**FTS Web Architecture Diagram**

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This document is meant to be maintained along with the Graphviz diagram in the same folder. A PDF version of the diagram should be in this folder as well. The basic features of the diagram are these:

The 4 player icons are meant to represent arbitrary numbers of players whose movements are being monitored. The arrows indicate the network topology in the following way. The red-orange arrows represent UDP multicast traffic on the private wifi LAN. All other traffic, shown in green, uses the standard TCP/IP protocol. The players are shown as each having a link directly to all the others. This is simply meant to illustrate that each player's messages are seen by all who have joined the multicast network. It is not actually necessary for players to know of each other's presence to be heard. They only need to send messages out on the multicast network. This part of the system already exists. The present task is to integrate this existing helmet computer (HC) software into the larger system.

The Item “Player position and user DB” is a small mySQL database that keeps track of where players are, their stats, trajectories, and many other things. It also stores password hashes and usernames for users such as guests, paying subscribers, and admins (such as us). The part of the architecture inside the “cloud” symbol is private and is not available or viewable by the public or the internet as a whole. The only traffic that goes in or out of the cloud must pass through the firewall (red Stop sign). The intranet behind the firewall can be implemented as a virtual private network (VPN).

The public webserver is directly on the internet. It gets information about player locations and conditions by communicating through the firewall with the database server on the intranet side. The web server serves both the business homepage and the FTS web app which allows fans (and us) to see where the players are. This GUI is meant to replace the Python GUI I have been using though I plan to keep that around until the web based GUI does everything it does. No further work will be done on the Python GUI though. There are 2 representations of the FTS web app shown. One is for the public and allows various levels of access depending on whether a person is a guest or a paying subscriber. The other is a special “God” view for us and other testers who can do various things that are not allowed in normal play such as deleting players, duplicating them, or deliberately slowing their network access to simulate various stress events.

The capabilities targeted for the next stage of development will be as follows:

1. Basic web app with GUI capable of showing player locations and allowing for user to click on a player icon to bring up details such as location, network usage, speed, distance covered, velocity. This will probably be implemented using the Luminus Clojure framework.
2. mySQL web server behind the firewall for the HC's to send position updates and other data.
3. Rudimentary firewall that bridges between the internet and intranet sides of the system.
4. FTS homepage (a basic homepage initially implemented as a WordPress blog)

It is likely that at the start all 4 components can be actually on a single server machine that I will set up at Linode distinct from the one that hosts my personal homepage. As traffic increases we should be able to break out the pieces into separate physical server machines without a need for significant configuration or software changes. These 4 components are what my cost estimate will concern itself with.