VIRBOX

Build up Customized Software Protection & License Solution

--Virbox Moway

What Moway can do

Protect software application (Software protection & Licensing) to defend software piracy, reverse-engineering, tampering, repackaging;

- Program Language support: PE, .NET, Java, U3D/U4E, Python, PHP etc.
- System environment: Windows, Linux, macOS etc.

As Portable & Secure license container (Support to bind with device);

Software Authentication (Identify Genuine software)

Data/File encryption/decryption (with key stored inside USB Moway, Signing/Signature verification)

Challenge/Response: 2FA Authentication (Web user login with cryptographic key : HMAC-SHA256/RSA/ECC/AES）

Customer value

Functionality/Feature

- Smart card chipset/CC EAL4+;
- Multiple Cryptographic key on Chipset;

- With PID & Virbox Protector;
- Asymmetric/Symmetric crypto algorithm;
- Soft license store and Binding hardware UUID;

- Top level security code hardening solution + CC EAL 4+

Benefit to developer

- To prevent license stolen & defend hardware clone;
- To enhance software security

- Instant protection scheme;
- Data/Project file Protection;
- Portable Secure license container;

  Cost effective license container to developer who used Flexera or other soft license system;

- Cost effective solution to Detect/ Defend/ Defeat piracy, Tampering/ Decompiling/ Repackaging.

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Technical Specification:

--Moway USB Security Dongle

Technical Specification

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Hardware Specification

Item	Description
Dimension：L×W×H	42.2mm×16.6mm×9.2mm
Weight:	5.5g
Memory	8kb / 32 kb
Chipset	Smart card (32 bits)
Data retention	>10 years（25℃）
Data writing time	>200,000
Interface	Hi-Speed USB 2.0/ HID
CE & FCC	Compliance
System & Language support	
Operation system	Windows, Linux, macOS
Program language	C/C++, C#/.NET, Java, Delphi, etc.

Security Specification

Item	Description
UUID	Global unique ID
Master dongle	Available
PIN/PID	Available
Communication encryption	Available
Random Number	32 bits random generated
Encryption Algorithm: Asymmetric algorithm & Symmetric algorithm	Cryptographic algorithm on Chips： RSA1024/RSA2048 ECC192/ECC256/ECC384 AES128/AES192/AES256 DES/TDES SHA1/SHA256 HMAC-SHA1/ HMAC-SHA256/ HMAC-MD5
Security level	CC EAL 4+
Physical Resistance	Defend SPA，DPA attack; sensor inside to detect frequency, light, fault, temperature, voltage attack.

02

Moway SDK
One Stop Solution for Developer
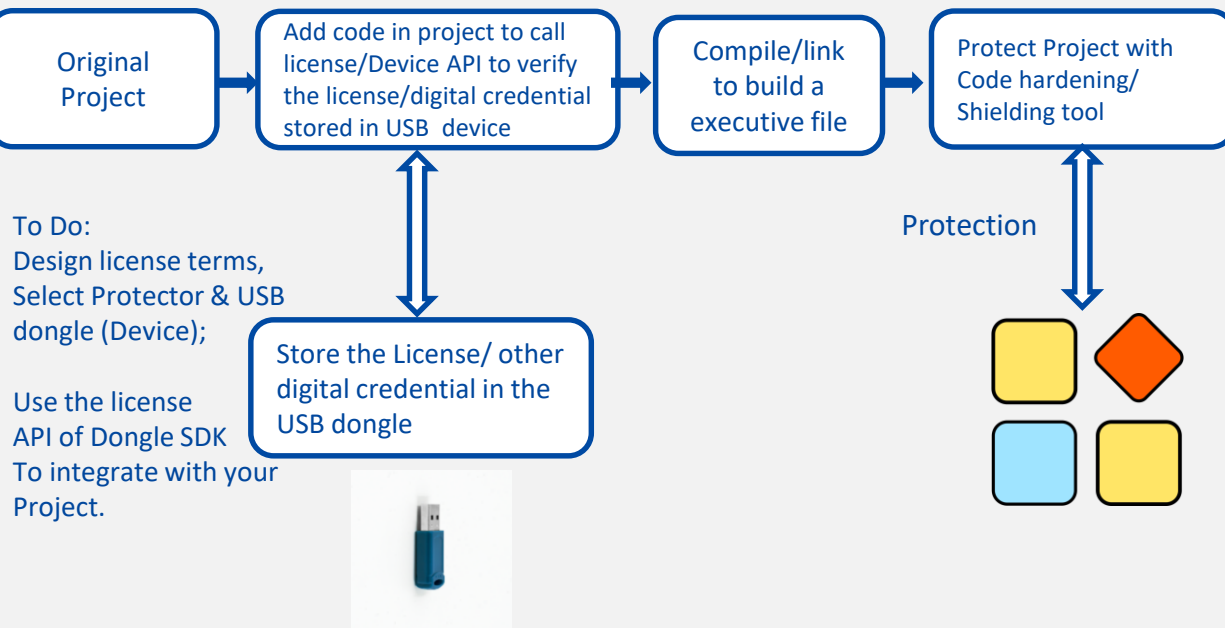
Moway SDK

Moway SDK	Description
Tool chains	Support developer to build up protection license scheme quickly & codeless;
Moway API & library	Developer use Moway API to integrate with project to build up comprehensive protection scheme;
Sample case	Developer may refer these sample case when they integrate Moway API with project.
Virbox Protector	Code hardening & App shielding tool to defend static & dynamic attack.
Document & Quick Start Guide	Help developer to complete customized scheme quickly & easily

Moway SDK: One Stop solution to developer

General USB dongle protection & Licensing process

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Developer Premise

Original Project

→

Add code in project to call license/Device API to verify the license/digital credential stored in USB device

→

Compile/link to build a executive file

→

Protect Project with Code hardening/ Shielding tool

Protection

To Do:
Design license terms, Select Protector & USB dongle (Device);

Use the license API of Dongle SDK To integrate with your Project.

Store the License/ other digital credential in the USB dongle

Software User Premise

Protected app installed in user machine

It is require developer to invest coding workload to integrate API with projec

2.1 Moway Tool chain

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DevTest Tool
Device initialize, PIN setting, Generate PID, import, delete, editing

Crypto Tool
Generate the cipher key, testing encryption algorithm

Batch Tool
Quickly volume setting the Moway user dongle

Make Package Tool
Create License update package by Developer.
Developer lock required

Virbox Protector
Highly Security Protector to protect application to prevent static/dynamic attack from decompiling, reverse engineering, tampering.

Update Tool
User use it to import software license update package to Moway user lock.

Moway Tool chains: Moway SDK provides a series tools for developer to create & accomplish protection scheme quickly, codeless and effortless. To save developer workload in protection and license scheme.

With **Virbox Protector**, the code hardening & app shield tool, Developer will have effective/secure protection tool to protect application to defend static & dynamic analysis from third party attacker.

2.2 Virbox Protector
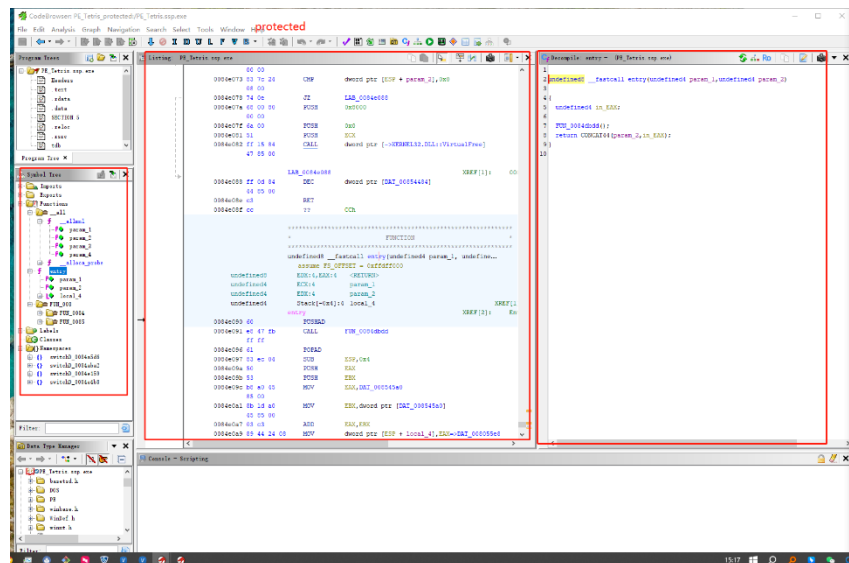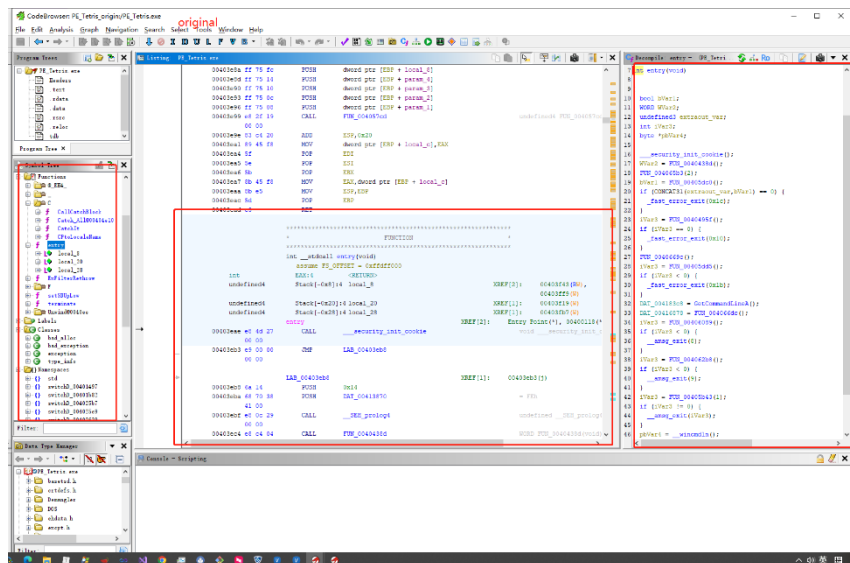
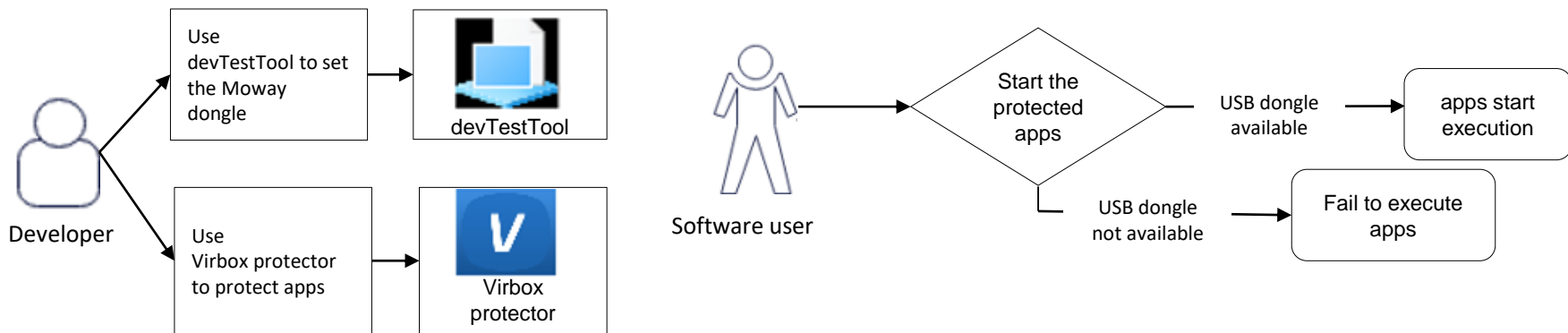Protection comparison:

The decompiling result:

Left: Decompile the original application without protection by Virbox Protector;

Right: Decompile the application with protection by Virbox Protector;

Decompilier: Ghidra

Besides of Moway tool chain to developer, Virbox also provides Code hardening tool (**Virbox Protector**) to developer to protect software project, which effective to defend decompiling, reverse engineering, tampering & repackaging by attacker.

2.3 Use Moway tools to accomplish instant protection scheme

Developer

Use devTestTool to set the Moway dongle → devTestTool

Use Virbox protector to protect apps → Virbox protector

Software user → Start the protected apps

- USB dongle available → apps start execution
- USB dongle not available → Fail to execute apps

Tools used	Operation
DevTestTool	Use DevTestTool to generate and Set/import PID to specific Moway USB dongle.
Virbox Protector	Protect the application and use same PID to set the binding with specific USB dongle;

Protection Scheme:
1. Use DevTest tool to set the unique PID and input PID to specific Moway USB Dongle;
2. Use Virbox Protector to protect the application, and input PID into the protected Apps;
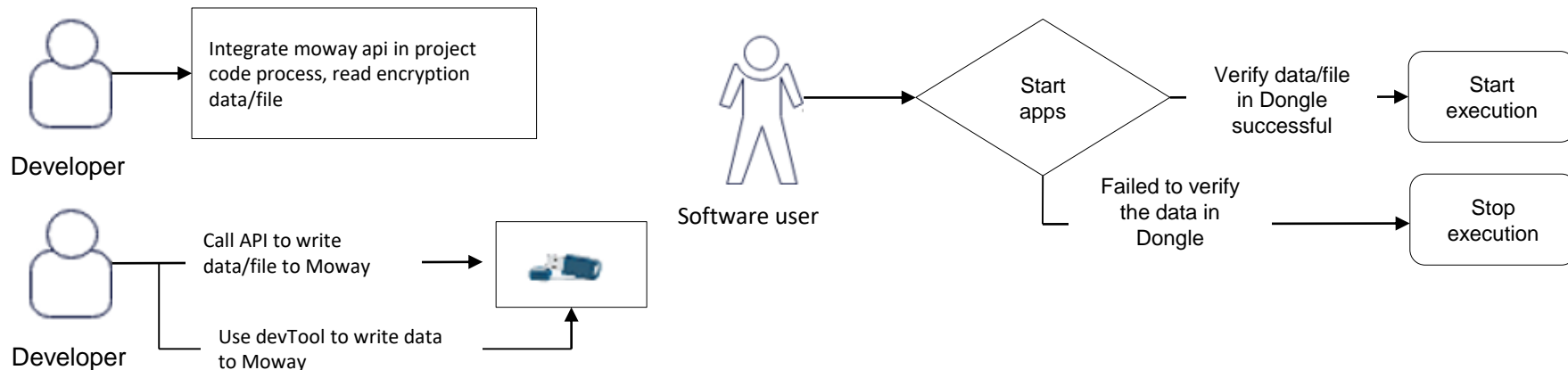3. The protected application require the Moway USB dongle with PID pre setting to start execution

PID: Product Identification ID, Developer use the DevTestTool to generate the PID, PID is used to identify each of product.

2.4 Moway API

API to operate device	Description	API to operate file	Description	API to Cryptographic	Description
mw_enum	Enumerable the Moway device plug in the machine	mw_read_file	Read file	mw_sym_encrypt	Symmetric encryption
mw_open	Open Moway Device	mw_write_file	Write file	mw_sym_decrypt	Symmetric decryption
mw_get_device_info	Get Moway device information	mw_delete_file	Delete file	mw_rsa_encrypt	RSA encryption
mw_control	Controal The flash of Moway device/Reset device status	mw_enum_file	Enumerate file	mw_rsa_decrypt	RSA Decryption
mw_change_pin	Edit PIN code			mw_signature	Signature
mw_verify_pin	Verify PIN code			mw_verify_sign	Verify signature

With Moway API, Developer may integrate the API with the original project to accomplish a customized & comprehensive protection and license scheme. More API available, please refer API manual accordingly.

2.5 Integrate Moway API with your project

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Developer → Integrate moway api in project code process, read encryption data/file

Developer → Call API to write data/file to Moway

Use devTool to write data to Moway

Software user → Start apps → Verify data/file in Dongle successful → Start execution

Failed to verify the data in Dongle → Stop execution

API	Description
moway.lib/moway.dll	Moway support developer to call relevant API to operate the Moway device: open/set, read/write the Moway device, etc.
SlcCrypto.lib/SlcCrypto.dll	With crypto library & API, Developer may use cryptographic algorithm in their project.

Sample: Sample available in the SDK for: C/C++ project, C# project, Java project, Delphi project. Developer may refer sample case to design the comprehensive protection scheme and integrated with your own software project easily.
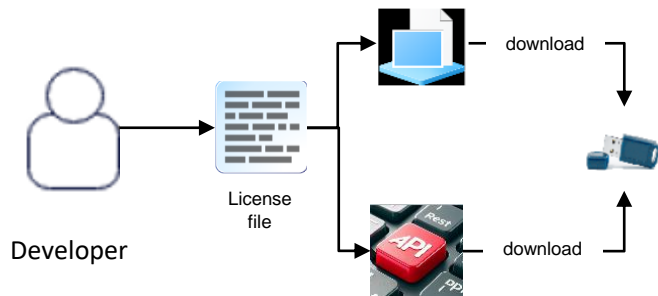
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Use case

1. Use DevTestTool to generate PID and import PID to Moway Device
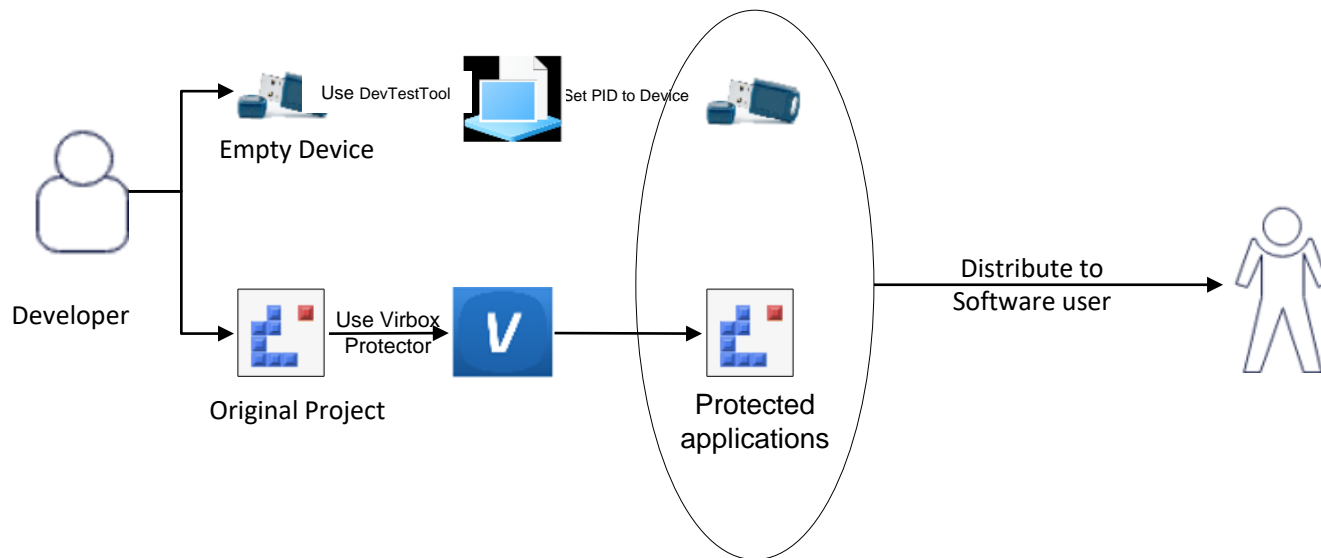
2. Input same PID to Virbox Protector and protect application

Applicable for developer to complete the instant & secure protection & licensing scheme
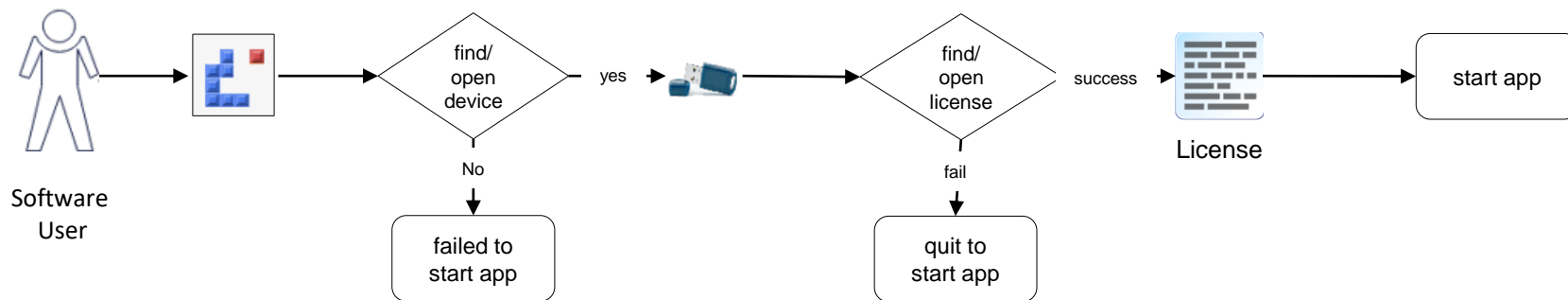
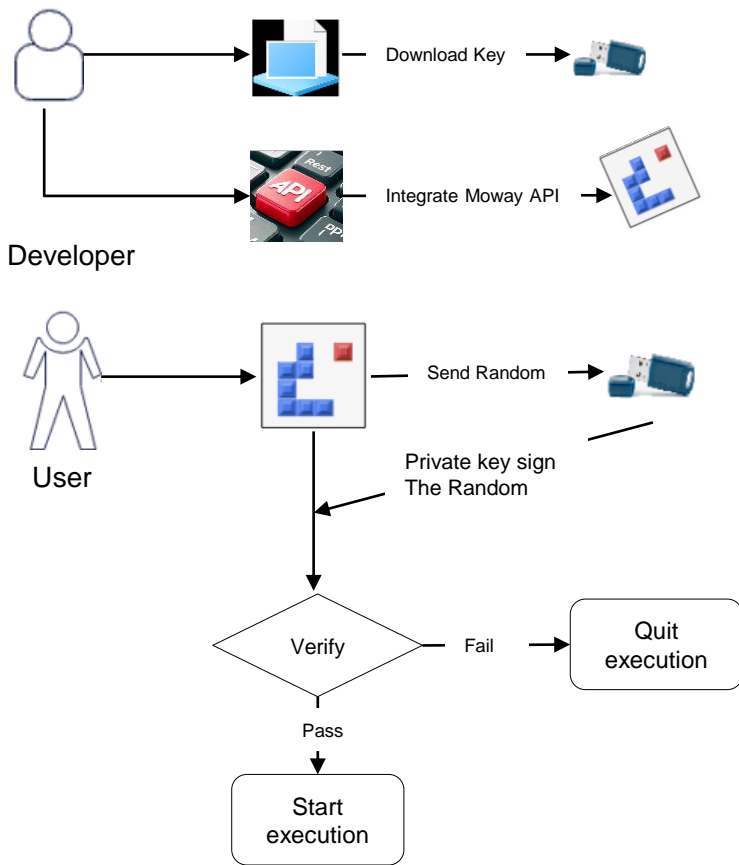# 2. As a Portable License container

Note:
Soft license binding with specified machine fingerprinting are popular deployed in software licensing. Developer also can use Moway device to store & bind with soft license as a license container. Much secured and portable.

License file, or other data file can be import/download into Moway device by use of DevtestTool or callAPI

The Soft license can be stored in secured hardware device as a portable license container

3. Design (Using Cryptographic Algorithm) Sign/Signature verification process to identify Genuine software

Developer

User

Download Key

Integrate Moway API

Send Random

Private key sign
The Random

Verify — Fail → Quit execution

Pass

Start execution

In the use case left, developer use the cryptographic algorithm (RSA/ECC) to design customized protection scheme- SIGN&VERIFY. to verify the executed software is Legitimate software or pirated.

1. Developer download the RSA private key into the Moway dongle;
2. Developer integrate the Moway cryptographic API with the project and use crypto API to access the private key stored in the Moway Device to verify; and protect the apps.

When user execute the protected application, the signing and signature verification process will be:
the protected application send a random number to Moway device.
The private key stored in the Moway device to sign this random number and send back to applications.
Application use public key to verify the response with the signature signed by the Moway device;
if verification success, the program continue to execution;
if verification failed, stop and quit execution
The signing and signature verification process can be used in the similar protection scheme and applicable for similar scenario.
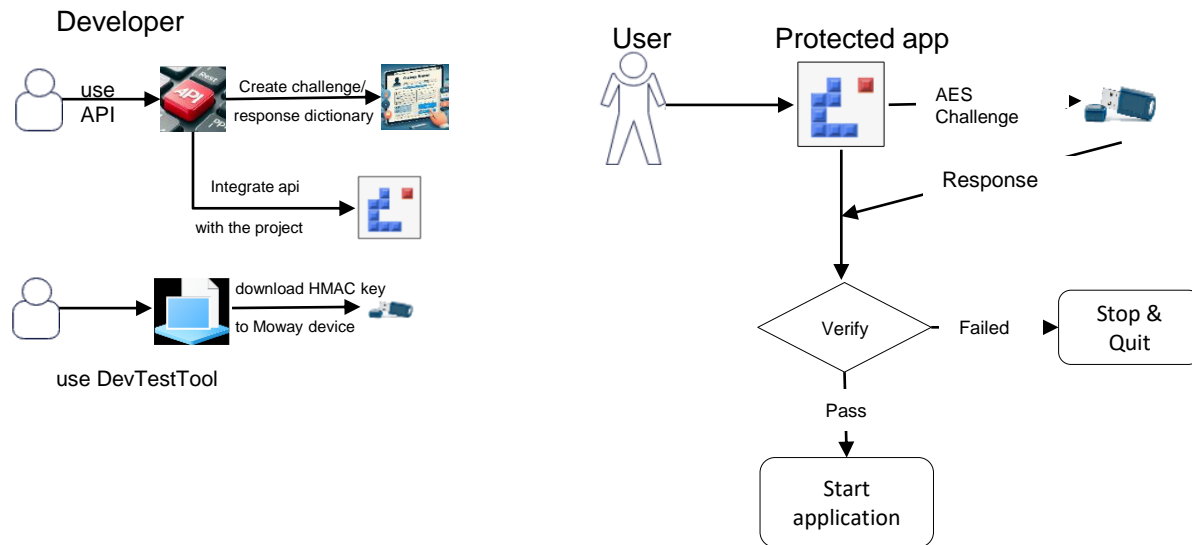
With Asymmetric cryptographic algorithm, developer can design a typical Sign & Signature verification mechanism which can be used in following scenario:
Verify the software is a Legitimate (genuine) software or pirate software;
Protect and identify if the data file (for example, the project file) being tampered or not;
Communication encryption, etc.

4. Challenge/Response Authentication (Symmetric Cryptographic Algorithm/API)

Developer

use API → Create challenge/ response dictionary

Integrate api with the project

use DevTestTool

download HMAC key to Moway device

User   Protected app

AES Challenge

Response

Verify → Failed → Stop & Quit

Pass

Start application

Moway support HMAC-SHA1/SHA256，AES, symmetric cryptographic to deploy Challenge/ Response authentication process

Developer use AES, Symmetric cryptographic algorithm and API to design authentication process based on Challenge/Response mechanism;

When challenge initiated, The application send a different challenge "string" to the Moway device; When Moway Device received the challenge string, and use the symmetric algorithm and **key kn** calculate the result and send the response back to application
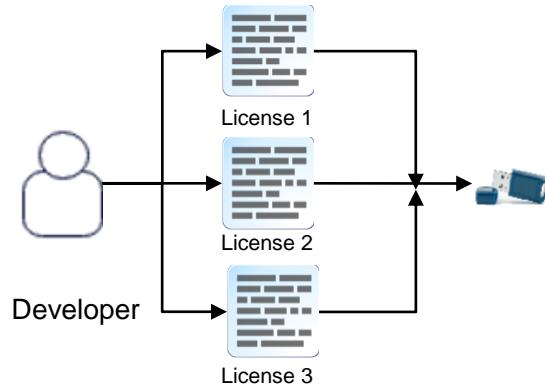Then the application will verify the response and start the app or quite execution.
Moway provides tunnel communication encryption functions to prevent third party to listen the "response" by interception or replaying.
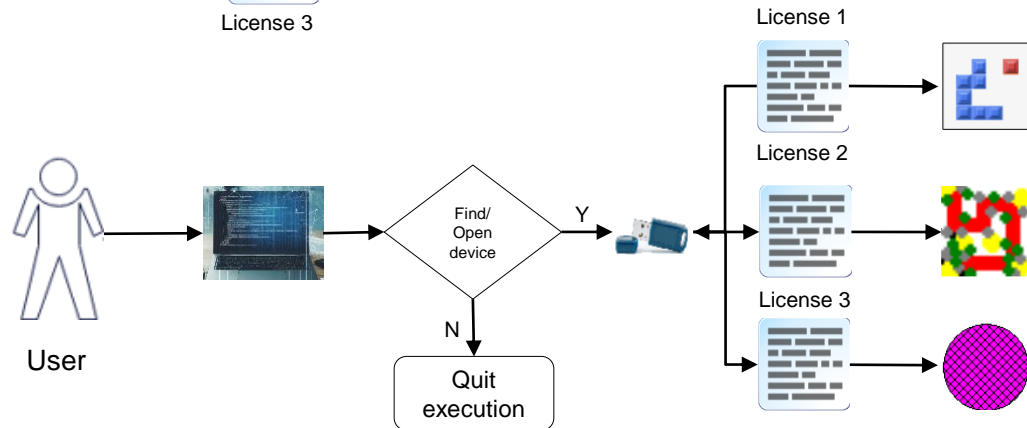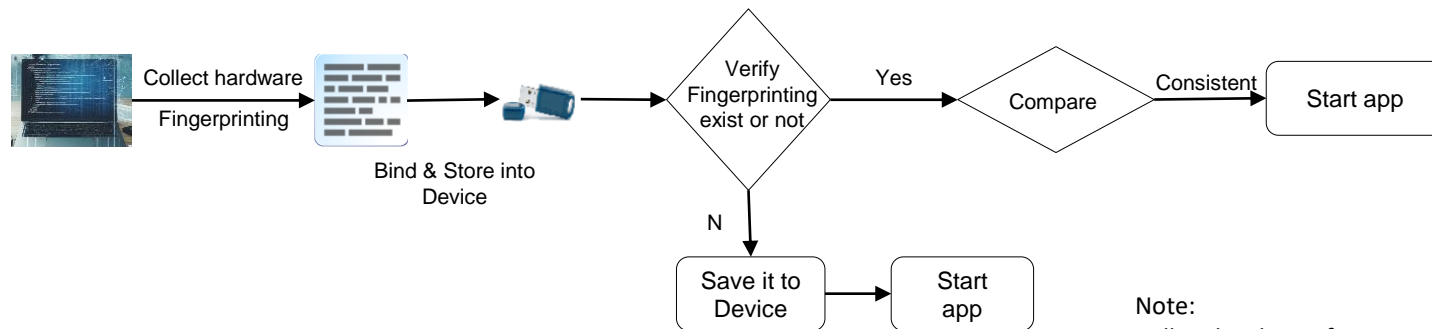
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Industry application

1. Licensing to each function model to CAD software

1. With large capacity (8K/32K), multiple license file can be stored inside of Moway device to implement flexible license scheme.
2. Developer may implement comprehensive license scheme by use of multiple license file;

2. Binding with Manufacture device with Moway

Collect hardware
Fingerprinting

Bind & Store into
Device

Verify
Fingerprinting
exist or not

Yes → Compare → Consistent → Start app

N → Save it to Device → Start app

Note:
Collect hardware fingerprinting from manufacture device in the product line and store fingerprinting to Moway USB dongle.

Use Secured Moway USB device to bind manufacture device, which is more Applicable in product line, industry automation, in offline environment.

VIRBOX

Contact us

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With almost 30 years experience in software protection, licensing & USB hardware dongle designing & production, we support developer/device vendors to design & complete the comprehensive protection & licensing scheme.

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Successful stories

Successful Case