Technical Specification – Server Subgroup

# Components

* Database
* Media Streaming
* Web Services

# Environment

The environment chosen to host the server components is a Windows Server 2008 R2 Datacentre Edition with an Intel Xeon 2Ghz CPU and 613Mb RAM. For the demonstration purposes of this project this hardware is more than sufficient to process the number of requests it is likely to encounter. However, the server is hosted by Amazon Web Services; a highly scalable platform, so if a more performant hardware was to have been required, this would have been simple to provision. Using a third party for hardware hosting also negates the need for expertise in server maintenance.

The reasoning for the Windows Server operating system was threefold; firstly familiarity was a factor, as the systems administrator in the group is used to maintaining such an arrangement. Secondly, one of the requirements was to provide a media streaming service, of which Windows Server has a role that utilises a protocol accepted by the handset client software. Finally using a Windows Server meant that all roles needed could be placed upon one machine. Despite this not being best practice, budgetary constraints were another key factor and renting a second server would have cost the group money.

# Database

The database server used in this project is not entirely relevant as the underlying Relational Data Base Management System (RDBMS) is entirely interchangeable thanks to the fact we utilised an Object Relational Mapping (ORM) library, Microsoft Entity Framework (EF). Entity Framework creates code to generate and update the schema and all queries are built on the fly, therefore no SQL was needed.

# Media Streaming

One of the primary functions of the server subgroup was to provide a service to stream audio files to the handset client. As previously stated, Windows Server can be configured to accept RTSP requests via Windows Media Services; a role that can enabled on Windows Server instances. Windows Media Services can run on top of HTTP to provide media exploration and choose whether to stream using the same protocol or RTSP, both of which are accepted by the handset client.

# Web Services

HTTP is a protocol that is rarely blocked by routers and therefore needs no special configuration to use it within distributed applications such as the handset client. Therefore, it seemed appropriate to utilise the Windows web server, Internet Information Services (IIS), and write ASP.Net Web API applications for the handset to communicate with the server. By using ASP.Net Web API a common code base shared between all the other server applications has been used lowering code complexity and greatly increasing interoperability and ease of maintainence.