Introduction

The Excelfore eSync Agent SDK has been created to facilitate and accelerate the development of customized eSync Agents, so that edge devices may be integrated into the eSync OTA pipeline.

The SDK provides a fully working OTA data pipeline based on the eSync standard. Users are expected to provide their own computer (PC or Raspberry Pi) to host the eSync software, and their own edge device (typically an ECU, or an ECU development platform) with an Ethernet or CAN bus interface, and with an embedded UDS server.

Edge-Device Integration

The Excelfore eSync Agent SDK is a tool for updating edge computing devices such as Electronic Control Units (ECUs) , domain master ECUs, smart sensors 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 during development and after deployment.

Security-Enabled

The eSync Agent SDK reduces the learning curve required to understand how software is delivered over-the-air, with all protocols, procedures, security-certificates and end-to-end encryption mechanisms for delivery and updates.
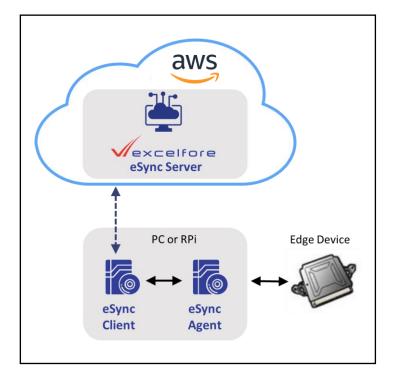
Rapid Deployment

The Excelfore eSync Agent SDK is an effective tool for integrating a user's edge device into a proven, field-deployed OTA pipeline. eSync is optimized for complex multi-device environments such as connected vehicles. The eSync OTA pipeline effectively addresses this complexity, providing a consistent approach to reach any number of diverse devices through the configuration of eSync Agents. The eSync Agent SDK is the right tool for rapid development of a practical and scalable platform for OTA software updates.

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, gateways, domain master ECUs, ECUs and smart sensors.

Included in the Agent SDK

The eSync Agent SDK includes two software components for installation into a user's computing system, and an authorized login to the eSync Server hosted on the Amazon Web Services cloud. Users will build and install an eSync Client, and use a template format to configure, build and install an eSync Agent for the user's edge device.

• An eSync Server account which allows the user to log-in, view and manage OTA campaigns to the SDK
  ✓ Pre-configured and pre-authorized "tree" of the Agent SDK platform

• eSync Client and Agent software for installation on the user's PC or Raspberry Pi computing platform

• All necessary keys and authorizations for secure OTA to the eSync Agent provided with the Agent SDK

• Instructions for building and installing the eSync Client and configuring, building and installing the eSync Agent

• Instructions for managing OTA campaigns on the eSync Server

Advanced OTA Features

The eSync Agent SDK provides an effective tool for exercising and experiencing advanced OTA capabilities.

Delta Compression and Reconstruction

Delta compression is an effective way to reduce network bandwidth utilization when sending large updates. The eSync Agent SDK allows the user to enable or disable Delta reconstruction, so that users may explore the efficiencies and benefits of using Delta compression.

Retry and Rollback

When an OTA update fails for unexpected reasons, eSync will automatically retry. After repeated failures, the device can be rolled back to the last known good condition. This capability is fully implemented in the eSync Agent SDK.
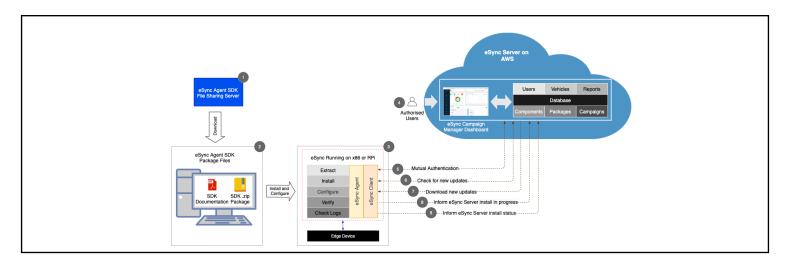
Diagnostic Reporting

eSync is a bi-directional data pipeline. The SDK allows the Agent to be configured to send specific device statistics and/or diagnostics periodically to the eSync Server.

The Template Agent of the SDK

The eSync Agent library provides a simple interface to enable rapid deployment of a device-specific eSync Agent. Only the programming interface of the Agent must be customized to bring the edge device into the eSync OTA pipeline. Additional advanced OTA features are accessed by simple selection of configuration options.

The template Agent is built on top of a C library and encapsulates initialization, application protocols, JSON message parsing and encoding. Developers should only need to hook up the needed code and will then be ready to flash/update device software with a package archive provided by the library. Both Python and C Models are available to achieve the customization of the template Agent.

The implementation model is left for the developer to determine and write into the Agent to address the edge device.

eSync Compliant Interfaces

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. Users can learn more at: www.esyncalliance.org