

Introduction

The Excelfore eSync platform is a secure bi-directional server-client-agent architecture for pushing data from the cloud to end devices in the vehicle, and for pulling data from those devices to the cloud.

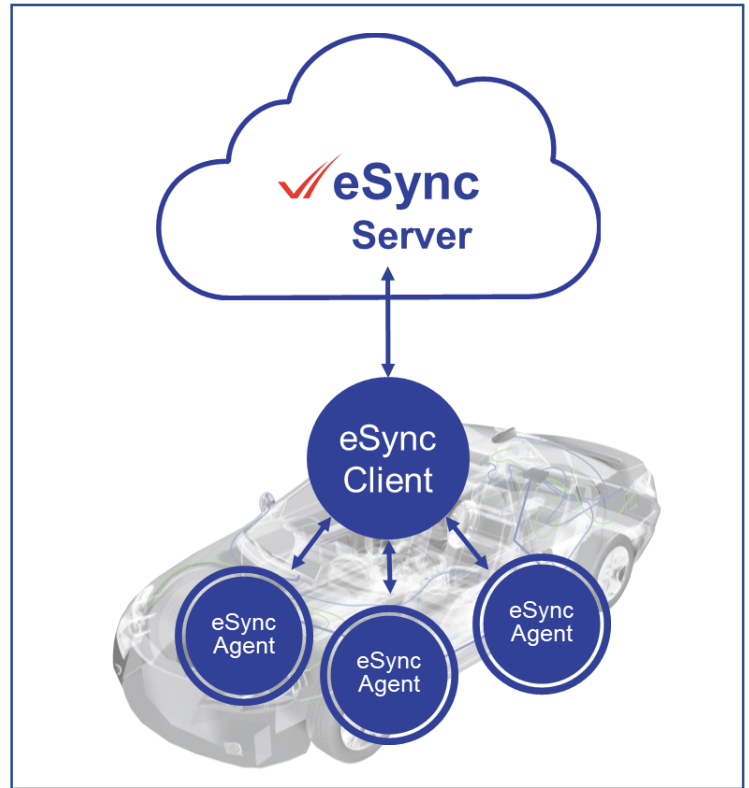
Primary applications include:

- OTA Software Updates
- Integrated Vehicle Health Management

The eSync Platform offers a secure data path to any number of devices in the vehicle, including IVI systems, telematics devices, network controllers, ECUs, sensors or actuators.

eSync Components

The eSync platform from Excelfore consists of a server software, client software in the vehicle, and agent software for the end device(s). Excelfore has implemented and proven the server software on a variety of public and private clouds, and the in-vehicle embedded software components on the operating systems and microprocessor/microcontroller families that are most widely used in the automotive market.



eSync Compliant Interfaces

All of the Excelfore OTA components in the cloud and in-vehicle are built to be compliant with the specifications available through the eSync Alliance.



eSync Compliant interfaces ensure that eSync components from multiple sources, including cloud services, or in-vehicle clients and agents, can work together as a single OTA platform with a minimum of integration work.

Multi-Layered Security

The Excelfore eSync platform provides security from the root-of-trust to the end device.

Key features include:

- Certificate Management
- Key Management
- Authentication
- Layered Encryption
- Software Integrity Hash

Reports on 3rd party penetration testing of the Excelfore eSync platform are available on request.

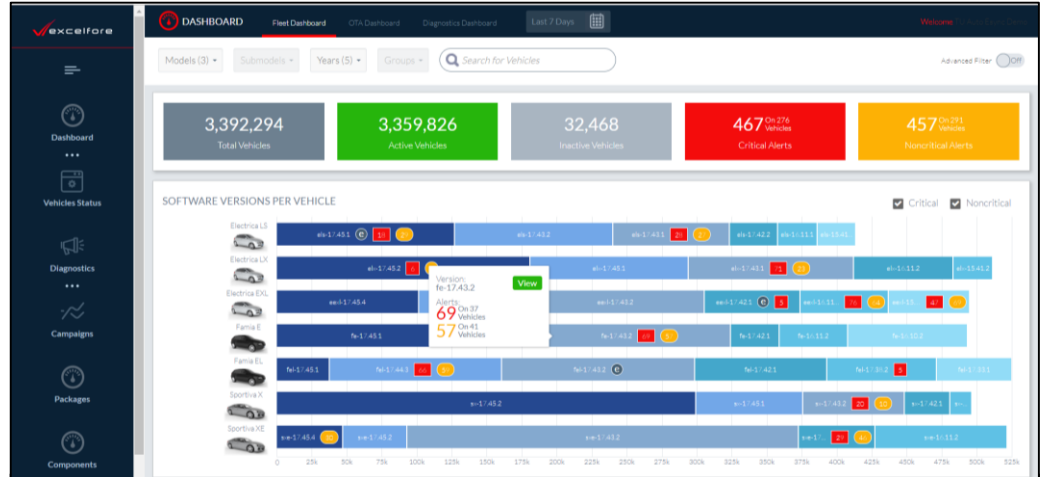
eSync Component	Environments
eSync Server Software	Amazon AWS
	Baidu
	Microsoft Azure
	Private Cloud
eSync Client	Automotive Android
	Automotive Grade Linux, GenIVI
	QNX
eSync Agent	Android, GenIVI, Linux, QNX
	Classic and Adaptive AUTOSAR
	Aurix
	Integrity
	ERIKA, FreeRTOS, Micrium, TI-RTOS

eSync Server

Excelfore offers three ways to access the eSync Server:

1. Managed OTA Services
2. Software-as-a-Service on Public Cloud
3. Licensed and Ported

The Excelfore eSync Server takes Advantage of Content Delivery Network (CDN) integration for quick and efficient scaling of the number of vehicles and of geographic diversity.



eSync Application: The Excelfore eSync Application provides comprehensive OTA campaign management with detailed policy control, updating and monitoring of end devices (ECUs and sensors), and data aggregation across fleets of vehicles.

eSync Client

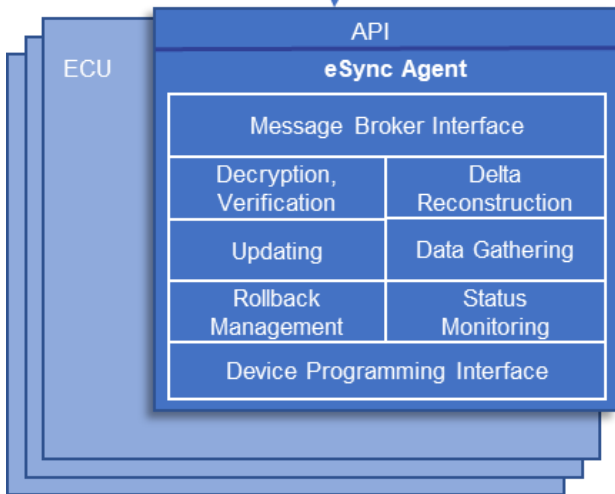
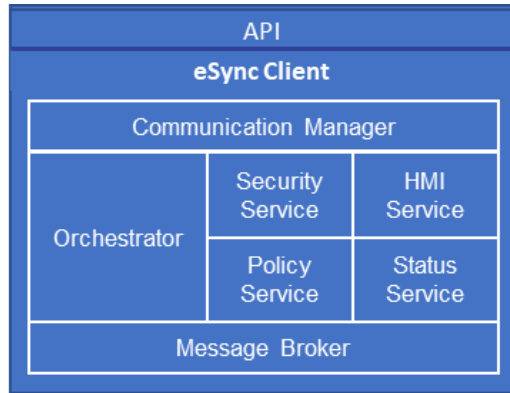
The eSync Client establishes secure communications with the Server, and with eSync Agents within the vehicle. It aggregates device status information from Agents for reporting to the Server. It receives updates from the Server, verifies them, and transfers them to the correct Agent within the vehicle. The Orchestrator within the Client corresponds with the other Client Services to ensure compliance with OTA policies.

eSync Agent

The eSync Agent is the primary endpoint for Over-the-Air updating, and the primary starting point for data gathering. It exchanges data with the eSync Client through secure communications with the Message Broker.

eSync Agents effectively abstract the characteristics of various ECUs, sensors and other electronic devices on Ethernet, CAN bus, or other in-vehicle networks or busses. Agents are customized for the particular requirements and programming interfaces of each end device on the in-vehicle network, while providing a consistent interface to the eSync Client and Server

The presence of Agents for end devices provides an abstraction layer, with a consistent data interface to widely divergent end devices in the vehicle, allowing rapid integration of a full vehicle OTA platform. Agents also provide scalability for the platform, enabling quick updating of many devices by distributing the processing workload throughout the vehicle.



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