

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



## Increasing Dependency and Complexity

With increasing dependency on software and more advanced electronic control units (ECUs) using sophisticated microprocessors to power intelligent connected vehicles, the 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 S32G2 vehicle network processor (VNP) 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 vehicle platforms 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

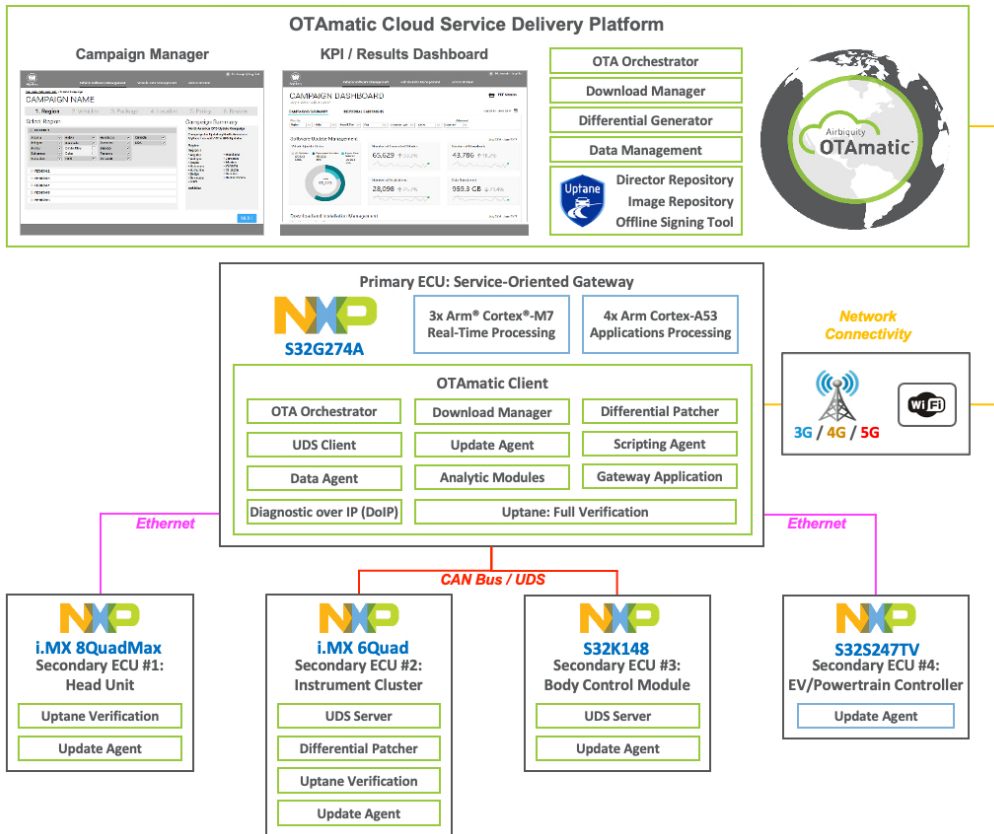
The NXP S32G2 brings together real-time OTA gateway processing with significant application processing for high-level operating systems to enable new applications and services that will unlock the full benefits of connected vehicles. VNP supports legacy automotive interfaces (CAN FD, LIN, FlexRay) and 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 up to ASIL D level systems.

## Airbiquity Automotive-Grade OTA Services with NXP Automotive Platforms Demonstrator



# Airbiquity Automotive-Grade OTA Services with NXP Automotive Platforms

## — 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 S32G2 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 (HSE) and up to ASIL D 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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