DIVE (Hybrid Peer-to-Peer Application

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Abstract

A peer-to-peer (P2P) computer network is a network that relies primarily on the computing power and bandwidth of the participants in the network rather than concentrating it in a relatively low number of servers. This networking paradigm is useful for the implementation of numerous systems. File transfers are by far the most popular. In this regard, users have a love-hate relationship with current P2P applications. Files are not always available on current P2P applications. The download speed varies dramatically and can sometimes outright stop. Download speed consistency is extremely poor making it difficult to estimate the time of arrival of the complete file.

While this hybrid model (Dive) is far from perfect, it does handle the aforementioned concerns quite well since it is able to allow the Client to download from the well-provisioned, always-on Gmail service. Downloading multiple files does not slow the download rate of a particular file unless bottlenecked by the intermediary network. The future version of Dive will be able to download multiple segments of the same file simultaneously, thereby increasing the download rate by multiples.

There are four elements to this hybrid model: Content Management Server (CMS), Content Management Database (CMD), Gmail, and the Client application. The CMS receives requests from Clients and dutifully responds after obtaining the required information from the CMD. The CMD holds all the file detail and location information. It provides the specific mailbox, message details, and attachment information that will allow the Client to download the file from Gmail.

The hybrid model uses web services and SOAP for firewall traversal, an application server to provide scalability of the CMS, and a normalized MySQL schema to handle performance concerns of the CMD. This implementation of the hybrid uses entirely open-source technology to minimize cost. This implementation was done with J2EE running on Tomcat application servers supported by a MySQL database. Also, the compact communication protocols between the Client and the CMS also facilitates lesser bandwidth usage.

Pure peer-to-peer based applications will continue to be a daily part of many users Internet activities but pure peer-to-peer technologies have its challenges and faults. This hybrid model (Dive) provides a unique solution to some of the faults encountered by pure peer-to-peer technologies. It is built with the latest in service-based software architecture and is easily convertible to a platform-independent API.

Though it has technical merits, like other peer-to-peer services, it will face financial and legal issues and thus, just as in other peer-to-peer services, the greatest challenge is not of crafty technical implementation but that of ingenious and cunning solutions to how to make money and how to stay legal.