3.   Car Management with AirWatch Mobile Device Management

AirWatch Mobile Device Management was developed to help organizations that deploy smartphones, tablets, and laptops in a secure and effective way to enable a mobile workforce and improve employee productivity. Today AirWatch manages millions of devices worldwide, from the cloud or on premise. The AirWatch platform is built on a highly scalable, multitenant architecture that allows organizations to securely deploy corporate email, apps, documents, and internal content to their workforce, and to comply with security standards across the entire mobile device fleet. Recently, AirWatch capabilities were extended to support Internet of Things (IoT) applications by managing wearables (such as smart watches, mobile printers, and dispensers) and additional embedded devices requiring over-the-air data collection and provisioning.

Mobility is the raison d'être of the automotive industry, so modern cars can be considered mobile devices on wheels, embedding dozens of engine control units (ECU) running up to 100 million lines of code, interconnected by vehicle bus systems and gateways. As a result, in-car electronics represent a significant amount of a modern automobile's R&D and production costs. The car's head unit, originally designed as the front end for the vehicle's audio system, has been expanded over the years to deliver value-added connected services such as navigation, real time traffic information display, diagnostic information and alerts, in addition to user-centric data such as emails, social feeds, and weather information.

The head unit can therefore be considered a mobile device, typically running a real-time operating system such as QNX[4], with all the well-known challenges of over-the-air data collection and software provisioning known from the mobile device world. QNX is an operating system designed for connected embedded systems, including ARM and x86, and boards implemented in virtually every type of embedded environment. It offers a highly customizable, modular operating system for use in multiple industries and systems. Its flexibility and robustness makes QNX a strong candidate for the automotive industry[5].

Key Takeaway 1: The head unit is a mobile device with challenges regarding secure over-the-air data collection, over-the-air software provisioning, and security similar to smartphones and tablets.

Head unit management opens the road for strong, innovative value-added services that can benefit the entire automotive ecosystem (OEMs, dealers, services, drivers). This is possible thanks to the three main pillars of the management framework:

- Over-the-air remote car data collection

- Over-the-air remote data and content provisioning

- Data security and privacy

3.1   Over-the-Air Data Collection

Access to critical car diagnostic data is a key challenge for the automotive industry. In most modern cars, diagnostic data are first collected when the car is serviced. A computer connected using an industry-standard on-board diagnostic (OBD-II) cable is required for OEMs to obtain sensor data, engine status, breakdown reports, wear and tear information, driving habits, and the like. Not being able to remotely access diagnostic data is a big burden for OEMs because they are unable to proactively detect software or hardware flaws. This often leads to expensive car recalls, increased numbers of warranty cases, and

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[4] http://www.qnx.com/products/neutrino-rtos/index.html

[5] Fortune, "QNX: The little-known company that controls your car." Kurt Wagner, April 13, 2013 http://for.tn/1tsZloq