

Master Degree Special Project:

The next step in Heterogenous Network development: Basic WiFi and Cellular integration using Passpoint authentication of WiFi clients

About ReWiCom and the project:

ReWiCom is an innovative company founded by cellular engineers addressing the next big challenge for wireless communication; to provide state-of-the art indoor coverage solutions using a variety of technologies and services.

Classic examples of solutions are:

Multioperator indoor coverage systems using WiFi and cellular access for shopping malls, tunnels and public buildings, enterprise solutions and

special RF solutions for handling coexistence issues, (I.e. filter solutions).

The classic model of national cellular operators and completely separate indoor wireless systems is about to evolve to the next stage and ReWiCom is playing a key role in this.

In response to increasing market demand ReWiCom now has several projects where it is needed to safely support automatic login and authentication of clients that are using WiFi for data connections of mobile devices and laptops. ReWiCom has the basic systems, but a SW & script development is required to integrate and manage the different systems. There are also other systems that can benefit from SW development & integration so the exact scope will be refined during the project setup.

This special project can, if successful, also be a starting point for a career as SW development specialist in ReWiCom.

Background Passpoint

Wi-Fi CERTIFIED Passpoint™ was launched in 2012 as an industry-wide solution to streamline network access in hotspots and eliminate the need for users to find and authenticate a network each time they connect. In Wi-Fi networks that do not support Passpoint, users must search for and choose a network, request the connection to the access point (AP) each time, and in many cases, must re-enter their authentication credentials. Passpoint automates that entire process, enabling a seamless and automatic connection between hotspot networks and mobile devices, all while delivering the highest WPA2 security.

For Passpoint to work as intended the following prerequisites need to be fulfilled:

- Mobile devices need to support Passpoint standard
 - Today more than 3000 smartphones or tablets support the Passport standard
 - Devices without SIM cards, (e.g. laptops) can also use Passpoint by EAP-Transport Layer Security (EAP-TLS)
- The WiFi network need to support Passpoint and be able to interact with the mobile server
 - This requirement is fulfilled by the WLAN solution used by Rewicom
- The Mobile server need to be able to understand and react correctly on Passpoint

authentication requests

- A solution for this requirement is not implemented in the mobile server used by Rewicom and needs to be developed

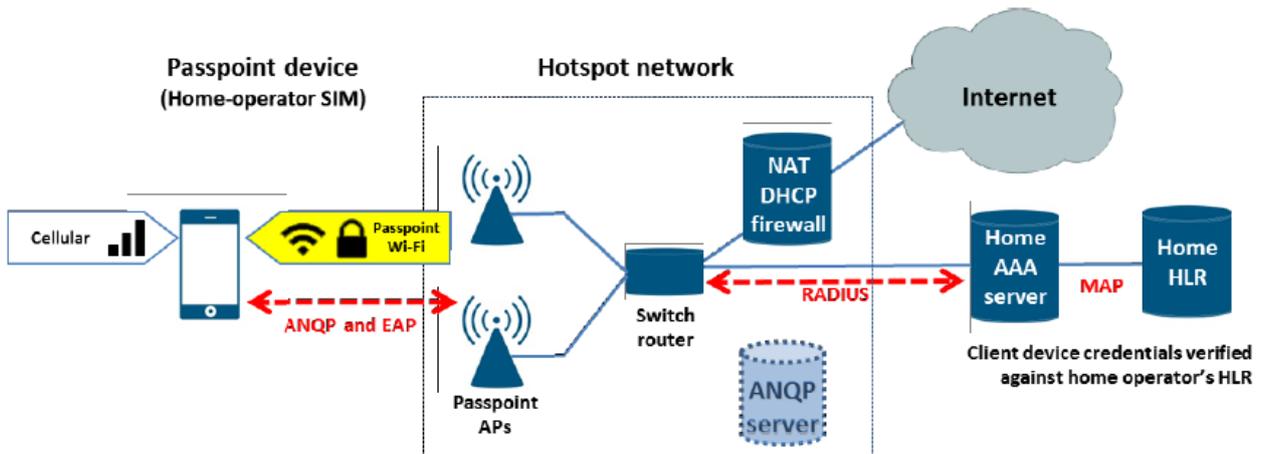


Figure 1. Passpoint hotspot reference architecture: SIM device

Task

This task include very much the same moment as a worktask for a fully qualified engineer and as such the student need to master several areas.

The task consists of the following parts:

Define a solution:

Define a solution for adaption of a mobile server for Passpoint certification of WLAN that is scalable and applicable to current and future projects where this is required. This requires a sizable amount of information gathering to master a deep knowledge about the Passpoint standard as well as WLAN and Mobile systems in general.

Design a solution:

Design the chosen solution using either advanced scripting in or development of a software plug-in for the server.

Test and verification:

Test and verify that the solution works in a lab and at real customer premises, this will require live testing using several mobiles with Passpoint and laptops with installed Passpoint solution. Verification is crucial in a project like this, test cases need to be defined clearly and need to be executed and documented in detail.

Documentation:

Document the Passpoint solution including the WiFi system with connected server.

Final documentation of the Master Thesis outlining the key points in the approach and result except company confidential parts.

Requirements

We are looking for an ambitious, self-driven and creative master thesis student in computer, communication, systems, electronics, electrical, or similar engineering programs with a strong interest in participating in and contributing to the evolution of wireless and mobile access. You have academic, hobby or professional experience of IT and software development. You are handy and love gadgets and mobile apps. Knowledge about IP, WiFi and mobile networks is desirable.

Additional Information

The project will start as soon as a suitable candidate is selected. Apply with your CV, academic transcripts and a cover letter in Swedish or English. Evidence of your project achievements is beneficial for the selection.

Contact

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