

Traffic – Ingest & Delivery Gateway (v1.1)

By Milton Adamou

At Stereo D we have always been sensitive to the flow of a movie, and how that translates to decisions we make during the stereo conversion process. Whenever we present our work, it is in contextual form, not as individual shots. This is not only a luxury afforded to our filmmaker clients, by also our hundreds of artists who work tirelessly to deliver some of the best looking stereo in the world!

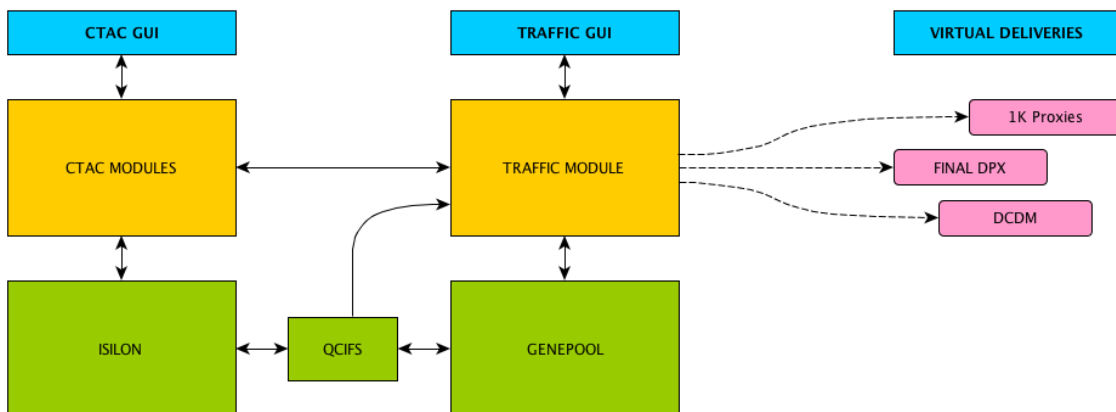
From the early sequences of the movie to the final, refined stereo version, an artist gets to see the shot they just worked on in the context of the scene and more broadly the movie. On a technical level, this contextual way of working creates certain challenges, including the way in which we integrate the two disparate storage topologies we have at Stereo D.

On one hand, our storage infrastructure needs to be able to serve a large amount of data to over 400 artists, while on the other hand the converted stereo shots need to be manipulated and displayed as multiple streams of stereo 2K/3K. The turnaround time between the point of creation and their in-context display can usually be counted in minutes. The prerequisites to service each one are diametrically opposed, and this is why we built Traffic.

Seamless Integration

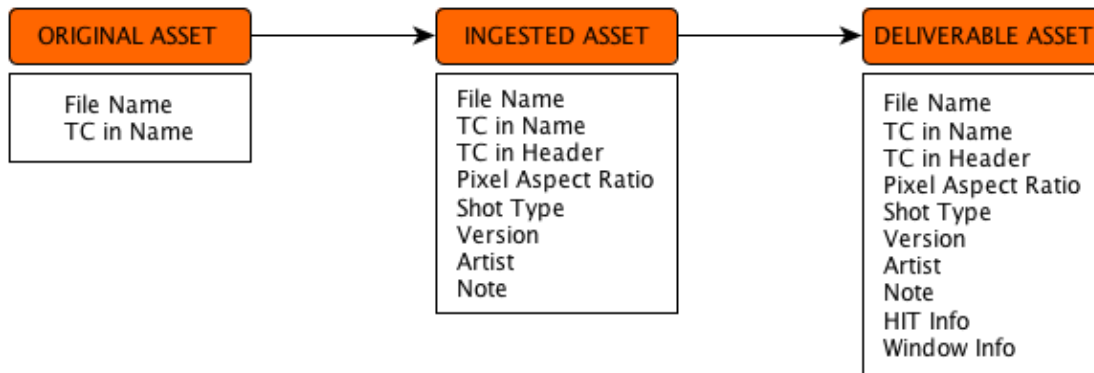
Traffic allows us to seamlessly span the NAS and Fibre-based topologies used at Stereo D. When converted stereo shots are rendered and ready for viewing, Traffic administers the optimal and automated copying of the shot from the NAS volume to the Genepool.

The simplified diagram below shows how Traffic interacts with other components within the facility.



Metadata Accumulation

As a shot gets ingested into the Genepool, Traffic communicates with our own in-house Media Asset Manager, CTAC, to inject the files with the correct metadata in order to ensure the shot conforms into a timeline. This information travels with the file and is used to dictate the viewing parameters for the shot, automate certain tasks further down the pipe and generally make the asset more autonomous on its way to final delivery. At any point in time these assets can be interrogated, many times in a live session, to feed any number of other tools and processes.



Zero-Wait Operations

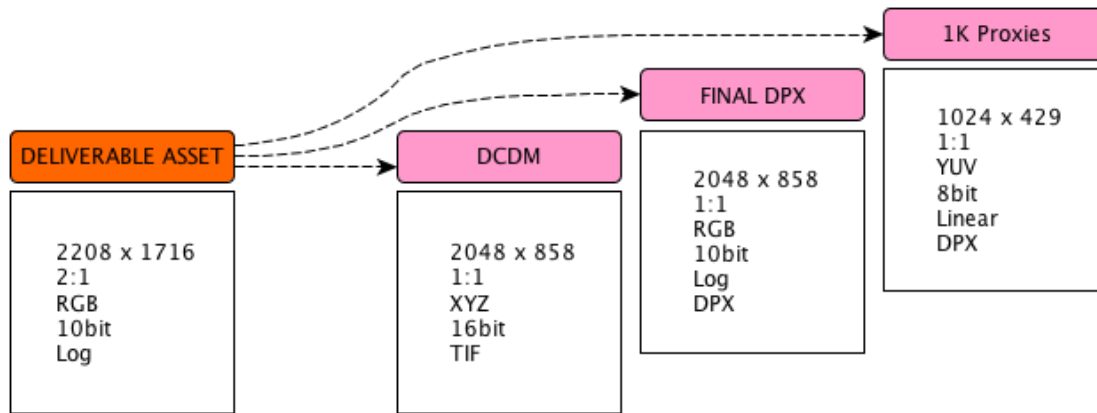
Traffic provides a front-end to Quantel's powerful QXML language. By targeting advanced image-processing capabilities implemented in CUDA, Traffic can perform any number of zero-wait operations on any file transfer, to or from the Genepool or any other storage system. This feature is often used when the working data differs from a movie's final output specifications.

Furthermore, by utilizing accelerators between the Fiber and 10GigE network infrastructure, we place the data inline with the actual workflow, which guarantees a quality of service to the rendering engine. The result is these operations essentially come for free since the transfer of data between the NAS and the Genepool is not slowed down in any meaningful way.

Virtual Deliveries

Once a shot has gone through the conversion and review pipeline, it is ready for delivery. Again, Traffic makes its mark here: not only is it able to author and deliver multiple deliverables in seconds, from DCDMs to final DPX frames to proxies for use in remote applications, but it is able to do so virtually, without creating a single frame. To any Operating System these deliveries appear to be regular files sitting on a FileSystem, but they are only created for real when they are accessed either directly or programmatically.

Three virtual derivatives created from a single asset



An example would be the creation of a DCP. The virtual DCDM authored by Traffic appears instantly, yet the frames are only created as the DCP Creator asks for them. This *Just-In-Time* approach – creating the files fast enough and only as needed, versus a *Just-In-Case* approach that forces the actual creation of the files, dramatically cuts down on IO and Disk Storage. The Just-In-Time approach is not only useful for instantly authoring multiple deliverables, but also helps to cut down on the creation of a growing number of intermediate files, which themselves may only have a limited shelf life.

Key Traffic Features:

- 1) Bridges VFX and Editorial through metadata accumulation
- 2) Incorporates Zero-Wait Operations during File Transfers
- 3) Creates Metadata Rich Assets for self-defined deliveries
- 4) Multiple Instant Virtual Masters

Conclusion

Traffic finally allows us to bridge the gap between the VFX and editorial worlds by dramatically cutting the time between the final rendering of a shot and its appearance in the movie. The realization that media should be self-defining potentially reduces the reliance on a constant link to a database, and therefore limits a potential bottleneck as each shot makes its way into the final movie.