

Introduction

The Excelfore eSync SDK has been created to facilitate and accelerate the development, prototyping, and testing of new eSync compliant devices, and integration of legacy devices into the eSync OTA platform. It also enables rapid deployment of eSync in-network and cloud software by OEMs or suppliers who are seeking a practical and scalable platform for OTA software updates.

Security-Enabled

The SDK reduces the learning curve required to understand how software should be delivered over the air, with all protocols, procedures, security-certificates and end to end encryption mechanisms for secure software delivery and updates.

Edge-Device Integration

The Excelfore eSync SDK allows over-the-air software updates to compact edge computing devices such as automotive Electronic Control Units (ECUs), smart sensors, domain master ECUs, or network gateways. The SDK has been conceived and designed with ECU suppliers and OEMs in mind, who constantly face the challenge of updating the software of edge devices, both during development as well as after commissioning the device inside a vehicle.

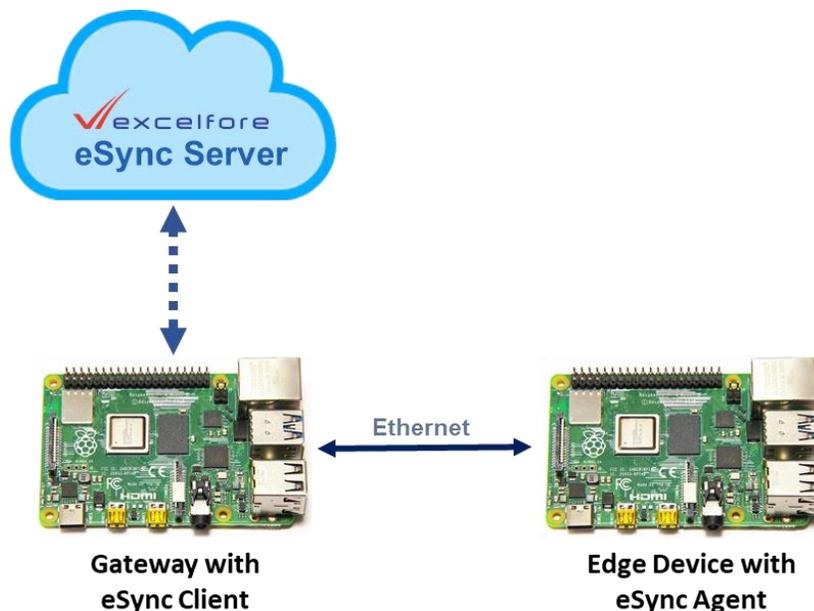
Rapid Deployment

The Excelfore eSync SDK is a quick way to explore OTA updating of embedded software, taking advantage of a proven, field-deployed OTA technology. OTA solutions are complex, and the maturation process requires substantial time and resources. Extensive real-world experience and knowledge of the eSync platform makes the Excelfore eSync SDK the right mechanism to gain practical experience in OTA.

Included in the SDK

The SDK comes with two compact computing devices, an eSync Server account instance, and all the material and information needed to quickly begin updating via OTA

- eSync Server account allows the user to log-in, view and manage OTA campaigns to the SDK
 - ✓ Pre-configured and pre-authorized “tree” of the SDK platform
 - ✓ All necessary keys and authorizations for secure OTA to the SDK devices
- A Raspberry-Pi computer as the gateway
 - ✓ Pre-Installed Yocto Linux operating system
 - ✓ Pre-Installed eSync Client software to interface with the Server
 - ✓ Pre-Installed eSync Agent to self-update as the user wishes
- A Raspberry-Pi computer as the edge device
 - ✓ Pre-Installed Yocto Linux OS
 - ✓ Pre-installed eSync Agent to receive payloads from the Client and perform updates
- All necessary power supplies and cables
- Instructions for setting up and operating the SDK
- Instructions for managing OTA campaigns on the eSync Server



Built on the eSync Data Pipeline

The 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 Digital Lifecycle Management

eSync offers a secure data path to an unlimited number and diversity of devices in the vehicle, including telematics devices, IVI systems, network controllers, ECUs, smart sensors and smart actuators.

Optional Expansion Kits

There are two initial expansion kits for the Excelfore eSync SDK.

Vehicle Status Emulator

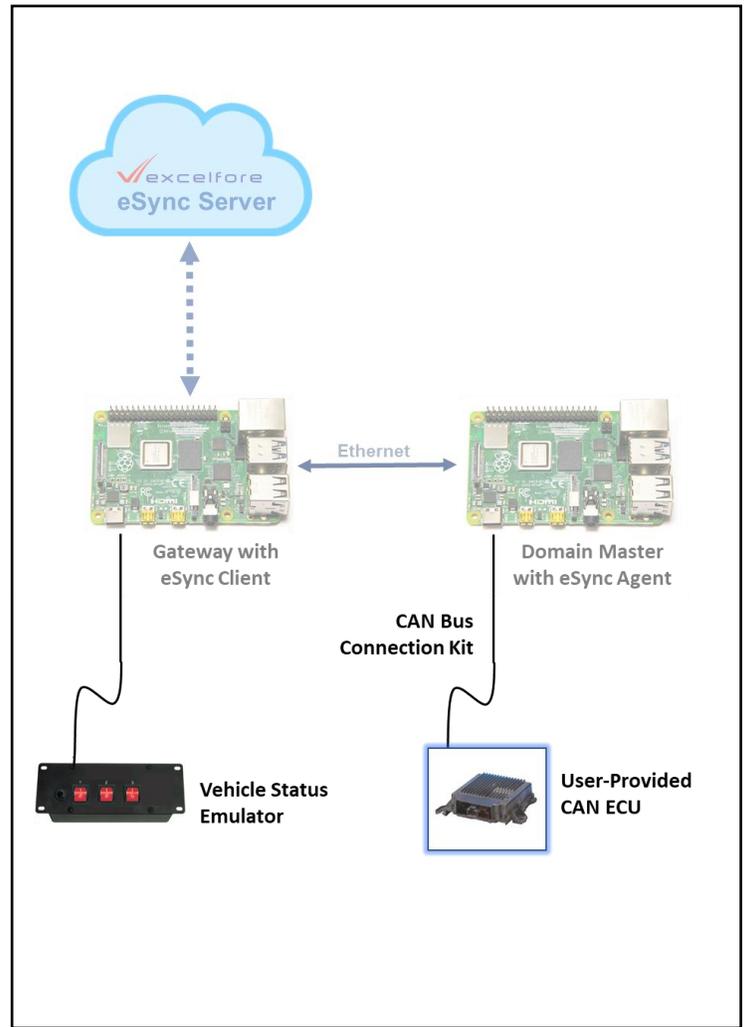
The Vehicle Status Emulator is a load board which emulates CAN bus messages on three variables of the state of the vehicle, as inputs to the OTA installation process. With the Vehicle Status Emulator users can explore how policy operates within the eSync platform.

When eSync is deployed to a full vehicle, any number of factors may be included for establishing OTA policies. For the sake of exploring policy with the SDK, the ignition status (on or off), the vehicle speed (0 or >0), and user consent (Y or N) are emulated.

CAN-bus Connection for ECU

The CAN-bus ECU expansion kit provides a template Agent to be installed in the second Raspberry Pi, and all necessary cables, to allow this device to act as a domain master to subordinate ECUs over CAN.

Users are expected to provide their own ECU (or ECU development platform) with a CAN bus interface and embedded UDS server. Instructions are provided for configuring the Raspberry Pi, and for connecting a user-provided ECU or ECU platform to the SDK, including updating of the vehicle Tree, adapting the UDS client of the Template Agent to the sequencing of the ECU UDS server, and provisioning of security, so that the eSync Server may reach and update the newly added ECU.



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 eSyncAlliance.

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.



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