

Over-the-Air Automotive Software and Data Management With Vehicle Network Processors



Increasing Dependency and Complexity

An increasing dependency on software, electronic control units (ECUs), and sophisticated microprocessors to power connected vehicles and autonomous vehicle systems and features—combined with the rising intricacy and complexity of managing software updates and data collection for millions of vehicles around the world—calls for an automotive-grade combination of high-performance vehicle network processors backed by a robust over-the-air (OTA) software and data management solution.

Efficient, Secure, Scalable Multi-ECU Software Updates

Airbiquity and NXP Semiconductors have joined forces to integrate Airbiquity's OTAmatic™ software and data management offering with NXP's Vehicle Network Processing (VNP) Evaluation Board (EVB) serving as a primary ECU/OTA gateway for efficient, secure, and highly-scalable multi-ECU software updates and data collection. This demonstration highlights the interoperability between Airbiquity's cloud-based OTA service delivery capability and NXP's next-generation VNP platform managing multiple ECUs for a variety of software update campaign scenarios and automaker and automotive supplier OTA use cases.



OTA Software and Data Management

OTAmatic securely orchestrates and automates connected vehicle software update and data management campaigns from the cloud. OTAmatic provides a sophisticated back-end service delivery management capability with highly refined vehicle and device targeting, discrete policy and privacy controls, customizable consumer communications, and solution deployment option flexibility. OTAmatic also features an edge analytics framework supporting upgradable data analytics modules and enhanced multi-layer cybersecurity protection via integration of the compromise-resilient Uptane Security Framework.



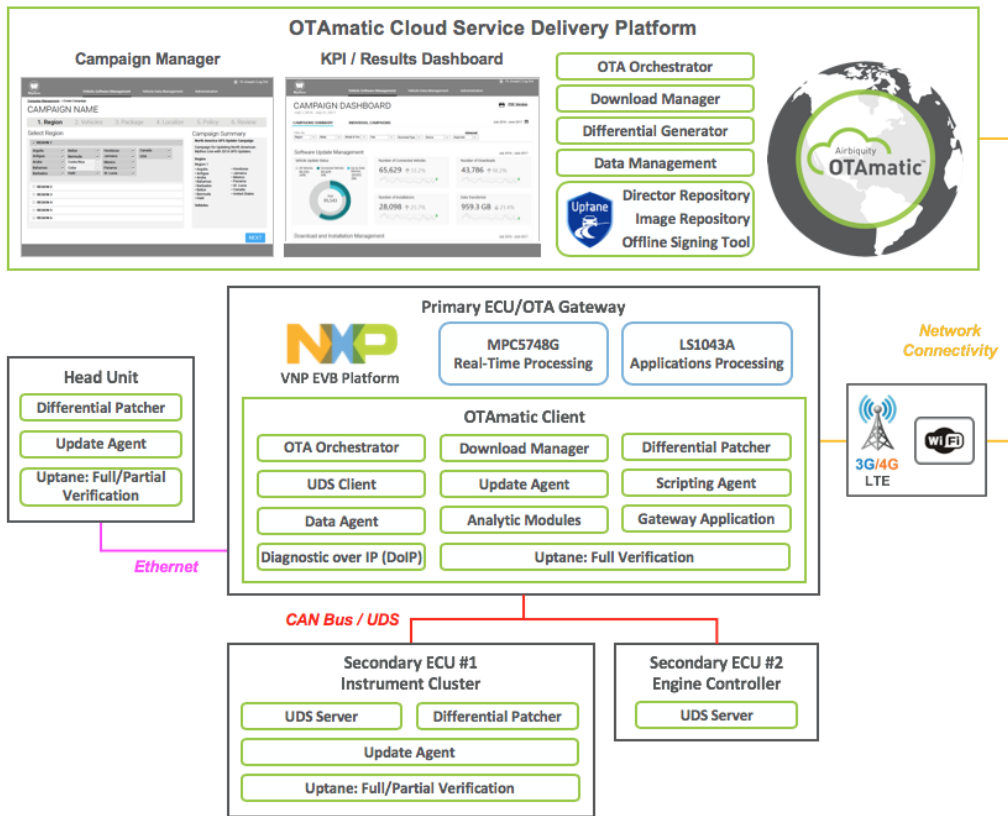
Vehicle Network Processors

The NXP VNP platform brings together real-time OTA gateway processing with significant application processing for high-level operating systems to enable the applications and services that will unlock the full benefits of connected vehicles. VNP supports legacy automotive interfaces (CAN FD, LIN, FlexRay) and meets the demanding high-speed processing requirements for 5G connections and new Gigabit Ethernet vehicle architectures. The VNP automotive-grade platform also provides hardware acceleration for security and industry-first Gigabit Ethernet packet forwarding, with support for ASIL B systems.



Airbiquity-NXP Automotive-Grade OTA Services with Vehicle Network Processor Demonstrator

Airbiquity-NXP Automotive-Grade OTA Services with Vehicle Network Processor — Functional View —



- Single and Multi-ECU Software Updates
 - Unified Diagnostic Services (UDS) Updates for Secondary and Legacy ECUs
- Multiple and Parallel Software Updates
 - Sequential and Parallel Installations
 - Firmware, System, Application, and HMI
- Advanced OTA Software Update Orchestration
 - Pre-Conditions, Priorities, and Dependencies
 - Fault and Error Detection, Recovery and Rollback
- Defense In-Depth Security Approach
 - Compromise-Resilient Uptane Software Security System
 - Standards-Based Confidentiality, Integrity, Authenticity
- Multiple Bus Support: CAN, Ethernet, MOST, FlexRay
- Dynamic and Flexible Data Management Framework
 - Definable Collection: Frequency, Triggers, Logs, DTCs
 - Multiple Bus Support: CAN, Ethernet, MOST, FlexRay
 - Upgradeable In-Vehicle Edge Analytic Modules
 - Data Transfer from Car to Cloud to Analytic Resources
- NXP Vehicle Network Processing EVB Platform
 - OTA Gateway Enables New Applications and Services
 - Vehicle-Wide Updates, Data Analytics, and More
 - High-Speed Interfaces: CAN FD and Gigabit Ethernet
 - Embedded Security (HSM) and ASIL B Functional Safety
 - Supports AUTOSAR RTOS and Linux OS
- Pre and Post Installation Scripting
 - Saves and Restores ECU Configurations
- Back-End Service Management Portal
 - Step-by-Step Campaign Configuration Process
 - Separate Software and Data Management Tracks
- Vehicle Configuration Web Portal
 - Define and Manage Vehicle ECU Inventories
 - Regulatory Vehicle Certification Compliance
- Campaign Specific Consumer Notifications
 - In-Vehicle Displays and Smartphone Application HMI
- Comprehensive Campaign Reporting
 - Collective and Individual Campaign Results

For Additional Information



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