



COMARCH

Comarch Matter POC – The Future of Smart Home

Comarch as a reliable partner offering support in the development of devices based on the new Smart Home Matter standard

Matter Protocol – Making Smart Home More Accessible

With the Smart Home technology dating back to the 1970s, when the X10 protocol for communication among electronic devices to facilitate home automation was released, the concept has been around for quite some time. Yet, it was only in 2022 that the first open-source connectivity standard for Smart Home and IoT devices came to be. Published on October 4, 2022, the Matter protocol is a royalty-free standard that enables connection through devices by various different manufacturers – from Apple and Google to Samsung and LG. According to the Connectivity Standards Alliance’s goal, the new standard is supposed to simplify smart home technology by providing interoperability for end users.

Comarch vs. HomeKit

The Matter standard is a new technology but relies strongly on Apple HomeKit – the go-to ecosystem first introduced in 2014 that allowed users to configure, communicate with, and control smart-home appliances through Apple tools. Unlike Matter, HomeKit was a closed system that only worked when used on Apple devices. As a team of engineers specializing in software and hardware services, Comarch’s IoT branch has had the opportunity to provide support for the HomeKit technology. Our team worked on the integration of HomeKit with Bluetooth LE and OpenThread, with a strong focus on developing new platform abstraction layer features and app layer maintenance based on single or multi-protocol.



New Smart Home Technology – Comarch’s Solution

Given our previous work with HomeKit support, Comarch is ready to dive into its successor standard. Due to our vast experience in Bluetooth, OpenThread, and IoT technologies, we were able to create a trial device based on the [Matter protocol](#). The preparation of Comarch Matter POC required us to write a demo with a modified and configured environment that would realize the real use case of home automation. That’s how based on Silicon Labs boards, two embedded applications for Matter devices have been developed.

The first is the lighting app with brightness support, which stimulates a real light bulb changing brightness (current brightness levels 0-100%), whereas the second is the light sensor app based on Silicon Labs brd4166a board with Si1133 UV Index and Ambient Light Sensor. Both Matter devices use Thread for communication, and the iPhone uses the Apple Home application as a Matter controller.

After commissioning, it is possible to add automation for connecting the light bulb with the light sensor. In our case, the brightness of the bulb depends on the value of the light sensor. The light sensor updates the illuminance cluster value continuously with a 1-second interval. The final effect of the system is to control the brightness of the bulb using a light sensor. The HomePod mini is used as a Thread border router. Development based on the open-source Matter [GitHub repository](#) using Silicon Labs boards. The work includes developing the Matter application layer, debugging the Matter library, and integrating Silicon Labs hardware into our use case. During the development, the ZAP tool was used to manage the Matter clusters. Raspberry Pi as Matter Hub was used for testing, and the CHIP Tool was used as the Matter controller.

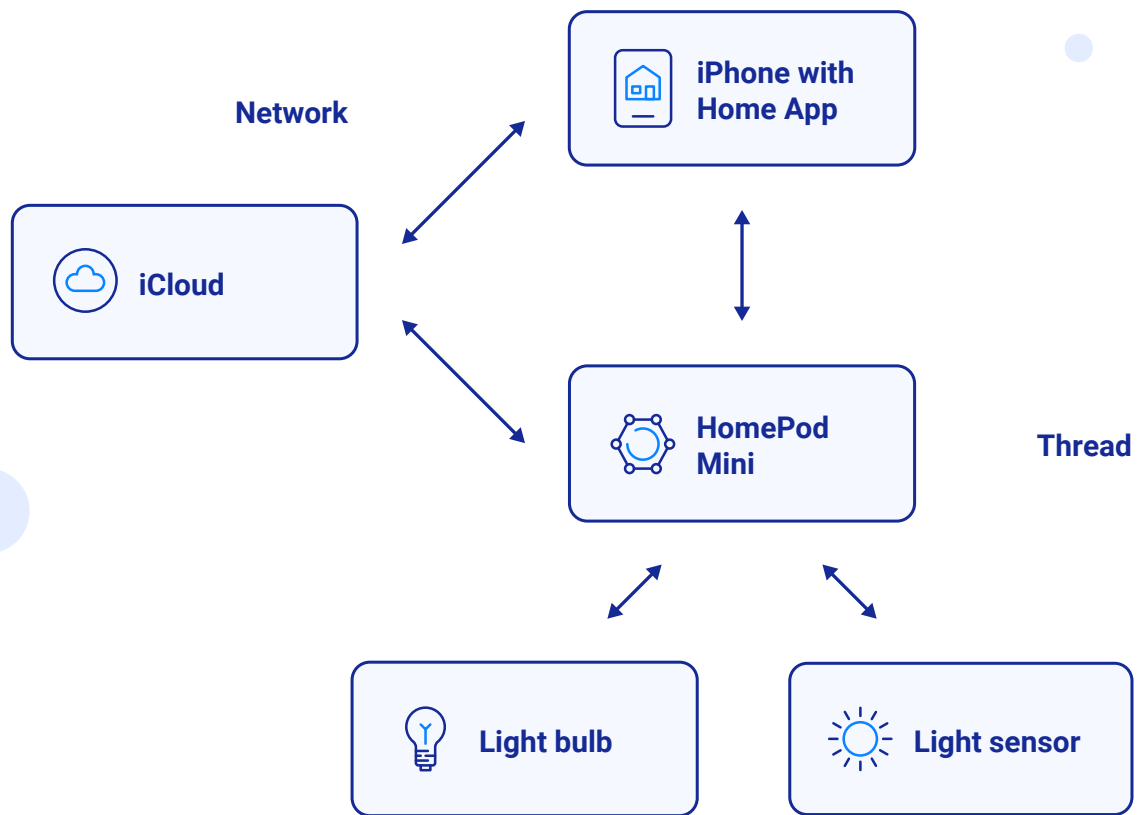
In short, Comarch Matter POC preparation included:

- Creating a Matter environment setup for Silicon Labs hardware.
- Developing Matter light sensor example application and light bulb application
- Debugging Matter protocol and communication layer
- Using the ZAP tool to manage the Matter clusters
- Creating a setup smart Home Network for Matter (Matter devices, Apple HomePod mini and iPhone controller with Home app)

Devices and applications used in Comarch Matter POC

- Matter light sensor application – Silicon Labs brd4166a with Si1133 UV Index and Ambient Light Sensor
- Matter lighting app with brightness – Silicon Labs brd4186c connected to WSTK with display
- iPhone X with Apple Home to control Matter devices
- HomePod mini for Thread communication
- Raspberry Pi 4 with CHIP Tool for testing

Comarch Matter POC System



About Comarch

Comarch (headquartered in Kraków) is a leading global IT company with a portfolio of thousands of complex and successful IT projects and implementations of software development for more than 40,000 companies worldwide. We have wide knowledge of IT systems and solutions including cloud services, IoT ecosystems and embedded software. Comarch has been a reliable partner for global IT standards organizations since 2007. Over the years, we've worked with various organizations and gained knowledge and expertise in how to support certification bodies at each step of the creation of certification programs, and aid their members in technology adoption.