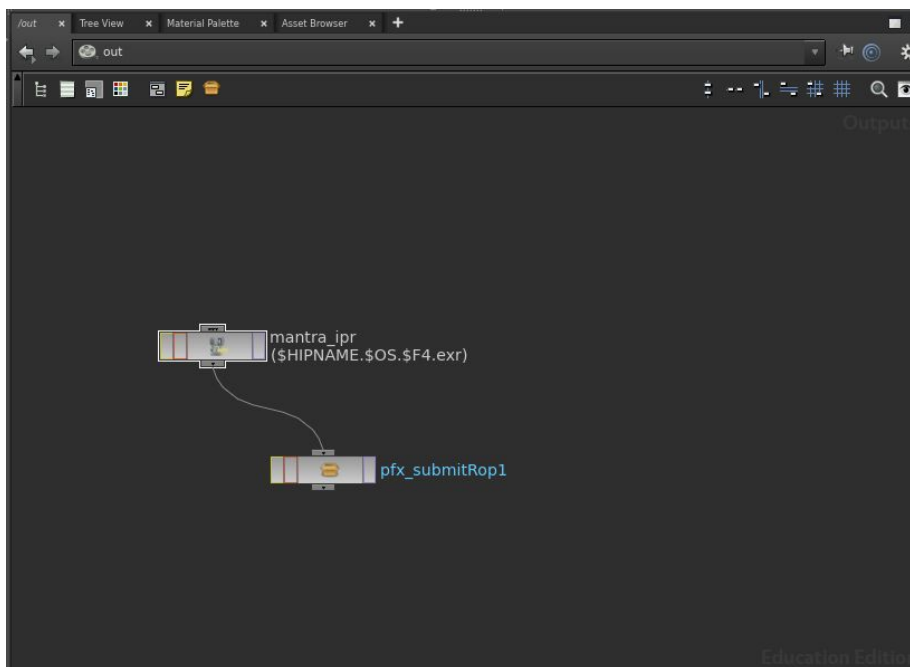
Submitting Render Farm Jobs From Houdini

- Make sure that you are connected to the Purdue network either on campus, or using VPN to access it (instructions at <https://www.itap.purdue.edu/connections/vpn/index.html>).
- Mount your RCAC home directory (instructions at https://www.rcac.purdue.edu/compute/rice/guide/#storage_transfer_cifs). On Windows, the drive should be assigned a letter from R:-Z:. On Mac OSX, the drive should be assigned as /Volumes/[your username].

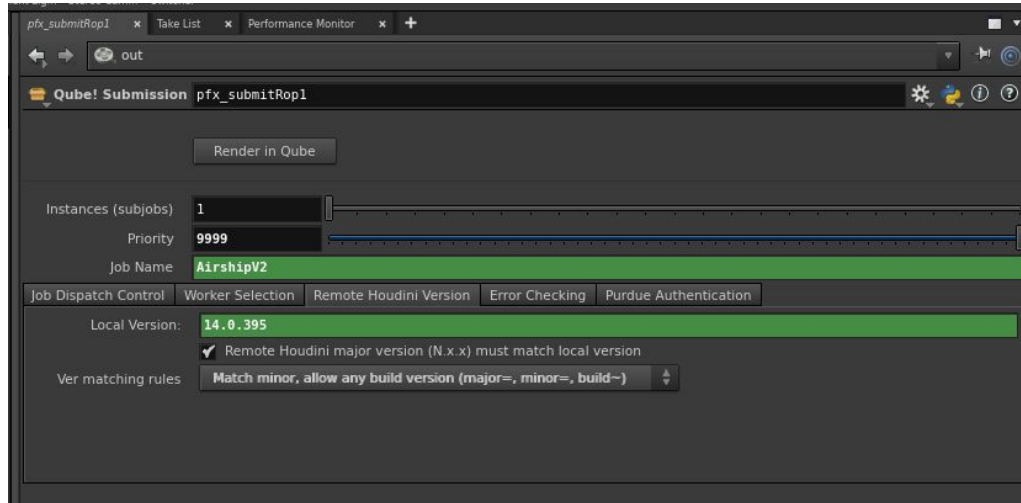
- Create a new directory in your remote RCAC home directory and transfer your scene (HIP file) and its resource files into the new directory.
NOTE: Ensure there are no spaces, apostrophes, quotation marks, or other special characters (ie. ‘ “ @) in your file or directory names. Dashes and underscores are allowed.
- Open the HIP file you just copied into your RCAC home directory.
- Go to the /out network. After adding your Mantra node, add the Qube! Submission node



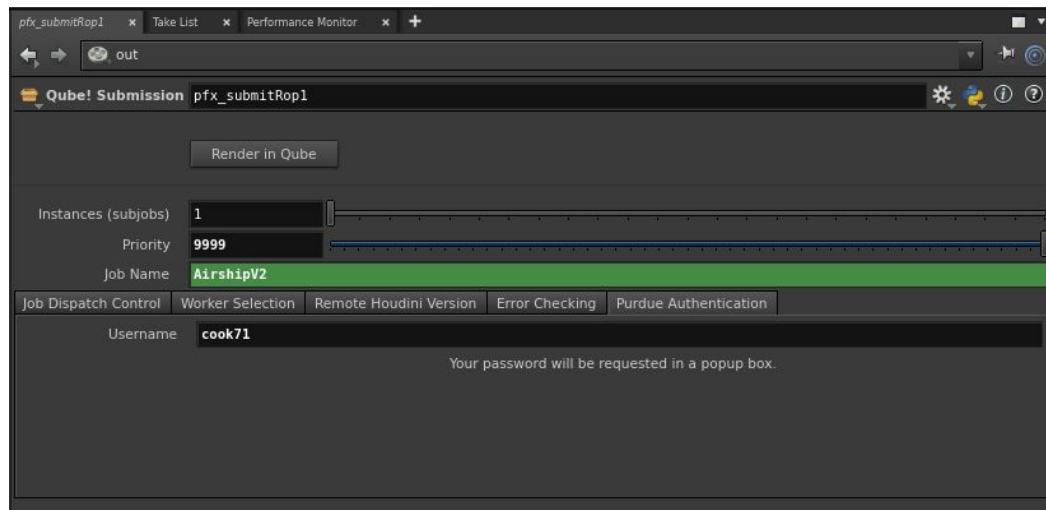
- Connect the Qube! Submission node after the Mantra node



- Select the Qube! Submission node to modify its parameters. Change the 'Job Name' to a title that describes the scene you are rendering.
 - Under the 'Remote Houdini Version' tab, set the 'Ver matching rules' to 'Match minor, allow any build version(major=,minor=,build~)'.



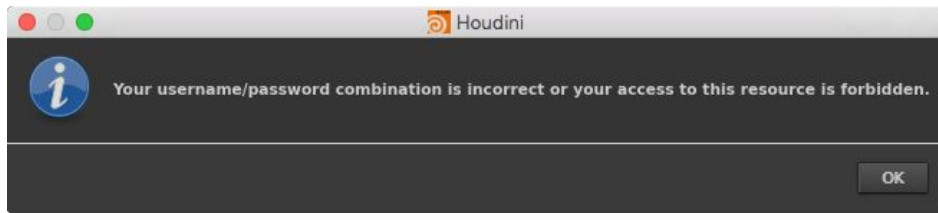
- Under the 'Purdue Authentication' tab, enter your Purdue Career Account username.



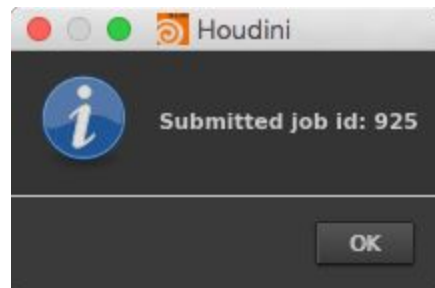
- Under the parameters for the Qube! Submission node, press 'Render in Qube'. A window will popup asking for your password. Enter your career account password and hit 'Submit'.



- If you entered the wrong credentials or you do not have access to the render farm, the following window will popup. If you entered the correct credentials, talk to your professor and make sure you have access to the render farm.



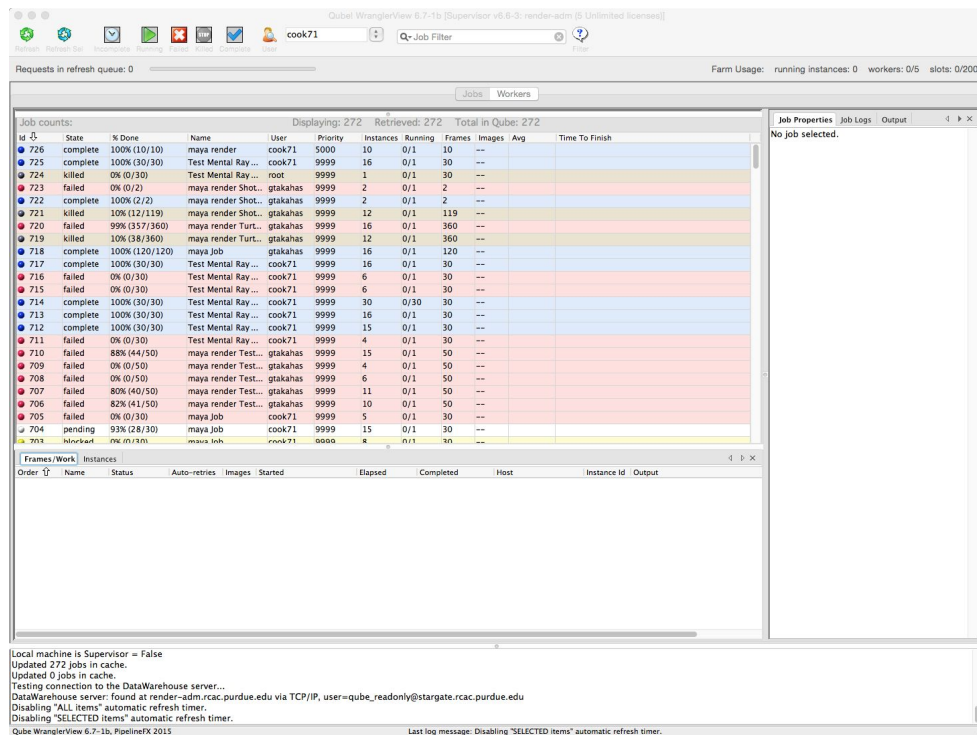
- If the job was submitted successfully, a window will popup saying the job was submitted with the id of your render job.



Watching Your Job in Qube!

NOTE: If you wish to control your job (block, kill, retry, etc.), you will need to be logged into a computer with your career account username. If you are not logged into a computer with career account username, but a generic username (ie. student, admin), you will not be able to do anything to your job other than view its status.

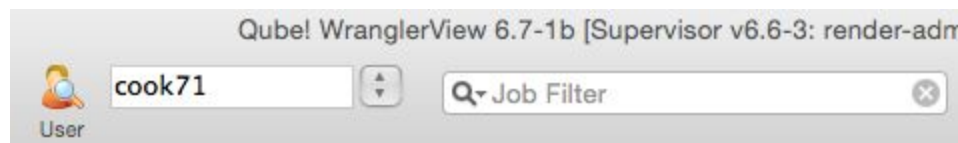
- Open Qube!



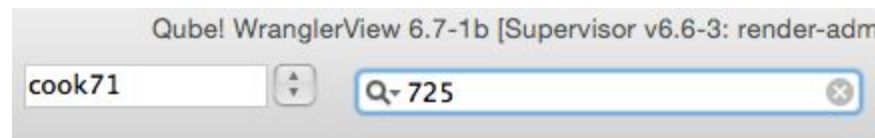
- All of the jobs are listed in the center of the screen
- To sort by job id, username, etc, click on the header of the center area

Job counts: Displaying: 272 Retrieved: 272 Total in Qube: 272										
Id	State	% Done	Name	User	Priority	Instances	Running	Frames	Images	Avg
726	complete	100% (10/10)	maya render	cook71	5000	10	0/1	10	--	

- To search for your job, click on the job filter text box towards the top center of Qube!.



- Enter your job id in the job filter and press enter. Your job will show up in the list of jobs.



Jobs Workers											
Job counts:			Displaying: 1 Retrieved: 272 Total in Qube: 272								
Id	State	% Done	Name	User	Priority	Instances	Running	Frames	Images	Avg	Time To Finish
725	complete	100% (30/30)	Test Mental Ray ...	cook71	9999	16	0/1	30	--		

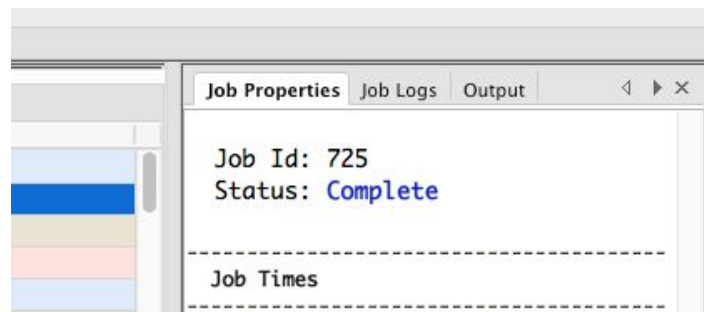
- Click on the job. The list frames that will be rendered for that job will show up in window below the jobs list. This window will show the status, when the frame started rendering, how long it took to render the frame, when it completed, and its output location.

705	failed	0% (0/30)	maya Job	cook71	9999	5	0/1	30	--		
704	pending	93% (28/30)	maya Job	cook71	9999	15	0/1	30	--		
703	blocked	0% (0/30)	maya Job	cook71	9999	8	0/1	30	--		

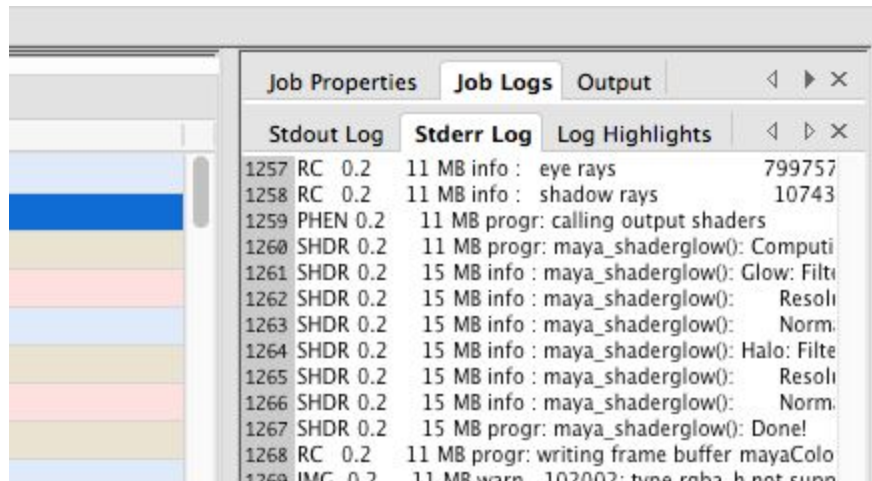
Frames/Work		Instances									
Order	Name	Status	Auto-retries	Images	Started	Elapsed	Completed	Host	Instance Id	Output	
1	1	complete	0	1	2015-09-09 03:10:58...	0:00:21	2015-09-09 03:...	render-a000.rcac.p...	1	[/home/cook71/maya/project:	
2	2	complete	0	1	2015-09-09 03:11:00...	0:00:18	2015-09-09 03:...	render-a000.rcac.p...	0	[/home/cook71/maya/project:	
3	3	complete	0	1	2015-09-09 03:10:59...	0:00:19	2015-09-09 03:...	render-a000.rcac.p...	2	[/home/cook71/maya/project:	
4	4	complete	0	1	2015-09-09 03:11:00...	0:00:26	2015-09-09 03:...	render-a000.rcac.p...	3	[/home/cook71/maya/project:	
5	5	complete	0	1	2015-09-09 03:11:03...	0:00:19	2015-09-09 03:...	render-a002.rcac.p...	5	[/home/cook71/maya/project:	
6	6	complete	0	1	2015-09-09 03:11:03...	0:00:18	2015-09-09 03:...	render-a000.rcac.p...	4	[/home/cook71/maya/project:	
7	7	complete	0	1	2015-09-09 03:11:07...	0:00:20	2015-09-09 03:...	render-a000.rcac.p...	8	[/home/cook71/maya/project:	
8	8	complete	0	1	2015-09-09 03:11:08...	0:00:19	2015-09-09 03:...	render-a000.rcac.p...	7	[/home/cook71/maya/project:	
9	9	complete	0	1	2015-09-09 03:11:10...	0:00:21	2015-09-09 03:...	render-a002.rcac.p...	6	[/home/cook71/maya/project:	
10	10	complete	0	1	2015-09-09 03:11:15...	0:00:19	2015-09-09 03:...	render-a002.rcac.p...	10	[/home/cook71/maya/project:	
11	11	complete	0	1	2015-09-09 03:11:17...	0:00:18	2015-09-09 03:...	render-a000.rcac.p...	9	[/home/cook71/maya/project:	
12	12	complete	0	1	2015-09-09 03:11:18...	0:00:18	2015-09-09 03:...	render-a000.rcac.p...	2	[/home/cook71/maya/project:	

Local machine is Supervisor = False

- After clicking the job, to the right of the job list shows the job properties and logs. Note: there is an 'Output' tab, but it will not show output frames.

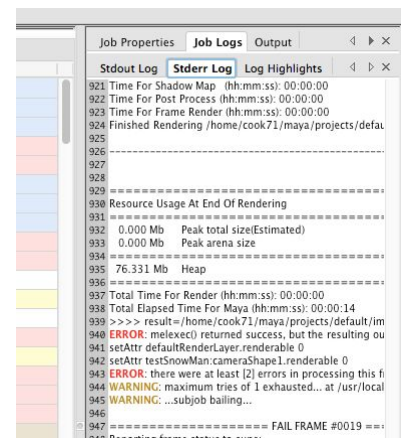


- If you go to the 'Job Logs' tab, then the sub tab 'Stderr Log', the section will show the error logs from the job. If the job failed, this may provide information as to why it failed.



- If you click on the frame of a job while the 'Stderr Log' tab is open, the window will show the error logs of that specific frame.

Order	Frames/Work	Name	Instances	Status	Auto-retries	Images	Started	Elapsed	Completed	Host	Instance Id	Output
18	18			complete	0	1	2015-09-08 05:46:32...	0:00:27	2015-09-08 05:46:32...	render-a002.rcac.p...	10	[/home/gtakahas/profile/My C
19	19			complete	0	1	2015-09-08 05:46:37...	0:00:25	2015-09-08 05:46:37...	render-a002.rcac.p...	1	[/home/gtakahas/profile/My C
20	20			complete	0	1	2015-09-08 05:46:40...	0:00:21	2015-09-08 05:46:40...	render-a002.rcac.p...	3	[/home/gtakahas/profile/My C
21	21			complete	0	1	2015-09-08 05:46:41...	0:00:23	2015-09-08 05:46:41...	render-a002.rcac.p...	8	[/home/gtakahas/profile/My C
22	22			failed	0	1	2015-09-09 09:24:22...	0:00:00	2015-09-09 09:24:22...	render-a001.rcac.p...	7	[/home/gtakahas/profile/My C
23	23			complete	0	1	2015-09-08 05:46:43...	0:00:21	2015-09-08 05:46:43...	render-a002.rcac.p...	11	[/home/gtakahas/profile/My C
24	24			failed	0	1	2015-09-09 09:24:22...	0:00:04	2015-09-09 09:24:22...	render-a001.rcac.p...	2	[/home/gtakahas/profile/My C
25	25			complete	0	1	2015-09-08 05:46:56...	0:00:31	2015-09-08 05:46:56...	render-a002.rcac.p...	9	[/home/gtakahas/profile/My C
26	26			complete	0	1	2015-09-08 05:46:57...	0:00:27	2015-09-08 05:46:57...	render-a002.rcac.p...	6	[/home/gtakahas/profile/My C
27	27			complete	0	1	2015-09-08 05:47:00...	0:00:31	2015-09-08 05:47:00...	render-a002.rcac.p...	5	[/home/gtakahas/profile/My C
28	28			complete	0	1	2015-09-08 05:47:00...	0:00:30	2015-09-08 05:47:00...	render-a002.rcac.p...	10	[/home/gtakahas/profile/My C
29	29			failed	0	1	2015-09-08 05:47:02...	0:00:04	2015-09-08 05:47:02...	render-a002.rcac.p...	3	[/home/gtakahas/profile/My C



- If you wish to kill your job, you can right click the job and select 'Kill'

Job counts:						Displaying: 27
Id	State	% Done	Name	User	Priority	
706	failed	82% (41/50)	maya render Test...	gtakahas	9999	
705	failed	0% (0/30)	maya Job	cook71	9999	
704	pending	93% (28/30)	maya Job	cook71	9999	
703	blocked	0% (0/30)	ma			
702	pending	0% (0/30)	ma			
701	failed	0% (0/30)	ma			
700	blocked	0% (0/30)	ma			
699	failed	73% (22/30)	ma			
698	pending	0% (0/120)	ma			
697	blocked	0% (0/120)	ma			
696	blocked	0% (0/120)	ma			
695	failed	20% (6/30)	ma			
694	failed	0% (0/30)	ma			
693	failed	73% (22/30)	ma			

- Refresh
- Filter Dependencies
- Retry...
- Retry Failed Frames...
- Interrupt...
- Block (+ Purge)
- Block (+ Finish Current)
- Unblock
- Shove...
- Kill...

- Once the job has attempted to render every frame, the job state will either be completed or failed. If the job is failing or has failed, then it failed to render at least 1 frame

Job counts:					Displ
Id ↓	State	% Done	Name	User	
726	complete	100% (10/10)	maya render	cook71	
725	complete	100% (30/30)	Test Mental Ray ...	cook71	
724	killed	0% (0/30)	Test Mental Ray ...	root	
723	failed	0% (0/2)	maya render Shot...	gtakahas	
722	complete	100% (2/2)	maya render Shot...	gtakahas	

- If one of your frames failed to render, you can tell Qube! to retry rendering that frame by right clicking on the job and selecting 'Retry Failed Frames' or by right clicking on the failed frame and selecting 'Retry'

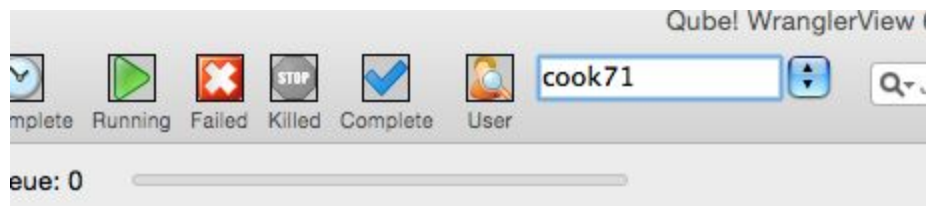
702	pending	0% (0/30)	maya Job	cook71	9999	6
701	failed	0% (0/30)	maya Job	cook71	9999	4
700	blocked	0% (0/30)	maya Job	cook71	9999	8
699	failed	73% (22/30)			9999	9
698	pending	0% (0/120)		as	9999	7
697	blocked	0% (0/120)		as	9999	9
696	blocked	0% (0/120)		as	9999	10
695	failed	20% (6/30)			9999	8
694	failed	0% (0/30)			9999	6
693	killed	73% (7/10)			9999	8

Refresh
Filter Dependencies
Retry...
Retry Failed Frames...
Interrupt...
Block / Unblock

Frames/Work		Instances			
Order ↑	Name	Status	Auto-retries	Images	Started
8	8	complete	0	2	2015-0
9	9	failed	0	2	2015-0
10	10	complete	0	2	2015-0
11	11	complete	0	2	2015-0
12	12	complete	0	2	2015-0

Retry
Block
Unblock

- To view only your jobs in the render farm, click the user icon towards the top of the screen so that it is highlighted, then enter your career account username in the box beside it



FAQ

Why don't I see 'Qube!' in Maya?

Qube! has not been properly configured for Maya. See the section 'Configuring Maya for Render Farm' to ensure Maya is properly configured with Qube!.

I didn't see a box saying my render was submitted successfully. Did my job fail to submit?

More than likely your job failed to submit and Maya or Houdini wrote the error to a log rather than popping up a dialog box. If you do not see a new job in Qube! submitted by your user, the job was not successfully submitted.

Why did my job fail and I only see one file in the output folder?

Your scene's render settings are more than likely set to render your frames into a single file (more than likely a .tif). Set your scene's render settings to render each frame as a separate file and re-submit your scene.

Some frames failed on my render, do I have to resubmit the entire thing?

No. You can right click on the failed frame and select 'Retry' to attempt to re-render the frame, or you can right click on the job and select 'Retry Failed Frames..' to attempt to re-render any failed frames in the job.

My job has not completed any frames recently, did my render job freeze?

Depending on your scene, it may take a lot of time to complete rendering a frame. If your scene has frames already completed, look at their elapsed time; if the current frames are under that time or close to it, then the frame is still rendering. If the frame has been rendering longer than usual, click on the frame and look at its 'Stdout Log' and 'Stderr Log'. If nothing is changing in the logs after a minute, your job may have failed.

Why can't the render farm find my scenefile?

Your scenefile may not be in your RCAC home directory or the path you gave Qube! may be incorrect. Be sure your files are in your remote RCAC home directory and that you are using the correct paths when submitting the scene to Qube!.