



How to Control a Zigbee-based Light with an Occupancy Sensor, Alexa and Your Phone

Introduction

Would you like to learn an easy way to control a Zigbee-based Light with Alexa voice commands?

Or how about controlling a Zigbee-based Light automatically with an Occupancy Sensor?

Furthermore, how would you like to learn how to easily create your own Bluetooth mobile application to control a Zigbee-based Light and access the Internet?

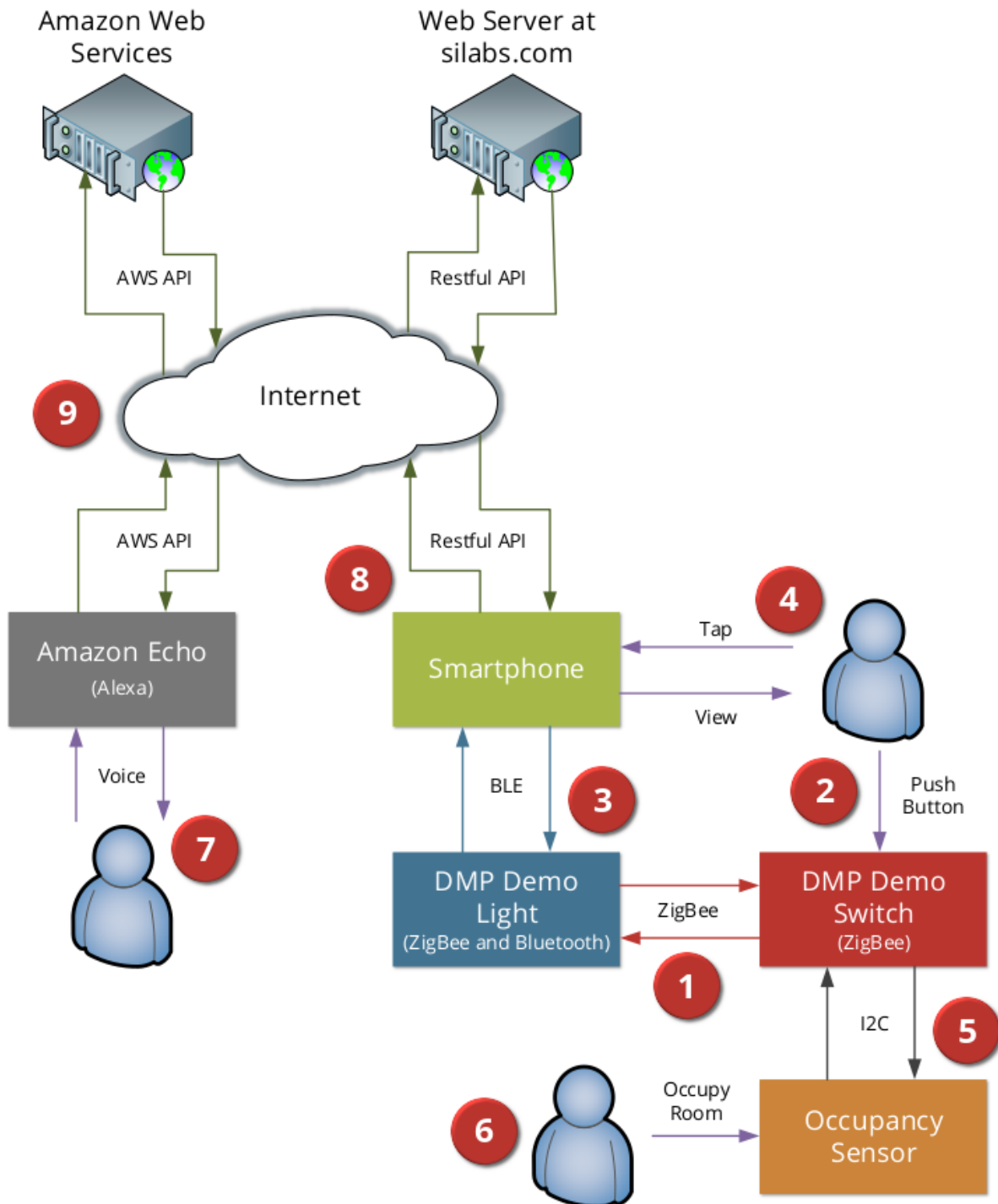
Background

Silicon Labs released on November 2017 the new Dynamic Multiprotocol Software (DMP) for our Wireless Geckos. In summary, the DMP software enables the simultaneous operation of Zigbee and Bluetooth Low Energy (BLE) on a single radio chip.

The best example to showcase this technology is by controlling and monitoring a Zigbee-based Light directly over Bluetooth with a smartphone mobile application. This example is actually available with the DMP SDK and our Hackathon project is based on it.

Project Overview

The following image illustrates the scope of this blog:



1. The Demo featured in this blog is based on the official DMP Light/Switch Demo that consists of two devices:
Light: it runs Micrium OS to switch between Zigbee and Bluetooth on a single radio.
Switch: it supports Zigbee to provide wireless control of the Light.
Click [here](#) to get started with this demo.
2. In the original demo, users press a push button on the wireless Switch device, which in turn, sends a Zigbee Light Link (ZLL) command to toggle the Light On or Off.
3. The Light device runs Micrium OS to switch between Zigbee and Bluetooth while sharing the same radio. This allows a mobile application to connect to the Light via Bluetooth.
4. Users tap the mobile application to toggle the Light On/Off.
The Light device receives the Bluetooth notification and not only toggles the Light On/Off but also updates the corresponding ZLL Cluster Attribute so the Switch remains in sync.
5. This blog shows you how to add an Occupancy Sensor to the Switch device by connecting the Silicon Labs Optical Sensor Expansion Board (Si1133/Si1153) to the Switch's EXP Header (I2C).
6. The Optical Sensor Expansion Board has a series of optical sensors to detect the presence of a person in the room. The occupancy sensor is used by the embedded application to control the light automatically.
Click [here](#) to see Stephen's blog on how to add this occupancy sensor to the DMP Light/Switch Demo.
7. This blog is also going to show you how to control the Light with Alexa Voice Commands.
8. To enable Alexa Voice Commands, we are also going to show you an easy way to create your own Bluetooth Mobile Application. This mobile application will use the smartphone as a gateway to access the Internet.
Click [here](#) to see Juan's blog on how to create your own BLE mobile app to control the DMP Light/Switch Demo.
9. Users will get to control the Light with Voice Commands and this blog will describe how to setup the system in Amazon Web Services (AWS).
Click [here](#) to see Manasa's blog on how to add Alexa capabilities to the DMP Light/Switch Demo.