A Render farm consists of three parts: **Client**, **Supervisor**, and **Worker**.

**The Client:**
These are the workstations that submit the jobs to be completed by the render farm. The clients at Dodge College include the computer labs and the digital art suites.

**The Supervisor:**
Controls the jobs that are submitted to the render farm. The supervisor then sends out instructions to all the workers for rendering.

**The Workers:**
Each worker receives the job from the supervisor and renders out individual frames.
Render Farms **CANNOT use Local Paths**, you must use **UNC Paths**.

*Example of Local Path:*  
C:\MyMovie\Images\bump.tga

*Example of UNC Path:*  
\ftv-render-nas\myfilm\Images\bump.tga

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Your Project can be worked on locally off an external hard drive, **BUT** when you want to render your project, you **will be assigned** a network space and your own UNC path for your project to work off of.

If your project name is “The Bug” you will be given a path like:

\ftv-render-nas\myfilm

EVERY piece of your animation from project file to texture files **MUST** be located on your storage space in order for the render farm to work.
Render Farm Procedures

How it Works
Render Farm Submission and Access

Fill out the “Animation Production Render Farm Access Form” located in the Animation Production section of the http://ftvtutorials.chapman.edu web site.

Soon after this form has been filled out, the users listed and the network storage space will be set up and you will be given an UNC path for your project like the one in the green box below.

Network Storage Drive \ftv-render-nas\myfilm

It is important to fill in the usernames that will be submitting the project to the render farm. If the usernames are not submitted, that user will not have proper access for the render farm and all jobs submitted will be denied.

Without proper access the Qube program will not accept jobs. Once approved you will have the ability to submit, kill, or modify a job, but not delete it. That will be done periodically by an administrator.

Note! ALL Scene Files, Image Assets and the Render destination folder MUST be on a UNC path. Make sure that once the job is submitted from the network path.
**What is Qube?**

*Qube!* is a robust and highly scalable render management solution. It interfaces with different post-production softwares within the same management system.

If a student sends a 3dsmax, Maya, or After Effects job to Qube, the system will manage all the different jobs and tasks within the same system.

Simply, students can send jobs from whatever program they are using without having to do any adjustments on the render farm.

The Qube System manages the different render jobs one at a time. Once you submit a job, the system puts it in a queue and renders it once the last job is complete. You can see the jobs in the Queue by opening the Qube program located on the desktop. If the station you are on does not have the Qube icon, it most likely does not have access to the render farm. More functions of the interface will be covered later in this document.
Render Farm Procedures

Restrictions

Computer Power Restrictions

<table>
<thead>
<tr>
<th>Agenda</th>
<th>Frames</th>
<th>Workers</th>
<th>Subjobs</th>
<th>Output</th>
</tr>
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<td>2009-11-06 07:30:57</td>
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</table>

The limit on rendering is set for 20 min a frame. If a job exceeds this duration, it is at the administrators discretion to terminate a render job. This limitation is intended to make the render farm available to more students.

Testing

Test Early, or solve big problems later...

Is it highly recommended to test a few frames on the render farm throughout the production to ensure that the output is what you expect. Like a cinematographer will test certain stocks of film, animators must test renders so that everything comes out technically correct.

The image above shows a frame rendered without textures due to a missing UNC path.

The Render farm CANNOT access the Avid Unity Isis system. Do not submit jobs that reference storage on any isis.
BEFORE Submission
What to do BEFORE you send a job to the render farm.

TEST your render locally on your computer before you submit it to the farm.

Press the F5 Key to select the render toolbars. Select the Render option on the top toolbar and click the option “Render Current Frame”

IF your local computer CANNOT render the frame, there’s a good chance the render farm won’t be able to either.

Ensure all your scene images and assets are in your project folder. If they are in other folders ensure you place a copy every image file contained in the scene including textures and any background images to “Images” folder in the Maya project folder.
The most common problem that users will have is having their assets in the reference editor not set properly to the correct path. If these are not corrected to the path on the render NAS, your scene will fail rendering.
Render Farm Procedures

Submission

How to send jobs to the render farm through Maya.

Load the scene FROM your network storage path. Our example was saved here:
\ftv-render-nas\testfilm\maya_data\scenes\excitebike.ma

Copy your Maya Project folder to the network storage path given for your project.

You can access your network path by entering it into the folder line of any windows explorer window or going to Start->Run and entering your network path.

Before your submit your job to render, be sure to test render individual frames on your local computer.

Inside Maya, you are given the option through the “Qube!” option on your top menu. Make sure you are in the render mode.
Submission

Manually send job to the render farm through Maya.

Load the scene FROM your network storage path. Our example was saved here:
\ftv-render-nas\testfilm\maya_data\scenes\excitebike.ma

Inside Maya, you are given the option through the “Qube!” option on your top menu. Make sure you are in the render mode.

If you can’t submit directly from Maya, open Qube and select Submit and Maya Job. This will bypass Maya entirely, but WILL require extra settings to be made.
The next window will come up with certain parameters.

- **Name**: The Name of the render MUST have your film name! After the underscore, you can label it however you like.
- **CPUs**: The CPUs declare how many blades will render your project. You can set this up to 14 CPUs.
- **Range**: The RANGE sets the start and end frame that need to be rendered by the farm.
- **Scenefile**: The Scenefile will show WHERE your Maya file is loaded from. This MUST be an UNC path or will fail on submission.
- **These settings are all optional. If you set these options in the Maya project, you DO NOT need to enter them here. Leave these areas blank. If your settings are set different here, they will override your project settings.**

If the option for Render Threads Comes up, be sure to select 8. This will allow the render farm to use all 8 Cores. BUT you must also set the reservations to 8+ as well. This will be shown on the next page.

DO NOT HIT SUBMIT YET! Go to the next page for more options!
Submission

How to send jobs to the render farm through Maya.

Set the Render Directory to the directory where you want the exported files to be saved!

The Image render size must be set ahead of time. The maximum allowed render resolution for our render farm is 1920x1080.

Set the reservations to host.processors=8+ as well. This will optimize the amount of cores needed per machine and only render one job per scene.

Now that the options are set, you can select the Submit button.
How to send jobs to the render farm through Maya.

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Submission
FOR More Complex Submission Guidelines for Batch-renders and Mental Ray
go to Page 22
How to send jobs to the render farm through Maya.

Inside Qube, you can see the status of your job and if the job had been FAILED, KILLED or Complete.

**Failed:** Means there was a problem in the submission to the render farm.

**Killed:** Means that a user or administrator canceled the job.

**Complete:** Means the render job is complete.

If your Render job FAILED, check your settings of your project or check the Stderr tab for more information.
Failed Frames: Occasionally, for whatever reason, the render will fail and only those frames will need to be fixed. This can be done by selecting the “Retry” option when selecting the failed frame. This will re-render ONLY the failed frame.

Multiple Failed Frames: If there is a job that contains several failed frames, you can right click on the JOB and select the “Retry Fail Frames...” option. This will re-render ONLY the failed frames.

IF NO FRAMES RENDERED AT ALL, there is a problem with your animation file. Check and see if the scene will render on your local computer FIRST. If the same frames are failing over and over again, there might be a problem in the animation settings or possibly missing textures that are not in the correct folder.
Your scene is still failing?

Open the Maya scene from a computer you have never worked on before and point it to the network storage path.

If the scene is missing assets or maps are linked properly it will notify you of the problem.
Render Farm Procedures

Re-Assembly
Compiling your Targa Sequences-

The Render farm will output a sequence of Images that need to be compiled into one file.

Import your Footage into After effects and set the input and output formats.

The final output will be a quicktime file that can be imported into any video editing program.

Open After Effects and go To -> File and Import.
When the Import File window comes up, select the first file in your targa sequence.

Make sure Import as: Footage is selected and that Targa Sequence is selected.

Your image sequence will go into a file in your bin on the top left. Right click and go to Interpret Footage and Main.

In the frame rate selection, set the frames to either 24 fps or 30 fps based on what your sequence was rendered from 3dsmax or Maya.
Next, drag your Targa sequence to the composition tab. A composition will be made with the same resolution and framerate as your sequence.

A new composition will appear in your bin.

Targa Sequence... drag this to here: Composition Tab

Your Composition can now be rendered out into a single file.

Go to Composition -> and Add to Render Queue
We now need to set the output settings for Quicktime and where the file will be saved.

In the Render Queue tab select “Lossless” and change the output module settings to the Format: Quicktime. It should default to the “Animation” preset.

In the output to option, select your destination of your animation file. Click save and then select the render option on the far right of the Render queue window.
Additional Resources

Problems you can’t solve-

The Render farm is managed by:
Kc Wayland
714-744-2182
cwayland@chapman.edu
For More Advanced Projects, the render farm offers a render platform that can be fine tuned for mental ray renders for Maya.

Open QUBE and select Submit and Maya BatchRender -> Maya BatchRender (mr) Job.

This is a selection made for Mental Ray.

Type to enter text
Set the Render Name to your scene name.

Set Cpus to 14

Set Range to the Range of Frames you wish to render. Ex: 1-100

Select ‘mayaExe’ to C:\program files.....(Maya 2012) option.

Set your scenefile here

Set your render directory here:
Enable autoRenderThreads!

Other flags are available for editing, but only those options above are required.

Once finished, select the submit button.

Set the reservations to host.processors=8+ as well. This will optimize the amount of cores needed per machine and only render one job per scene.