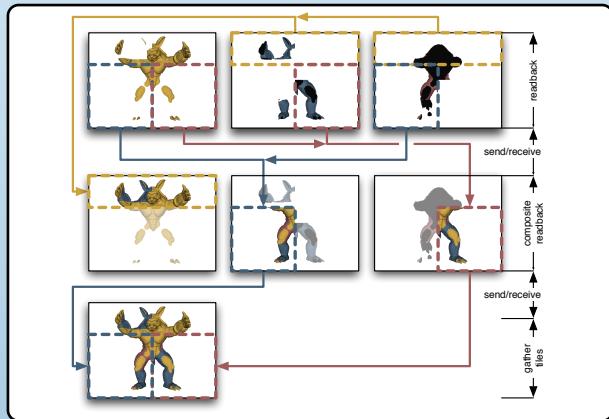


Sort-last (DB), sort-first(2D) and multi-level compounds



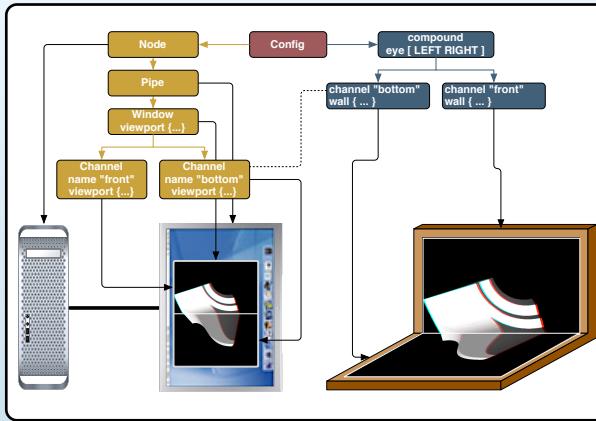
Direct-send parallel compositing

Scalability

Equalizer implements a wide range of algorithms to parallelize the rendering of large data sets. Multiple graphic cards, processors and computers can be combined to render a single view. Equalizer distributes the rendering task across the available resources (decomposition) and assembles the results on the final view (recomposition).

For the task decomposition, Equalizer currently supports sort-first (2D), sort-last (DB) and stereo (Eye) compounds. Time-multiplex (DPlex) is planned.

Equalizer supports virtually any parallel compositing algorithm, for example binary swap or direct send for sort-last, and tile gathering for sort-first rendering.



Example configuration for a TAN Holobench™

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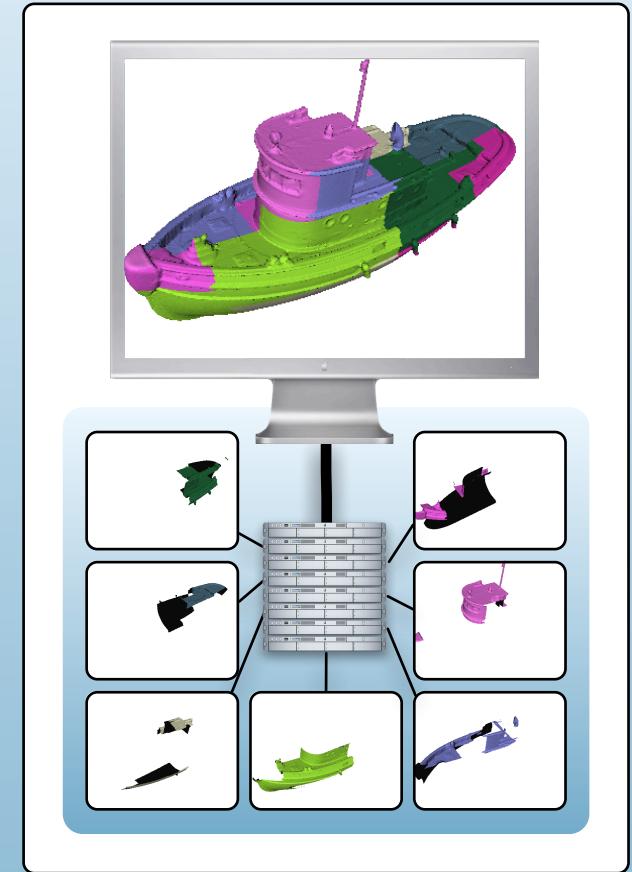


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Equalizer

Scalable Rendering



Equalizer is an open source programming interface and resource management system for *parallel, scalable OpenGL®* applications. An Equalizer application can run unmodified on any visualization system, from a singlepipe workstation to large scale graphics clusters and multi-GPU workstations. The foundation of Equalizer is a *minimally invasive* programming interface which addresses the problems common to any multipipe application.

Major Benefits

Parallel Rendering Know-How: Equilizer contains 10+ years of experience in parallel and scalable rendering, easily combined with your applications.

Fast Path for Scalable OpenGL Applications: Equilizer provides the natural parallel execution model to exploit the parallelism of multi-core, multi-GPU workstations and graphic clusters.

Feature-Rich Framework: Equilizer contains state-of-the-art scalable rendering algorithms, and its open development model ensures constant improvement. The configurability allows to deploy Equilizer applications in many, often unforeseen environments.

Scalable rendering using six graphic cards to render a single view.

Compatibility

- OS Support: Linux, Windows XP and Mac OS X
- Interconnects: Ethernet, InfiniBand
- Portable: 32 and 64 bit, little- and big-endian
- Minimally invasive: easy porting
- Clusters and Multi-GPU workstations
- LGPL license: commercial and open source use
- Open standard for parallel rendering

Major Features

Multi-GPU Workstations are an affordable way to scale the rendering performance and display size. Equilizer applications can exploit multiple processors and graphic cards by running multiple threads.

Scalable Rendering parallelizes the rendering of a single view across multiple graphic cards, processors and potentially computers to render more data faster.

Display Walls are one of the common uses for visualization clusters today. Typically one instance of the application's rendering code is executed locally on a node for each display.

The Equalizer framework abstracts the routine configuration from the application code. This allows an application to be deployed in many different ways without any modification, for example.

Use Cases

Support for Immersive Environments: Equalizer supports both active and passive stereo rendering, as well as head tracking, which is required for immersive Virtual Reality installations.

Distributed Execution: Equalizer applications can be written to support cluster-based execution. The task of distributing the application data is facilitated by support for versioned, distributed objects.

- **Runtime Scalability:** An Equalizer application can use multiple CPUs, GPUs and computers to scale the rendering performance of a single view.

Parallel Programming Interface

A photograph of a display wall consisting of seven large monitors arranged in two rows of three and one row of four. The screens show a continuous, high-resolution rendering of a terrain or map, likely a 3D environment. The top row shows a coastal area with water and land, while the bottom row shows more inland or mountainous terrain. The monitors are mounted on a light-colored wall, and some cables are visible above them.

- Node - a single computer in the cluster
- Pipe - a graphics card and rendering thread
- Window - an OpenGL drawable
- Channel - a view port within a window
- The developer amends these entities implementing application-specific task methods Equalizer facilitates application porting providing a default implementation for each case.

A photograph of a person wearing a head-mounted display (HMD). The HMD screen displays a 3D projection of a hand interacting with a virtual environment, shown in green and red. To the right, a dark silhouette of another person's head is visible against a white wall.