IoT: Cloud Connectivity Expansion Packages for STM32Cube

Overview
IoT and Cloud general considerations
While M2M network connects machines in closed systems, **IoT enhances the existing networks** through an intelligent cloud.
Connectivity bricks for Cloud connection

Top technical view: TCP/IP based

From Thing to Remote User from any location

Thing

Application

Cloud Connectors
MQTT, HTTPS...

SSL/TLS Security

TCP/IP Stack

Cloud

Front end +
Services (Fleet, Data mining, ...)

Things protocols
MQTT, HTTPS...

Storage

User

Apps/Browser

HW
Ethernet
Wi-Fi...

SW or HW
crypto
ST Cloud connectivity Software Development Kits (SDKs)
ST Cloud connectivity SDKs, specific and generic, offered for FREE as STM32Cube Expansion Packages (X-CUBE Es)

Provide all needed Cloud connectivity, device management and security blocks (MQTT, HTTP, SSL/TLS, LWM2M)

Provide applicative examples
  - Simple data logging and dashboard display
  - Bi-directional interaction with Cloud servers
  - Remote Firmware Upgrade (RFU) through HTTP

Extensive HW connectivity support
  - Wi-Fi, Ethernet, Cellular (coming soon: 2G/3G, LTE M1 and NB-IoT)
Connection to 1st tier Cloud providers made as easy as 1, 2, 3 within the STM32Cube environment

STM32Cube Expansion Packages

- **X-CUBE-AWS**
  - **Application**
    - AWS SDK
    - MQTT
  - **SSL/TLS Security**
  - **TCP/IP Stack**
    - Ethernet Wi-Fi
    - SW crypto

- **X-CUBE-AZURE**
  - **Application**
    - Azure SDK
    - MQTT
  - **SSL/TLS Security**
  - **TCP/IP Stack**
    - Ethernet Wi-Fi
    - SW crypto

- **X-CUBE-WATSON**
  - **Application**
    - Watson SDK
    - MQTT
  - **SSL/TLS Security**
  - **TCP/IP Stack**
    - Ethernet Wi-Fi
    - SW crypto
Available for FREE and in source format under business friendly license terms on st.com

**X-CUBE-AWS**
- **Order code:** X-CUBE-AWS / www.st.com/x-cube-aws
- **Mixed license distribution model** ([SLA0048](#)) including amongst others:
  - Source (business friendly) format for Cloud connectivity, security firmware blocks and STM32Cube drivers
  - Source (ST Ultimate Liberty) for applicative examples
  - Apache 2.0 license for aws-iot-device-sdk-embedded-C

**X-CUBE-AZURE**
- **Order code:** X-CUBE-AZURE / www.st.com/x-cube-azure
- **Mixed license distribution model** ([SLA0048](#)) including amongst others:
  - Source (business friendly) format for Cloud connectivity, security firmware blocks and STM32Cube drivers
  - Source (ST Ultimate Liberty) for applicative examples
  - MIT license for Microsoft® Azure IoT SDK
• X-CUBE-WATSON
  • Order code: X-CUBE-WATSON / www.st.com/x-cube-watson
  • Mixed license distribution model (SLA0048) including amongst others:
    • Source (business friendly) format for Cloud connectivity, security firmware blocks and STM32Cube drivers
    • Source (ST Ultimate Liberty) for applicative examples
    • Eclipse™ Public License - v 1.0 license for IBM Cloud® Embedded C Client Library

Available for FREE and in source format under business friendly license terms on st.com
ST SDK for Generic Cloud Connectivity
2\textsuperscript{nd} tier Cloud providers support
Generic Cloud Connectivity offer: interfacing to any Cloud providers made easier

- Generic connectivity clients and examples using main IoT protocols standard implementations
  - MQTT(S): Light communication protocol overhead for more efficient packets over TCP/IP
  - HTTP(S): Classic internet communication protocol

- Basic SW components and examples for device management from a Cloud service
  - LWM2M: Most popular M2M protocol for IoT
  - CoAP: Mandatory for LWM2M
X-CUBE-CLD-GEN

Enabling customers to quickly get started with any Cloud service using standard connectivity protocols

- Offered in open source and free of charge on ST’s website
- Provides varied applicative examples
  - Basic HTTP and MQTT server/client connection
  - 2nd tier Cloud providers supported: Exosite, Grovestream, Litmus Automation and Ubidots
  - Ethernet, Wi-Fi and Cellular support (2G/3G and LTE M1/NBLoT)
- LWM2M: Available in Q4/2018
Order code: X-CUBE-CLD-GEN
  • [www.st.com/x-cube-cld-gen](http://www.st.com/x-cube-cld-gen)

Mixed license distribution model ([SLA0048](http://www.st.com/x-cube-cld-gen)) including amongst others:
  • Source business friendly (BSD and others) format for Cloud connectivity, security firmware blocks and STM32Cube drivers
  • Source (ST Ultimate Liberty) for applicative examples
  • Eclipse™ Public License - v 1.0 for Paho MQTT embedded C

Available for FREE and in source format under business friendly license terms on st.com
Supported boards and IDEs
Supported HW boards: Ethernet, Wi-Fi and cellular

STM32F413 Discovery kit
STM32F413H-DISCO
(On-board Inventek Wi-Fi module)

STM32F769 Discovery kit
STM32F769I-DISC1
STM32F769I-DISCO
(On-board Ethernet connector)

STM32L4 Discovery IoT node
B-L475E-IOT01A1
B-L475E-IOT01A2
(On-board Inventek Wi-Fi module)

STM32 Discovery Pack for Cellular to Cloud
P-L496G-CELL01
P-L496G-CELL02
(Quectel BG96 and UG96 through STMod+ connector)

Several ST boards allowing out-of-the-box development with the SDKs
Example Projects and IDEs

Example projects preconfigured for AC6 System Workbench, Arm® Keil®, IAR™, and ST boards
Releasing your creativity

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