Animation Renderfarm

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Presentation Outline

- Introduction
- Hardware and software components
- Typical steps in a render job
- Renderjob Demo
- Technical details
- Future directions
Animation Showreel
Why build a renderfarm?

- Rendering animation is a processor intensive, time consuming job
- Students spend less time waiting for renders to finish
- Review work sooner -> make changes quicker or start new stuff
- Help prepare students for working in industry
## Hardware

<table>
<thead>
<tr>
<th>THEN - 2006</th>
<th>NOW - 2011</th>
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<tbody>
<tr>
<td>• 46 PowerMac G5 Quad cores 2.5 GHz, 2 GB RAM</td>
<td>• 30 MacPro Intel 8 Cores 3.2 GHz, 26 GB RAM</td>
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<tr>
<td>• 19 Xserve G5 cluster nodes dual-processors 2.3 GHz, 2 GB RAM</td>
<td>• 3 dedicated render boxes MacPro Intel 12 Cores 2.66 GHz, 24GB RAM</td>
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<tr>
<td>• total cores - 222</td>
<td>• total cores - 276</td>
</tr>
<tr>
<td>• 1 G5 Xserve</td>
<td>• 2 Intel Xserves</td>
</tr>
<tr>
<td>• w XRaid attached 1.35 TB disk space</td>
<td>• Promise VTrak RAID 3 x 6TB volumes</td>
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Software

2 main pieces of software:

• Maya 2011 from Autodesk Inc.
• Rush Network Render Queue from Seriss Corp/ Greg Ercolano

Others:

• Fcheck, Apple Remote Desktop, OS X Server, OS X 10.6
Typical steps in a render job

• Students create animation scenes using Maya (1-2 minute short animation typically has multiple scenes/ camera shots)

• Copy project directory to Renderfarm volume. Project dir includes scene files, sourceimages, textures, and more.

• Submit job to Rush render queue
• Rush daemon on submit mac sends job to renderjob controller

• Renderjob controller distributes frames to available macs

• Rush daemon on each machine launches maya cmd line renderer

• Maya renders in the background ie. while macs are sitting at login window
• Macs not available to render if student is logged in

• Rendered frames written back to renderfarm volume (incrementally)

• Students can monitor and manage job progress using irush application
Live Demonstration
Rush

• manages distributed rendering, compositing, and other command line capable software (eg. 3D Studio Max, After Effects, Softimage, Houdini, Renderman)

• can work on small or large networks of Linux, Mac, or Windows machine.

• we’ve tried cross platform rendering - mixed success
Rush cont ...

- Our experience with Rush -
  - great technical support over 5+ years
  - extensive documentation & FAQs
- Have not had any compelling reason to change
- Check out the website  http://seriss.com/rush/
It’s even won an Academy Award!:

OS X modifications

- NFS Renderfarm volume to prevent file permissions issues
- StartupItems script to mount NFS volume
- Login & Logout Hooks take Rush offline & online (no rendering while students logged in)
Live Demo cont ....
Alternative render systems

- Alternatives we looked at:
  - Qmaster
  - DrQueue - needs X11 and Fink
  - X Grid - not specialised enough
  - And others …
The future ...

Renderfarm continues to evolve

- Other types of rendering - 3DS Max?
- Web interface to monitor and manage jobs
- Digital architecture - increasing need for 3D rendering
- Animation undergrad degree starting next year
- New student lab, more dedicated render boxes
Questions ?