



The Media Grid Featured in Dr. Dobb's Journal

An article describing the technical foundations of the Media Grid was the lead feature of the November, 2005, issue of *Dr. Dobb's Journal* on distributed computing.

The Media Grid: A public utility for digital media was authored by Aaron E. Walsh, Director of the MediaGrid.org open Standards organization through which the Media Grid is designed and developed. The six-page spread officially introduces the Media Grid to the high technology community and includes sections describing the system's main features and capabilities. It also explains how software programs and Web sites can use the on-demand public computing utility to access digital media content delivery services (graphics, video, animations, movies, music, games, and so forth), storage services, and media processing services (such as data visualization and simulation, medical image sharpening and enhancement, motion picture scene rendering, special effects, media transformations and compositing, and other digital media manipulation capabilities).

The Media Grid is a digital media network infrastructure and software development platform based on new and emerging distributed computing and grid technology. The Media Grid (<http://www.mediagrid.org>) is designed as an on-demand public computing utility that software programs and web sites can access for digital content delivery (graphics, video, animations, movies, music, games, and so forth), storage, and media processing services such as data visualization and simulation, medical image sharpening and enhancement, motion picture scene rendering, special effects, media transformations and compositing, and other digital media manipulation capabilities. As an open platform that provides digital media delivery, storage, and processing services, the Media Grid's foundation rests on Internet, web, and grid standards. By combining relevant standards from these fields with new and unique capabilities, the Media Grid provides a novel software development platform designed specifically for networked applications that produce and consume large quantities of digital media.

As an open and extensible platform the Media Grid enables a wide range of applications not possible with the traditional Internet alone, including on-demand digital cinema and interactive movies, distributed film and movie rendering, web-immersive multi-player games and virtual reality, and time visualization of complex data (weather, medical, engineering, and so forth), telepresence and telemedicine (remote surgery, medical imaging, drug design, and so forth), teleconferencing (such as video-conferencing, video calls, video phones, and shared collaborative environments), vehicle and aircraft design and simulation, computational science applications (computational biology, chemistry, physics, astronomy, mathematics, and so forth), biometric security (such as real time face, voice, and biocry recognition, and similar high performance media applications). By giving software developers the ability to easily access a flexibly distributed pool of computing resources optimized for digital media, we anticipate the Media Grid will enable these types of applications almost instantaneously while unlocking the potential for a new class of applications that we call consumer utilities.

The Media Grid has been under active development for several years and is now reaching critical mass thanks to partner organizations and foundation technologies such as the Global Grid. In this article, I examine how some of the system's key capabilities are supported by the Global Grid (GG). Along the way I explore several significant GGI features, including its support for standard web services.

Public Utility for Digital Media

At a conceptual level the Media Grid is modeled after an improved national power grid, with added security and stability features that eliminate downtime and blackouts. As with the US national power grid, which standardizes the production and transmission of power in the United States, the Media Grid is built with the intention of establishing a new generation of industry standards that enable computer applications to "plug in" to digital media services over the public Internet. Applications that only need to consume media content, store or archive media files, or access media processing services can do so at a fair and standardized price (or for free in certain cases). We anticipate will be greatly reduced compared to the cost of today's proprietary digital content delivery systems, while the owners of computers that host and deliver media or provide media processing services receive compensation for their contribution to the Media Grid.

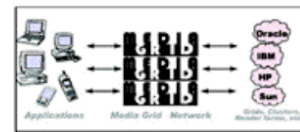


Figure 1: The Media Grid features a simplified API that shields application and web developers from the back-end complexity typically associated with high-performance computing systems, such as clusters, computational grids, and rendering farms.

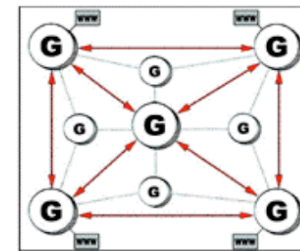


Figure 2: High-powered Media Grid nodes (indicated by the big G's) provide storage, delivery, and processing services to other devices, including less capable devices that can only consume services (indicated by the smaller G's) and standard web-enabled applications such as web browsers and rich clients. Red arrows denote high-speed connections between nodes, while grey and black lines depict traditional broadband connections such as DSL and cable modems.



Dr. Dobb's Journal, published by CMP, is a leading publication for professional software developers and computer scientists. It has a print circulation of approximately 150,000 issues as well as a significant online audience. The November 2005 issue featuring the Media Grid is available at ddj.com and MediaGrid.org