

ENHANCED USER SECURITY WITH EAP-PEAP

Implementation over Wi-Fi Module



Services: Embedded Engineering

OVERVIEW

US based leading manufacturer of residential and commercial water heaters and boilers, as well as heating, ventilating and air conditioning equipment delivering a new level of efficiency, convenience and comfort to users.

CHALLENGES



The client had 75K+ legacy and new age devices (water heaters and HVAC) on field. The legacy devices were connected to cloud via their Wi-Fi module. With the increasing enterprise customer base, client wanted to provide a technologically upgraded and enhanced user security to their end customers who uses their Wi-Fi modules. For the same, they were looking for a technology partner with in-depth knowledge over Wi-Fi security who can help them implement latest security protocols into their module.

SOLUTIONS

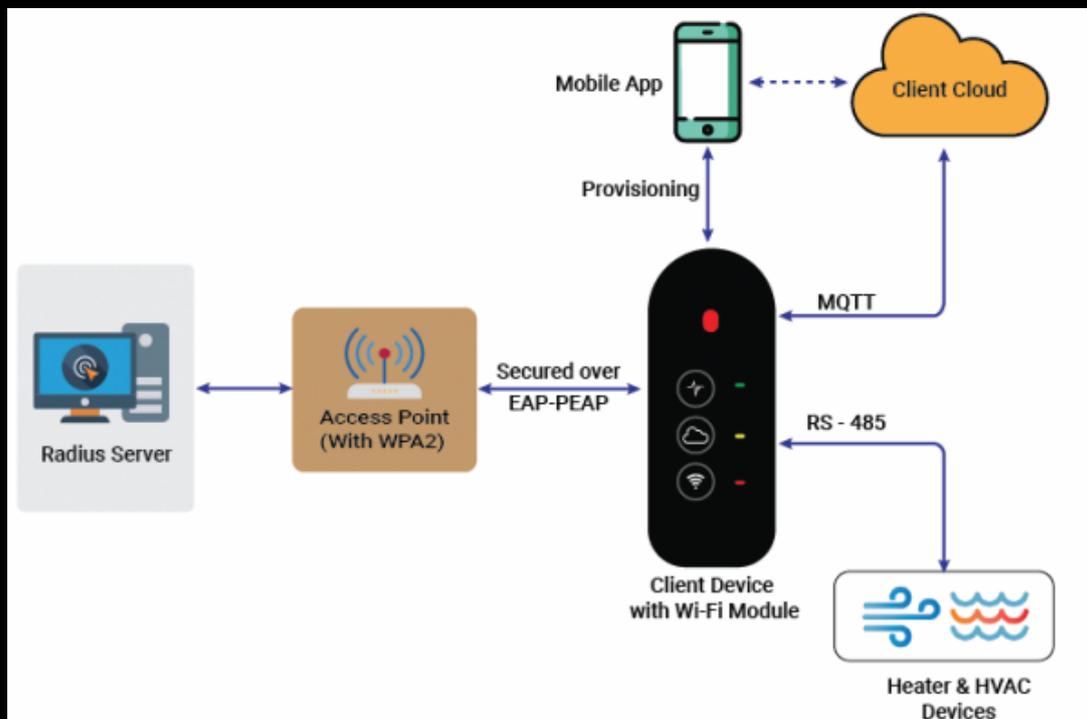
We helped our home automation client to enhance their Wi-Fi device security by implementing EAP-PEAP that encapsulates the Extensible Authentication Protocol within an encrypted and authenticated Transport Layer Security tunnel. This ensures secured user access with user name and password, avoiding risks of misuse.

- Analysed the existing code and ramp-up
- Migrated current device application to latest Marvell SDK version 6.0
- Analysed MQTT implementation and removed existing MQTT application patches
- Updated MQTT application with native MQTT Paho APIs
- Implemented WPA2 enterprise EAP-PEAP security with Elliptic curve crypto
- Updated device provisioning flow to share WPA2 enterprise username and password over AP mode
- Setup free RADIUS server to validate the WPA2 authentication over Wi-Fi
- Mitigated code issues making it more robust, efficient, and memory-optimized

Technologies | Engineering Expertise

EAP-PEAP | WPA2 | MQTT | Code Review | Embedded Engineering

The Solution Diagram



BENEFITS

- Enabled client to cater enterprise market with technologically upgraded and improved user security implementation for user access to cloud connected devices



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business@acldigital.com | www.acldigital.com

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