# X-CUBE-CLOUD

## Connectors for various cloud providers as software Expansion Packages for STM32Cube

**Data brief**

## Features

- Ready to run firmware example using Wi-Fi® and Ethernet connectivity to support quick evaluation and development with various cloud providers
- Interface to configure the board for connection to Amazon web services (AWS)
- Interface to configure the board for connection to Microsoft® Azure
- Interface to configure the board for connection to IBM Watson®
- Specific features of the X-CUBE-CLD-GEN Expansion Package:
  - 2G/3G and LTE cellular connectivity through the support of the P-L496G-CELL01 and P-L496G-CELL02 packs
  - Generic cloud connectivity solution based on standard HTTP and MQTT technology
  - Ready-to-run firmware examples for various second-tier cloud providers
- IoT connection, subscribe and publish for each supported cloud provider
- Specific features of the B-L475E-IOT01 board:
  - Measurement of humidity, temperature, 3-axis magnetic data, 3D acceleration, 3D gyroscope data, atmospheric pressure, and time-of-flight
  - Encryption key protection provided by the STM32L475 firewall peripheral
  - Remote firmware update

## Description

The cloud software Expansion Packages consist of a set of libraries and application examples for STM32L4 Series, STM32F4 Series and STM32F7 Series microcontrollers acting as end devices connected to cloud service providers. Amazon web services (AWS), Microsoft® Azure and IBM Watson® are supported so far, with more to come in the coming months. In addition, the X-CUBE-CLD-GEN Expansion Package implements generic cloud connectivity solutions to several second-tier cloud providers through standard MQTT and HTTP technology.

Each package enables a specific cloud provider and runs on the B-L475E-IOT01 and 32F413HDISCOVERY boards using an on-board Inventek module for Wi-Fi® connectivity support, and the 32F769IDISCOVERY board with its natively supported Ethernet interface. The X-CUBE-CLD-GEN package also enables cellular connectivity through the support of the P-L496G-CELL01 and P-L496G-CELL02 packs and their 2G/3G Quectel UG96 and LTE Quectel BG96 cellular modem daughter boards respectively.

For each platform, a sample application performs the configuration of the on-board Wi-Fi® parameters (except when using Ethernet or cellular connectivity), and of its necessary security credentials, connection to the Internet, connection to the cloud provider servers, as well as the publication of messages and corresponding subscription over a variety of connectivity protocols (such as MQTT or HTTPS) supported by a specific provider.

For more details, refer to the user manuals available for each of the cloud software expansion packages for STM32Cube.

# Revision history

**Table 1. Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 07-Jul-2017 | 1 | Initial release. |
| 11-Jan-2018 | 2 | Updated *Features* and *Description* for IBM Watson®. |
| 5-Jul-2018 | 3 | Updated *Features* and *Description* to cover generic-cloud and cellular connectivity. |