

# OPTIGA™ Trust M

**Product Version: V3**

## About this document

### Scope and purpose

This document specifies the Release Notes for OPTIGA™ Trust M solution.

### Intended audience

This document addresses the audience: customers, solution providers and system integrators.

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**Revision History**

| Page | Subjects (major changes since last revision)   |
|------|--|
| 5    | Release to Production of OPTIGA™ Trust M v3.00.2490 and its corresponding host libraries.      |
| 9    | Engineering Sample Release of OPTIGA™ Trust M v3.00.2468 and its corresponding host libraries. |
|      |  |
|      |  |
|      |  |
|      |  |
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# 1 Product Version Overview

## 1.1 Release versions

The Release versions defined in the below table is the overall version of OPTIGA™ Trust M which includes the OPTIGA™ Trust M Host library package and OPTIGA™ Trust M security chip version.

| Release Version | Build Date | Description  |
|-----------------|------------|--|
| v3.00.2490      | 2020-10-01 | Release to Production of OPTIGA™ Trust M and its corresponding host libraries      |
| V3.00.2468      | 2020-05-28 | Engineering Sample Release of OPTIGA™ Trust M and its corresponding host libraries |
|                 |            |  |
|                 |            |  |

## 1.2 Versioning Scheme

### 1. Product Version:

It defines the version of the product. (Example: OPTIGA Trust M **V1, V2, V3** etc...)

### 2. Release version:

Defines the revision of the product released with encoding scheme **Major, Minor, and Build** number.

**Example** – v3.00.2490 (Major version : 3, Minor version : 00, Build version : 2490)

2.1. **Major version** - It depicts the major changes/revisions of the product. Early engineering sample releases will always have the release major version as zero. (Example - vx.yy.zzzz)

2.2. **Minor version** - It changes with releases or/and significant changes in the product. (Example - vx.yy.zzzz)

2.3. **Build version** – It increments based on each change/release of the product. (Example - vx.yy.zzzz)

**Note:** Every release will have an OPTIGA™ security chip version [5], which defines the version of the software loaded on the OPTIGA™ security chip.

OPTIGA™ Trust M security chip version will have the same major and minor version numbers of that particular release version. But the build number of OPTIGA™ Trust M security chip version might be different from the overall release version.

Example:

Release Version : v3.00.2490 (Major version : 3, Minor version : 00, Build version : 2490)  
Security chip version : v3.00.2440 (Major version : 3, Minor version : 00, Build version : 2440)

## **2 Release to Production v3.00.2490**

### **2.1 Product Description**

OPTIGA™ Trust M v3.00.2490 is an Embedded Security Solution covering use cases to protect the authenticity, integrity and confidentiality of your device: mutual authentication, secure communication, data storage protection, cryptographic toolbox functionalities and lifecycle management for connected devices.

### **2.2 Scope of Release**

OPTIGA™ Trust M v3.00. 2490 is released as Release to Production. The Product is qualified by Infineon with complete documentation describing all features as stated below.

### **2.3 Contents of the Evaluation Kit**

1. OPTIGA™ Trust M security chip with software build v3.00.2440
2. Package containing following Software and Documentation
  - 2.1. binaries
    - 2.1.1.Examples for XMC4800 IOT Connectivity kit
  - 2.2. certificates
    - 2.2.1.Contains Infineon Test and Productive CA certificates for execution of use cases
  - 2.3. documents
    - 2.3.1.OPTIGA™ Trust M Datasheet v3.10
    - 2.3.2.Infineon I2C Protocol v2.03
    - 2.3.3.OPTIGA™ Trust M Solution Reference Manual v3.15
    - 2.3.4.OPTIGA™ Trust M Release Notes v3.00
    - 2.3.5.OPTIGA™ Trust M Keys And Certificates v3.10
    - 2.3.6.OPTIGA™ Trust M Host Library Documentation
    - 2.3.7.OPTIGA™ Trust M Getting Started Guide v3.10
    - 2.3.8.OPTIGA™ Trust M License Information
  - 2.4. examples
    - 2.4.1.optiga
      - 2.4.1.1. Example files for OPTIGA™ host library APIs
    - 2.4.2.tools

2.4.2.1. Tool to generate protected update data set for the data objects, key set for key objects and metadata set for data/key objects (used for optiga\_util\_protected\_update API example).

## 2.5. externals

2.5.1. Directory for 3<sup>rd</sup> party libraries (e.g. mbed TLS)

## 2.6. optiga

2.6.1. OPTIGA™ host library with source and header files

## 2.7. pal

2.7.1. Platform specific implementation for XMC4800 IoT Connectivity Kit

## 2.8. projects

2.8.1. DAVE™ Eclipse project for XMC4800 IoT Connectivity Kit

## 3. Hardware

3.1. XMC4800 IoT Connectivity Kit

3.2. Shield2Go with OPTIGA™ Trust M security chip

3.3. My IoT Adapter

## 4. Open Source Software – subject to separate licensing terms as below

4.1. Applicable for XMC4800 IoT Connectivity Kit

4.1.1. mbed TLS v2.16.0 crypto library (<https://tls.mbed.org/download>)

4.1.2. LUFA USB stack (<https://www.lufa-lib.org>)

## 2.4 Features

### 1. OPTIGA™ Trust M Security Chip Software

- a. Infineon I2C protocol v2.03 based communication with Shielded Connection support.
- b. Configurable protected data storage.
- c. Life cycle management.
- d. Crypto ToolBox commands with
  - i. ECC NIST P256/P384/P521, Brainpool P256/384/512, SHA-256/384/512 (sign, verify, key generation, ECDH, key derivation)
  - ii. RSA 1024/2048 (Sign, Verify, Key generation, Encrypt, Decrypt, Pre-master secret generation for RSA Key exchange (reference TLS V1.2))
  - iii. Symmetric encryption and decryption using AES-128/192/256 (ECB, CBC, CBC-MAC, CMAC) and HMAC SHA256/384/512.
  - iv. KeyDerivation using HKDF SHA256/384/512
- e. Hibernate and restore support.
- f. Integrity and confidentiality protected update of data, metadata and key objects
- g. Boot phase flag(Global and Application security states) based access to protected keys and data

- h. HMAC verification with authorization reference states.
  - i. Configurable security monitor.
- 2. OPTIGA™ Trust M Host Software
  - a. Support for XMC4800 IoT Connectivity Kit added.
  - b. DAVE Eclipse project added to release package. This project can be used for compilation and debugging.
  - c. Optiga Crypt Library (Crypto Toolbox command APIs)
  - d. Optiga Util Library (Open/Close Application, Read/Write and Protected Update command APIs)
  - e. Infineon I2C protocol v2.03 based communication with Shielded Connection support.
  - f. Tool to generate CBOR based manifest and payload fragments for optiga\_util\_protected\_update API example.

## **2.5 Fixes**

1. Fixed the below issues,
  - 1.1. optiga\_shell\_init function execution was exiting without waiting for asynchronous call to complete. This was leading to the failure of optiga\_shell\_deinit function execution with an error.
  - 1.2. optiga\_cmd\_gen\_keypair function was not validating the private key tag length in response buffer against the expected private key length. This was leading to memory corruption.
  - 1.3. optiga\_crypt\_hash\_generic function was not validating the hash length in response buffer against the expected hash length. This was leading to memory corruption.

## **2.6 Enhancements**

None

## **2.7 Known Issues**

1. Disconnecting the power (VDD pin) of the Host MCU during the communication with OPTIGA™ Trust M and re-establishing the connection might end up in Infineon I2C protocol stack non responsive state due to the low level driver issue observed.

## **2.8 Limitations**

1. The maximum number of OPTIGA™ crypt instances which would be based on session is limited to 4 in parallel.
2. Third-party libraries such as mbed TLS might invoke memory allocation functions during optiga comms protection (shielded connection) operations (pal\_crypt). There could be collision during memory allocation, if a create API from service layer is invoked at the same time.
3. OPTIGA™ is a singleton resource. The number of instances that can run in parallel is limited to 6 (1 active instance and 5 instances will be queued up internally). To increase the maximum number of parallel instances, re-configure the macro OPTIGA\_CMD\_MAX\_REGISTRATIONS (minimum value is 1) in optiga\_lib\_config.h.
4. As the RSA key generation can go beyond 50 seconds, the default timeout of ifx i2c protocol (TL\_MAX\_EXIT\_TIMEOUT) is set to 180 seconds. Otherwise, 10 seconds is sufficient.

## **2.9 Environment**

None



## **3 Engineering Sample Release v3.00.2468**

### **3.1 Product Description**

OPTIGA™ Trust M v3.00.2468 is an Embedded Security Solution covering use cases to protect the authenticity, integrity and confidentiality of your device: mutual authentication, secure communication, data storage protection, cryptographic toolbox functionalities and lifecycle management for connected devices.

### **3.2 Scope of Release**

OPTIGA™ Trust M v3.00.2468 is released as Engineering Sample Release. The Product is qualified by Infineon with complete documentation describing all features as stated below.

### **3.3 Contents of the Evaluation Kit**

1. OPTIGA™ Trust M security chip with software build v3.00.2440
2. Package containing following Software and Documentation
  - 2.1. binaries
    - 2.1.1.Examples for XMC4800 IOT Connectivity kit
  - 2.2. certificates
    - 2.2.1.Contains Infineon Test CA certificate for execution of use cases
  - 2.3. documents
    - 2.3.1.OPTIGA™ Trust M Datasheet v3.00
    - 2.3.2.Infineon I2C Protocol v2.02
    - 2.3.3.OPTIGA™ Trust M Solution Reference Manual v3.00
    - 2.3.4.OPTIGA™ Trust M Release Notes v3.00
    - 2.3.5.OPTIGA™ Trust M Keys And Certificates v3.00
    - 2.3.6.OPTIGA™ Trust M Host Library Documentation
    - 2.3.7.OPTIGA™ Trust M Getting Started Guide v3.00
    - 2.3.8.OPTIGA™ Trust M License Information
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2.4.2.1. Tool to generate protected update data set for the data objects, key set for key objects and metadata set for data/key objects (used for optiga\_util\_protected\_update API example).

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4.1.2. LUFA USB stack (<https://www.lufa-lib.org>)

## 3.4 Features

### 1. OPTIGA™ Trust M Security Chip Software

- a. Infineon I2C protocol v2.02 based communication with Shielded Connection support.
- b. Configurable protected data storage.
- c. Life cycle management.
- d. Crypto ToolBox commands with
  - i. ECC NIST P256/P384/P521, Brainpool P256/384/512, SHA-256/384/512 (sign, verify, key generation, ECDH, key derivation)
  - ii. RSA 1024/2048 (Sign, Verify, Key generation, Encrypt, Decrypt, Pre-master secret generation for RSA Key exchange (reference TLS V1.2))
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    - c. Optiga Crypt Library (Crypto Toolbox command APIs)
    - d. Optiga Util Library (Open/Close Application, Read/Write and Protected Update command APIs)
    - e. Infineon I2C protocol v2.02 based communication with Shielded Connection support.
    - f. Tool to generate CBOR based manifest and payload fragments for optiga\_util\_protected\_update API example.

### **3.5 Fixes**

None

### **3.6 Enhancements**

None

### **3.7 Known Issues**

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4. As the RSA key generation can go beyond 50 seconds, the default timeout of ifx i2c protocol (TL\_MAX\_EXIT\_TIMEOUT) is set to 180 seconds. Otherwise, 10 seconds is sufficient.

### **3.9 Environment**

None

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