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45% more efficient. Stronger and better performance.

Render and caching benchmarks with Gigapixel texture mapping, and caching, in Maya 2015 with SanDisk® Fusion ioMemory™ ioFX® PCIe card and Lenovo ThinkStation P900 series PC.

The 45% EFFICIENCY IMPROVEMENT in “Lab 1” helped large tiling on the UV map run faster, and a more successful load balance of the Fusion ioMemory ioFX cards with the GPU. We would recommend this pipeline when considering texture maps larger than 2K, and over 8GB per material. This pipeline is ideal for: Live event tiling and rendering, scaled VR experiences with limited real-time rendering, revisualization on-set, or Post Vis renders of tiled environments.

The Challenge

From June 2014 to December 2014, WIP FX participated in a CGI project to take the 1:1 scale satellite images of Mt Ararat in Turkey, and build a to-scale 3D model version of the mountain for exploration and documentary purposes.

To get the detail necessary when going through accurate trail paths and observing details of the mountain, the satellite maps (originally 16K) were scaled down to 8K, and applied to reformed geometry meshes. The meshes were created from the 16K greyscale positive and negative values, creating accurate valleys and peaks.

With such detail in the mesh, the 8K, 8 Gigapixel, 56GB+ textures segmented into tiles along the UV map, providing a completely accurate scene. To stabilize performance with such large texture maps and high poly count the local machine ran the following specs:

Lab 1

- Lenovo ThinkStation P900 workstation with 8GB RAM, (1) 250GB SSD, (2) 500GB SATA drives, and two NVIDIA K6000 GPU cards. Render files were run from a Fusion ioMemory ioFX card. An additional Fusion ioMemory ioFX card was used to handle caching and to render final plates. This hardware configuration was referred to as “Lab 1”.

Lab 2

- For a render benchmark comparison, the same scene was rendered on a more traditional setup: Lenovo P900 workstation with 8GB RAM, 250GB SSD, (2) 500GB SATA drives, and two NVIDIA K6000 GPU cards. No Fusion ioMemory ioFX cards were used. This was “Lab 2”.

Benchmark results

Each lab was given a series of 20 .EXR plates to render at a resolution of 2048 x 1152 with 5 other passes included per frame:

Lab 1		Lab 2	
By Frame	1	By Frame	1
Frame Grouping	1	Frame Grouping	1
Total Frame	20	Total Frame	20
Rendering Engine Vray	2.5	Rendering Engine Vray	2.5
Total Task	20	Total Task	20
Done Task	20	Done Task	20
Fail Or Killed Task	0	Fail Or Killed Task	0
Total Render Time	357 Min	Total Render Time	767 Min
Average Render Time Per Frame	17 Min	Average Render Time Per Frame	38 Min

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