GPS Over WiFi.
draft-brew-intarea-underground-01

Abstract

When users are at known underground locations, such as tube stations
they often do not have a GPS signal, as the radio waves from the
satellites required cannot penetrate the earth, this draft suggests
providing GPS locations over WiFI using remote IP detection for a
server to respond with the correct name of clients location and
the clients GPS location.IP address.

Extending this to those without WiFI access the standard goes one
stage further, by offering a hidden WiFI network with a standard name,
such as .location. The principle being that mobile devices can
look for this network in cases where GPS data cannot be collected. It
is hoped that this will allow those using mapping services to know
where they are when travelling on underground trains etc.

Status of This Memo

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1. Introduction

1.1 Motivation

Those travelling underground networks, such as the London underground
or the German autobahn do know where they are when underground. At
best apps such as citymapper will estimate where people are based
on the time the carridge takes to get to their location. It would
be convenient for them to know where they are. This protocol resolves
this problem, not just to those who have a wireless location but also
to those who do not.

1.2 The code for this servlet, implemented in Java running on tomcat8
is available at https://www.github.com/rydal/underground.

1.3 Security considerations: In order to prevent spoofing of the
location https can be used.

1.4 IANA Considerations:
 This document has no actions for IANA.

2. Mechanisms.
2.1
The Server, with the aforementioned outline code, knows the IP
address of the WiFi hot spot. It holds a list of GPS locations,
related to the IP address of the provided underground network.
Using this list it responds to the client (the Wireless
network of the underground network), with the relevant GPS
co-ordinates of the physical site being referenced by the
incoming IP address. The server responds with a name of the
location, it's GPS latitude and GPS longitude in a JSON array.

2.2:
Making this more accessible, including to user's not currently
connected to a WiFi network, we can implement a hidden wireless
network with a standardized name, such as ".location".

The operating system's of mobile phones can then search for
such a wireless network when GPS is unavailable. The hidden

wireless network can then act in the same manner as described in [section 2.1](#).

2.3:
As referenced in [section 1.3](#). Standard https encryption can prevent location spoofing.

3.
Interested parties:
The transport organisations for the relevant underground locations would need to be involved in this to provide said wireless networks. The mobile manufacturers would need to add a function to their GPS location code.

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