Feature Guide

Inside Royal Render

Works out of the box
You don't need any scripting TDs to get Royal Render (RR) running with all its features.

Client averaging
End "Priority Wars" once and for all. If you have multiple projects at the same time in your company, the server averages the clients between your projects. You don't have the problem that if Project „A" sends a lot of jobs, it will block the farm for other projects sending jobs later the day. With all other managers you have the problem with setting X priorities, re-ordering the render queue or redefining render pools for new projects. The average settings are stackable: E.g. All projects get the same amount of clients, within each project all render apps/users get the same amount of client, and within the render app all jobs with the same priority get the same amount of clients.

Of course RR combine the averaging with with other functions like
• Exclusive priority for project/user/app X on x random clients
• Preferred priority for project/user/app X on client Y
• Per job priority 1-99

Dynamic and flexible
It does not matter if you shutdown or disable a client. Assign or deassign clients for a active job. Or if you reboot the RR-Server machine, the clients don't care and continue to render their current task.

Intelligent Clients
• The client checks the render process and all sub-processes. It detects if a renderer froze or crashed and keeps information about CPU and memory usage per frame
• Auto-shutdown if idle and wake-up on new jobs
• Auto-cache texture files (Available for Softimage and Maya out of the box, other render apps require custom scripts for your pipeline)
• Workstation artist-client synergy:
  – Configure the client to know the artists working hours (Withlogout detection)
  – A client recognizes if the CPU usage is high and it should not start to render
  – Enable after x min with no CPU usage (gone home/meeting and forgot to enable)
  – Render in the background with less CPUs if the artist is loged in
  – Allow only (e.g.) Nuke jobs during your working hours
  – Disable if artists starts application X
  – Wake up machine before working hours

Render licenses
Set the number of render licenses. E.g. 20 Nuke and 10 Sapphire (Nuke-Plugin).

Service/deamon
The RR-Client and RRServer are running as a service. You do not need to be logged in on a workstation to render.

Job-checking and error-handling

The Royal Render Server distances itself from simple "fire render and forget" systems. A render job is not done when frames have been send to the render clients. No, a job is done if all frames are on your harddrive! It lays great value on accompanying your render jobs. It handles errors from crashed renderers to visual correctness analysis. In Detail:

Renderer return
The client reads the returned exit code of the renderer to check if the renderer crashed.

Render freeze
It happens this and then that a renderer freezes. It does not return, it does not crash, it does nothing. The client detects this (an important feature missing in other solutions).

Realtime error message check
The RRClient checks the render log output while rendering for some special messages. If it finds such an error message, it will abort the job. E.g. if the Arnold plugin was not loaded (It makes no sense that Maya switches to the default renderer and continues).

Frame file check
The server checks for the files that have been rendered. If a frame is missing (due to a client crash or user delete), a client renders that frame.

Frame visual check
After the render a tool analyses the rendered sequence and searches for visual errors like a mental Ray tile is missing or shaders are not assigned. The check result is displayed at the job.

Render log files
You have always access to the renderer output log files from any workstation. Just in case you need to investigate a problem.

Renderer log parse
The log file is searched for renderer specific error messages.

Renderer crashes
Crashes happen, but the server keeps track that all frames are rendered. If a client crashes too often (e.g. plugin missing), it is deassigned. If there is a predefined log message, it is deassigned directly.

Scene Crash
Of course, if a job crashes too often, then there is something wrong. The job is disabled and the clients are rendering other jobs

No Scene Output
A scene renders, but does not create the output specified. Nor does the renderer return any error. The server detects it.

Space Left
It can happen that a project share it filled up and no space is left. In this case the server disables the job instead of renering it over and over and waiting for crashes.

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For the Artist

Preview images
RRender converts a few frames of each job and displays them in RR-Control. If you send a lot of jobs on the farm, RRender starts these preview images at first. You have an overview how long all of your jobs take and have a visual check that everything is right.

Fast sequence viewer application
View your frames in a viewer and with a small flipbook for an easy check. Frames are pre-cached so you can load full HD jobs in a few seconds. If you find a broken/crap frame, directly delete it and the application informs the RR-Server to re-render the frame.

Render cost
Set hourly costs per render client and render application and receive the render costs of a project.

Notification
Set a notification if your render is finished via win message or Email.

EXR Crop and EXR 2.0 Multi-Part
Speed up compositing by huge factors, for one animation feature the speed gain was 100x (Depends on how much empty space your image has and how many layers the EXR file has).

Job Features

Control Jobs
Control your job queue and change any parameters for jobs. Including reorder/abort/ reset/disable jobs in the queue, assign/deassign clients, change sequence length, render quality, post-scripts...there's nearly nothing you cannot change.

User Aproval
Pause job after a few frames or after all frames (before post-scripts) and continue after user has approved the job.

Tile Frames
If you want to render highres images, then RR is able to split a frame and let each client render one part of the image. RR can even use split for whole sequences.

Job dependencies
One job can wait for up to 20 jobs before it is started.

Overrides
Override the image type, image size, render quality or verbose level for jobs. No need to change your scene.

Pre-/Preview-/Post-/Done-Commandlines
Define commandlines that are executed before, in the middle, after all frames are rendered or after the job was approved.

Customization

Python Library
Access all jobs, clients and user information via an external python library which can be used within any python installation.

Render applications
Add new render applications or change the render behaviour of existing ones. Config files include the commandlines to execute, default settings for submission and custom commandline options for the submitter. Separate config files tell the client how to find the new render application and where to install submission plugins.

Submitter default settings
Define default values for the submitter settings. Applied in multiple stages, a global one for the whole company, a specialized one for a project, a custom one for a user, ...

Administration

User management
Royal Render has a build in user management. Decide if users are allowed to change or disable jobs, which configuration they can access and who is RRender administrator.

Auto „Wake up on LAN" and auto shutdown
If your machines are not used at night, they will be shut down. If a job is send which requires, they are waked up via LAN. Saves power, noise and temperature.

Remote Batch Execution
Run install scripts on the clients. Commandline installation of software, copy plugins files, ... Just create a new RR job for it. And if the machine is powered off, the client gets the job once the machine is started.

Updates
As RRender uses a centralized program folder, updates to the render farm are done within 3 minutes. No need to stop the render farm. The updater takes care of everything.

More Information: **royalrender.com**