

The Engage Communications System

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Abstract

In the course of using any type of communications software, groups of users tend to coalesce, and meet each other regularly on one server. The problem with this cohesion is that when one or several members of the group decide to explore other servers, those members of the group are unable to communicate with the other members until they return to the server they left. This inability to communicate across servers leads to major fragmentation of user groups, which is the problem we wish to solve.

What we propose with the Engage Communications System is a method for allowing groups of people to communicate simultaneously, while preventing the group fragmentation problem from occurring. This is done by forming a network of individually run Engage servers, where the state of each server is exchanged. Clients can be notified when their peers join other servers on the network, allowing them to communicate directly.

Network Organization

- The Engage Network is organized as a complete graph on n nodes. This allows us to easily test message passing, while ignoring other issues such as routing and more complex network topologies.
- The protocol we developed includes a message type identifier, which allows us to handle and support a wide variety of messages, and provides us room to grow for future message types. Current message categories include: media messages, chat messages, network messages, and user join/leave messages.
- In order to ensure security, as well as a unique method for identifying clients across servers, we employ OpenSSL, an open source implementation of the Secure Sockets Layer (SSLv3) and Transport Security Layer (TLSv1) protocols. SSL encrypts the messages sent between clients and servers, and provides digital certificates, which uniquely identify each client on the network.

