Quick Start Guide

Software Protection and Licensing with Elite 5

Version 2.0

VIRBOX

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The specifications contained in this document are subject to change without notice.

Documentation Improvement

Any suggestion to this manual from you are welcome, We are glad to hear any feedback from you which will help us to continuously improve the documents quality which will support and serve the developer to protect software products more efficiently.

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About this document

This document is designed to help Software developer to quickly start to use Virbox Protector and Virbox Developer Utility (Local License Manager) to protect software and issue license to hardware Lock (Virbox Elite 5 dongle) and describes the operation process step by step for how to sign up in Virbox Developer Center (Virbox LM), how to protect software by use of Virbox Protector and issue the license to Virbox Elite5.

Target User: R & D or Operation staff of software developer who is responsible to protect software and license issuing;

Requirement & Environment:

■ Software developer has been upgraded to be standard developer in Virbox Developer Center;

■ Software developer has installed "*Virbox Protector*" in computer;

■ Software developer has installed *Virbox Developer Utility* in computer;

■ Software Developer has Virbox EL5 **Master Lock** and **User Lock** in hand;

Objective: Software developer will have basic skill to use Virbox Protector to protect software application and issue a license to hardware lock: Virbox El5 dongle;

For Software Protection and Licensing with Virbox El5 Network Mode, please refer to:

Quick Start Guide:

Software Protection and Licensing with Virbox EL5 (Network Mode);

For Software Protection and Licensing with Soft license and Cloud License by use of Virbox Protector and Virbox Developer Center (Virbox License Manager), please refer to:

Quick Start Guide:

Software Protection and Licensing with Virbox Soft Lock (Online);

Quick Start Guide:

Software Protection and Licensing with Virbox Soft Lock (Offline);

Quick Start Guide:

Software Protection and Licensing with Virbox Cloud Lock;

For Software Developer which use Unity 3D to develop Gaming software or other software applications, please refer a series documentation of Unity 3D Quick Start Guide separately.

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1. General Introduction

Virbox Elite 5 is the best choices for software developer who want to protect the copyright/IP of their software application by use of hardware Lock protection; By Choose of Virbox Elite 5 solution, it will supports developer to protect software with most security technology, best performance and easy to use feature to protect software. And it will help developer to accelerate software protection and licensing process and quickly launch the software accordingly. It will not only save developer's workload but also increase security level of software application.

EL5 Acme User Lock   EL5 Master Lock

Virbox Elite 5: Virbox El5 includes **Master Lock** and **User lock**, **Master Lock** is Unique Identity for each Software developer, it is mainly used for software encryption and protection, issue license and issue upgrade package to EL5 user lock, it is necessary to use master lock and user lock in right way, in other words, Master lock only valid to issue license to the user lock from same software developer. Master Lock can't issue license to the user lock belongs to other software developer.

When **Master lock** is delivered to developer from factory, it has an initial PIN, Developer need to modify the initial PIN with new PIN before first use.

Note: You can find the initial PIN code from: **Virbox Developer Center**>**Hardware Lock**>**Developer Master Lock**, for more details for how to find initial PIN code and modify and Verify the PIN by use of Virbox Developer Utility, please see the document "*Virbox EL5 PIN Setup*" separately.

Virbox EL5 User lock, EL5 User lock is the license repository in which license file issued by Software developer, when software user want to execute the encrypted and protected software in the software user computer, software user need to insert EL5 user lock to verify license issued by software developer.
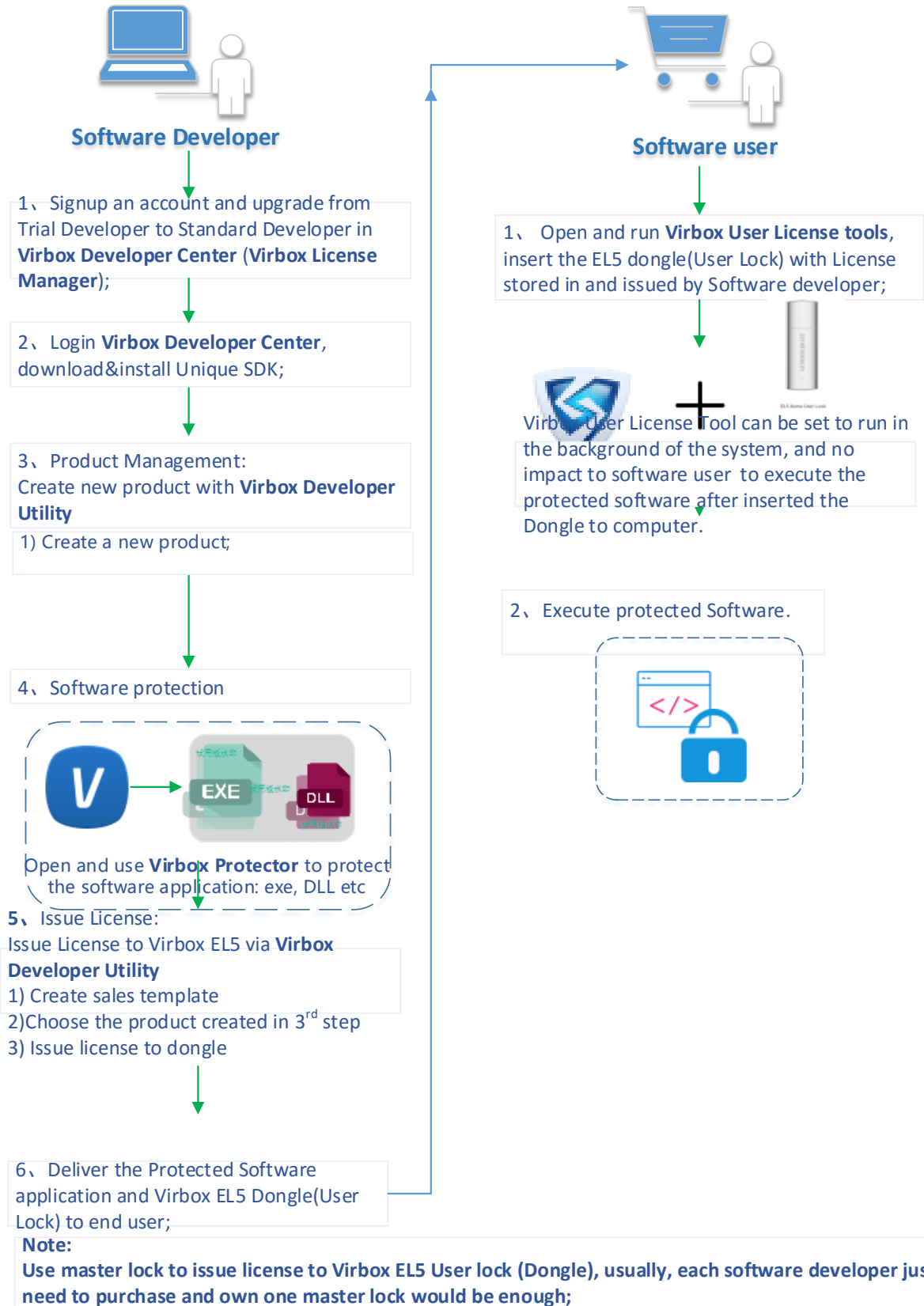
Installation and working Environment:

Windows: Support Windows XP sp3 and above version;

Linux OS: Support Debian, Ubuntu, CentOS, Fedora, OpenSUSE, Ubuntu Kylin OS

Mac OS: Support macOX10.9 and above version

The **Procedure** to Software Protection/Encryption, Licensing and deliver to the user are shown as blow:
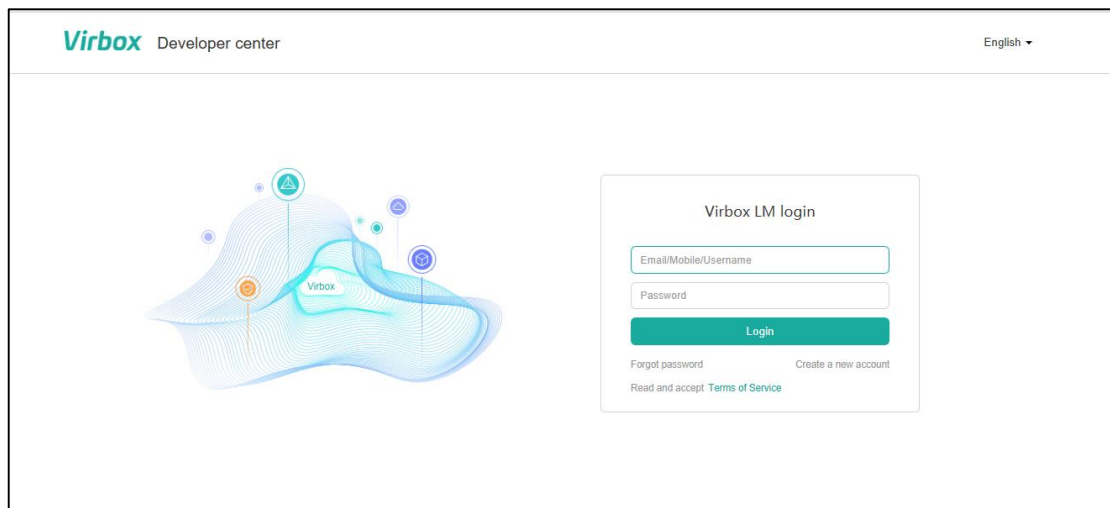
Evaluation- Protect&Licensing Process: Virbox EL5

Software Developer

1、 Signup an account and upgrade from Trial Developer to Standard Developer in **Virbox Developer Center** (**Virbox License Manager**);

2、Login **Virbox Developer Center**, download&install Unique SDK;

3、 Product Management:
Create new product with **Virbox Developer Utility**
1) Create a new product;

4、 Software protection

Open and use **Virbox Protector** to protect the software application: exe, DLL etc

5、 Issue License:
Issue License to Virbox EL5 via **Virbox Developer Utility**
1) Create sales template
2)Choose the product created in 3rd step
3) Issue license to dongle

6、 Deliver the Protected Software application and Virbox EL5 Dongle(User Lock) to end user;

Note:
Use master lock to issue license to Virbox EL5 User lock (Dongle), usually, each software developer just need to purchase and own one master lock would be enough;

Software user

1、 Open and run **Virbox User License tools**, insert the EL5 dongle(User Lock) with License stored in and issued by Software developer;

Virbox User License Tool can be set to run in the background of the system, and no impact to software user to execute the protected software after inserted the Dongle to computer.

2、 Execute protected Software.

2. Virbox Developer Center

2.1 Why Software Developer need to sign up a developer account in Virbox Developer Center (Virbox LM)?

■ Virbox LM use Unique SDK and dedicated API, Digital Certification of Authorization to protect Software application. Before use the hardware lock to protect your software, Developer need to sign up on Virbox LM and apply to upgrade to be standard developer, then download the dedicated SDK for each Standard Developer.

■ The only way for Software Developer to obtain unique and tailor made SDK is signup in the Virbox Developer Center (Virbox LM) and download SDK;

■ Virbox Developer Center and Signup and sign in link:

https://developer.lm-global.virbox.com/reg.html

https://developer.lm-global.virbox.com/login.jsp

The Virbox developer Center will be shown as blow:
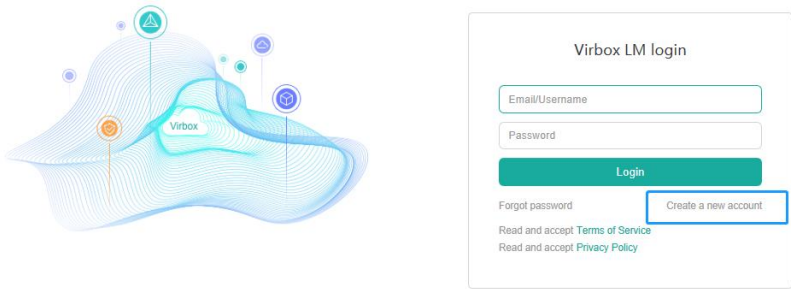
If you do not have an account, you need to sign up in **Virbox Developer Center**.

Note:

Please Read and Accept "**Terms of Service**" and "**Privacy Policy**" of Virbox LM before signup.

The fields with red mark are required.

After signup in Virbox Developer Center, you can login and download a trial version SDK for testing and evaluation, like the picture attached:
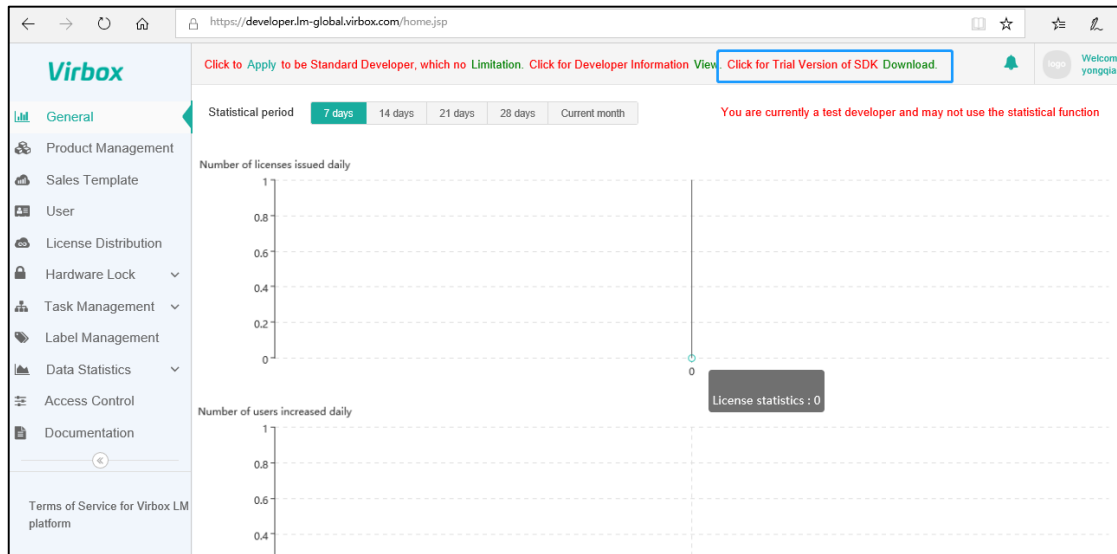
■ Virbox provides 2 version of SDK to Software Developer: **Trial version** and **Standard version**.
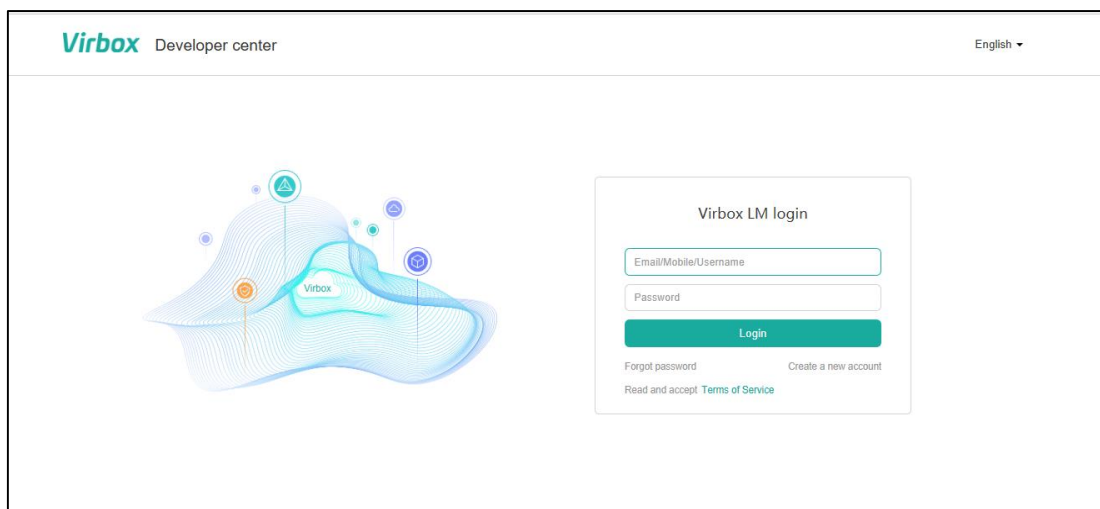
Standard version: Every standard version SDK have unique developer ID, API Password, private key and matched digital certificate of Authorization. All of the developer's SDK (standard version) are different. There will be no general crack solution available for hacker to software application protected by Virbox.

Trial Version: The Developer ID, API password, private key and certificate of authorization of trial SDK are same for all trial developer.

Note: Trial SDK use general SDK, CA, Private key and API password, Trial SDK will be only used for Developer for internal evaluation and would not be used for official software protection.

## 2.2 Login Virbox Developer Center for SDK

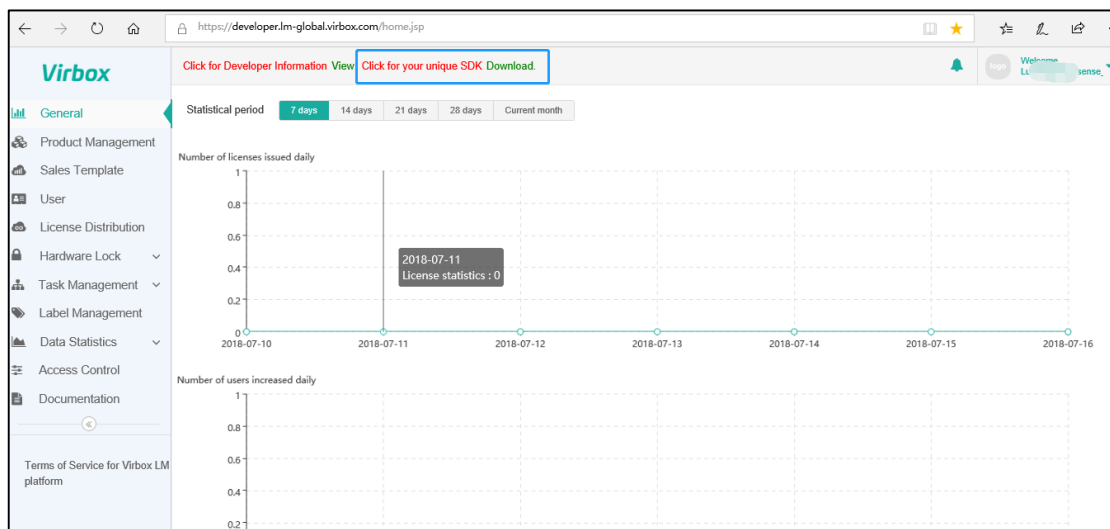Sign in to Virbox Developer Center with your account ID and password.

2.3 Apply to be a standard developer

Download SDK:

- After successfully signup an account in the Virbox Developer Center, (now your account is trial developer account), you can download a Trial version SDK, this version is for learning how to use Virbox Solution to protect your software and issue license and evaluation. Trial version SDK is not used for official publishing software protection and software distribution.

- If evaluation is successful and you want to choose Virbox to protect your application and issue license, please apply to upgrade your trial account to be "**Standard Developer**" account via Virbox Developer Center. You may get unique SDK after upgrading to a standard Account. Please be patient waiting for approval, it will take short time by Virbox Developer Center.
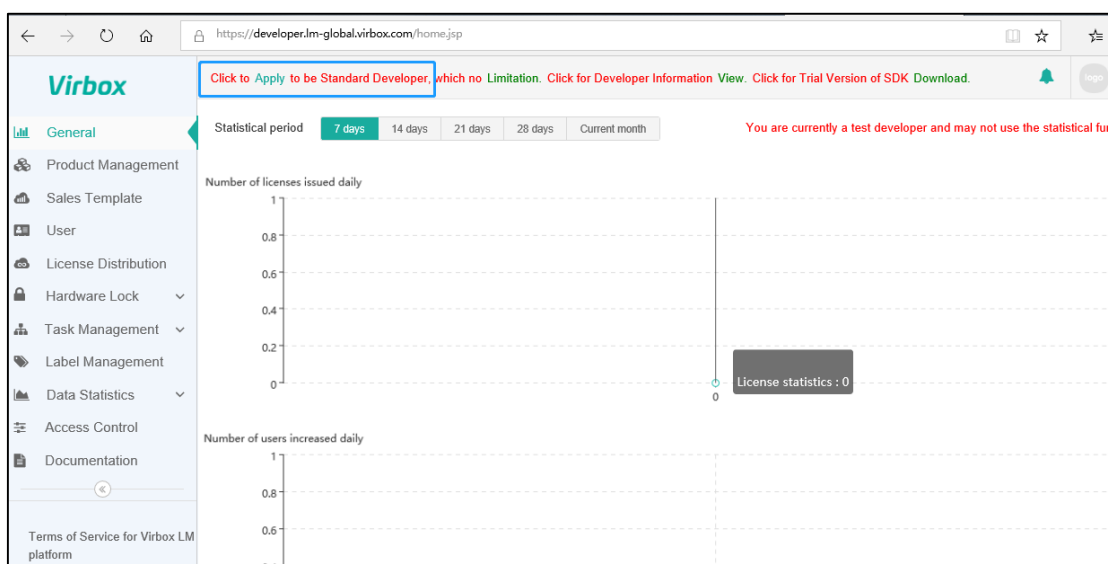
In the picture blow is a standard account and the place to download a standard SDK:

2.4 Virbox SDK

Developer may download and obtain the latest version of Virbox SDK from:

https://developer.lm-global.virbox.com/home.jsp

Download and install your SDK package in your computer, it will create 2 folder under directory of "C:\Program Files (x86)\senseshield: ss and ss_dev"

senseshield: This folder reserved and contains following software tools for Software users:

- **Virbox User License Tool**
- **Driver of Virbox EL5 dongle**
- **Log File**
- **Configuration File**

senseshield_dev: This folder reserved and contains following software tools for Software Developer

- **API sample lib**, support multi Program language.
- **Developer Utility** (Developer Manager Tool).
- **Virbox Protector** (this is the tool for Developer to wrap/Envelope/Encryption for software be protected).
- **Manual**: **Virbox Developer Guide** and other Virbox Documents
- **API Assistant**: Online help tool for Software Developer.

Take **Windows 10** computer installation as an example, it will create shortcuts in the start menu, and the senseshield and senseshield_dev folders can be seen in the start menu.
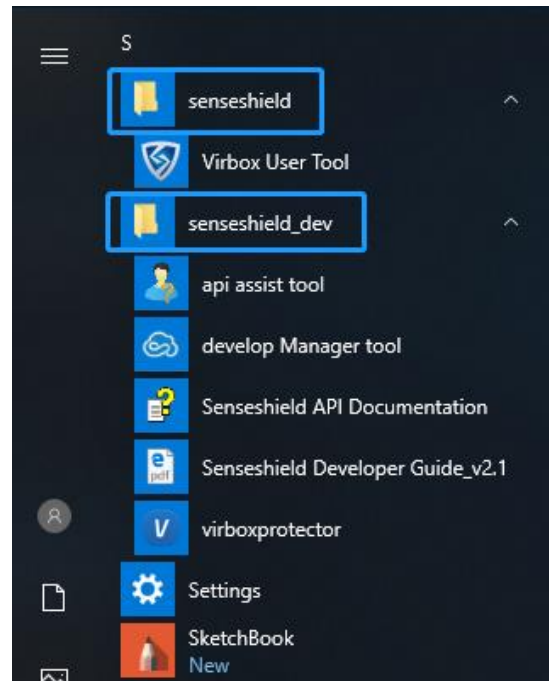
3. Product Management

3.1 Product Management by use of Virbox Developer Utility

**In this chapter we will use Virbox Developer Utility (Virbox Local License Manager) to create new Product**

Usually, there are more than one software product need to be protected, licensing and distributed to software user for one Software developer. So it is necessary for Software developer to well plan product ID for each product at the beginning phase. In order to avoid misunderstanding and confusion in the future.

What's more, it is also quite important for the Owner of software developer to setup a Principle to Product Management in advance, since it will also make some difficulty for product management and maintenance in future in case without well planning for product management due to R&D and operation staff left company.

The **following steps** will introduce how to create and manage a product with **Virbox Developer Utility**.

- ■ Please Open Virbox Developer Utility.

- ■ Create a New Product in the "**Product Management**" of Virbox Developer Utility by click "**New**":
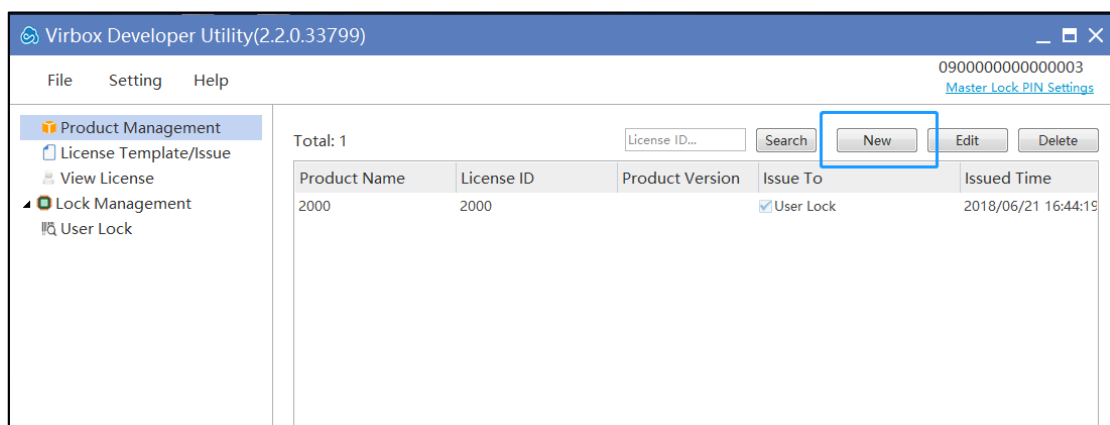
- ■ Define a **Product Name**, this Product name must to be correspondence with actual software product or the product's function, here we take a product named "**XYZ**" as an example;
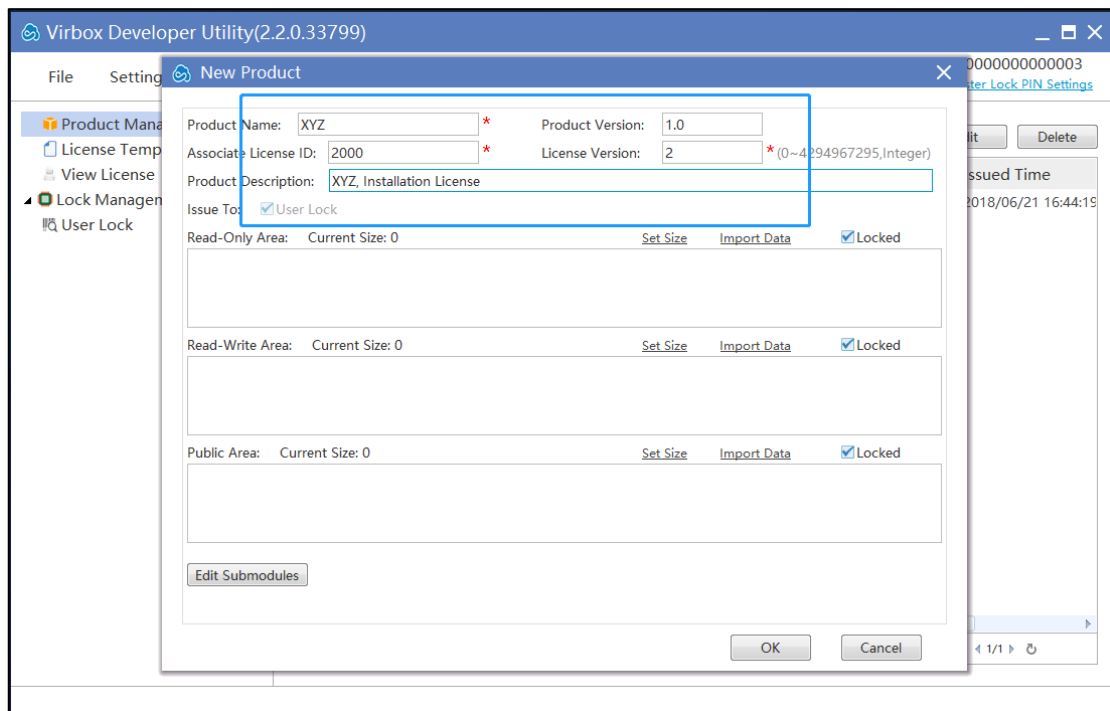
- Define a **License ID** to this product or to define License ID to each functions of this product, License ID is key concept for software protection and encryption, license ID is unique ID represent one software or for one functions or one software modules need be protected and encrypted. License ID could be setup to be an executable software, a software module or even to be a function such as "**Printing**" or "**Save**" functions. Of course, License ID could also be setup and defined for a whole software package, depends on software sales strategy decided by software developer. Here we define it to be "**2000**".

Note: License ID defined here must be in line with the License ID input when protect software by use of Virbox Protector, and it is also necessary need in line with license issue to Virbox El5 dongle later. And then the software user can verify license and run the protected software successfully.

- **License Version** : Marked for license version in case for future license upgrade or update, this can be defined by software developer, this is help for license version management;

- **Product Description** (Optional): Input short description for the product or one kind of function of the software that to be protected, this information will be shown in Virbox User License Tool;

- **Product Version** (Optional): Marked product version, this can be used for product version management for Software developer;

Note: For new starter of Virbox Developer Utility, you can skip this part to next chapter.

Each license ID can be attached with three data areas to store license-related data. The three data areas are, **Read-Write** (RAW), **Read-Only** (ROM), and **Public** area (PUB). Every area size can be set up to 64Kb. Corresponding to different access attributes to adapt to different application scenarios.

Read-write area: This area can be **read** and **write**. For example, some data that needs to be saved during the software operation can be stored here.

Read-only area: This area can only be read. For some configuration file, or other file that you do not want to be changed by other people, you can store it here.

Public area:

Both Software users and developers can see this area, such as the product name or some information about the product that can be shown to software users, you can put it here.

Note: For how to use these three area, you can see the related document for detail.

So far, Product Creation has been completed, if you have more than one software product need to be define and create, please repeat above process ,next chapter we will use "**Virbox Protector**" to protect the software.

4. Protect/Encrypt Software

4.1 Virbox Protector

To protect the software we will to use "**Virbox Protector**".

Virbox Protector is the latest envelope tool for software protection and encryption, it provides top security level to the software be protected with this tool, it integrated multi technology including **Virtualization, Obfuscation, Compression, Code transplantation** and **Code Snippet** and **Encryption** to protect software and is flexible and easy to use for software developer. Developer even can protect software with top security level without any kind of coding which will save lot of workload for developer. Developer may issue license to Virbox El5, Soft license or Cloud License to software user which use the Software protected by **Virbox Protector**.
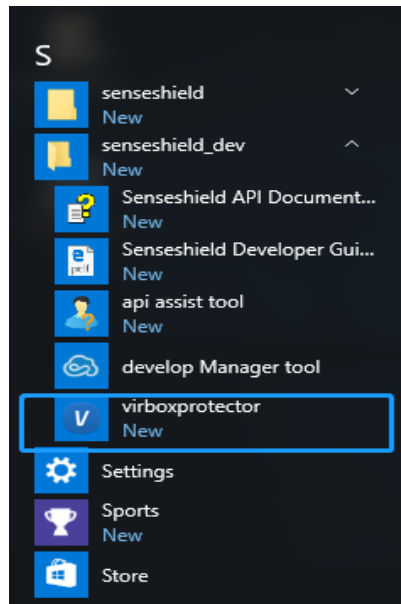
4.2 Use Virbox Protector

Also take Windows 10 as an example,
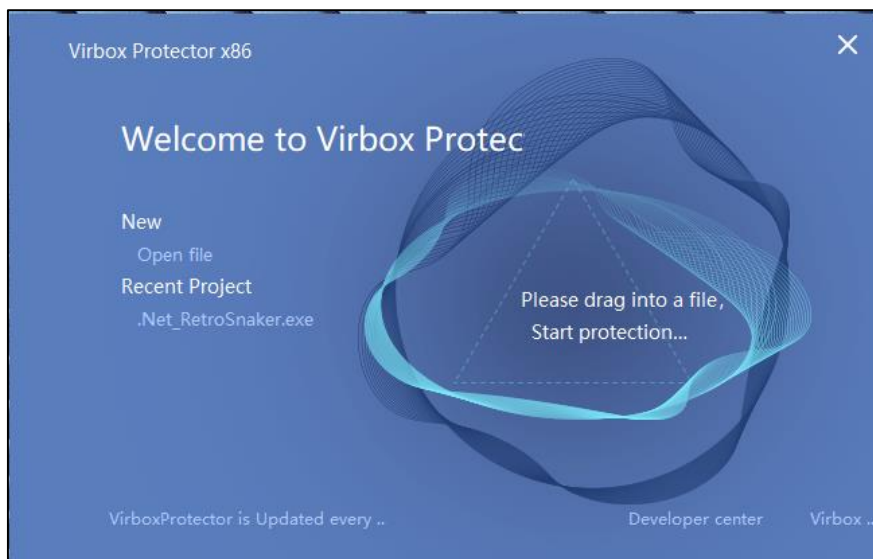
Please "**Exit**" Virbox Developer Utility first if Virbox Developer Utility still open, because this software may occupy the EL5 dongle.
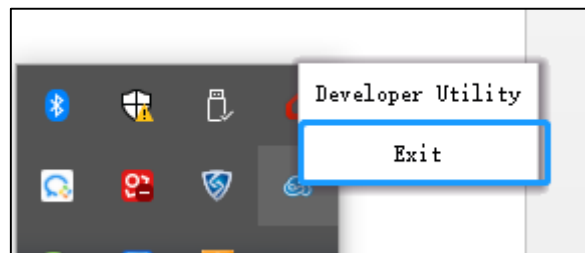
Open the software shown in the picture:

The appearance is like this:

Application can be protected with Virbox Protector:

Windows application: **EXE** and **DLL**.

Plugin maybe protected with **Virbox Protector** is:

AutoCAD ARX, Revit etc.

Program **Language** may protected with Virbox Protector:

✓ C	C++
✓ VB6.0	VC6
✓ VC2003,VS2005-VS2017	Delphi7 DeliphXE-XE10
✓ BCB6.0	C#
✓ .Net	Java
✓ ARX(AutoCAD)	Unity3D
✓ Revit(Plugin)	

Virbox Protector is fast Deployed Protection/Encryption, without any coding Competence, All Protection/Encryption Option can be setup via Virbox Protector;

Virbox Protector is suitable for fast deployed encryption and protection to your software application, software developer may protect software by use of Virbox Protector through setup/configure each option of Encryption/Protection in the Virbox protector without any coding effort for developer, which still can enhance security level.

For More detail operation instruction to Virbox Protector, please refer:

📖 "*User Manual: Virbox Protector*"

Software developer may obtain latest version of Virbox Protector via below link:

https://developer.lm-global.virbox.com

4.3 Setup Virbox Protector ("License Configuration")

Here we will take a snake application as an example, which is a .Net program.

■ Drag the software you wanted to protect into the protect area.

■ Inset Virbox Master Lock into the USB slot of your computer, (select the Master Dongle in grey color case, if you have purchased **Virbox EL5 1+1 package**).

Note: Master Lock (Grey) is used for Software protection, Licensing and upgrade, would not be and can't be use on software user's side;

Every Software developer has 2 kinds of Master lock, one master lock is physical hardware lock, another master lock is the "Developer Hosted Lock" hosted in the Virbox Developer Center (Virbox License Manager), the Developer Hosted Lock" is the mapping of the Physical Master lock in the Virbox Developer Center. Considering Security Issue, it is mandatory to keep your account, password of Virbox Developer Center in most

security.

- ■ **License configuration:** In this section, we will introduce the License configuration process for the product which created in Chapter 3:
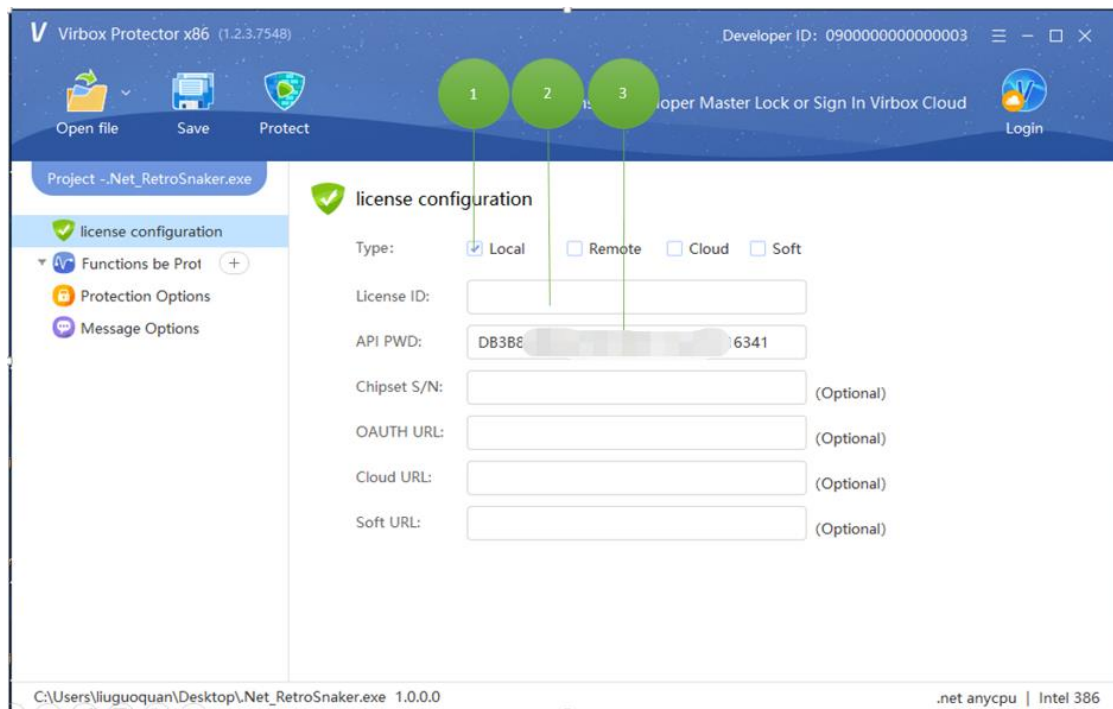
- ◆ Select **License Type**: Local Hardware lock;

  (You also can issue license to same hardware lock with Network Mode (Select "**Remote**" by use same hardware lock, for more detail, please refer Quick Start Guide: "*Software Protection and Licensing with Elite 5: Network Mode*".

- ◆ Input **License ID**, i.e. The License ID you input must be in line with the License ID you have input and created in Virbox Developer Utility in previous step (License ID Setup in Virbox Developer Utility to create a product, in chapter **3.1**);

- ◆ Input **API Password**. (If you don't know how to get an API password, please refer the Tips blow.

Tips: To get API password, you need to login develop center and click" **view**" shown in the figure blow.
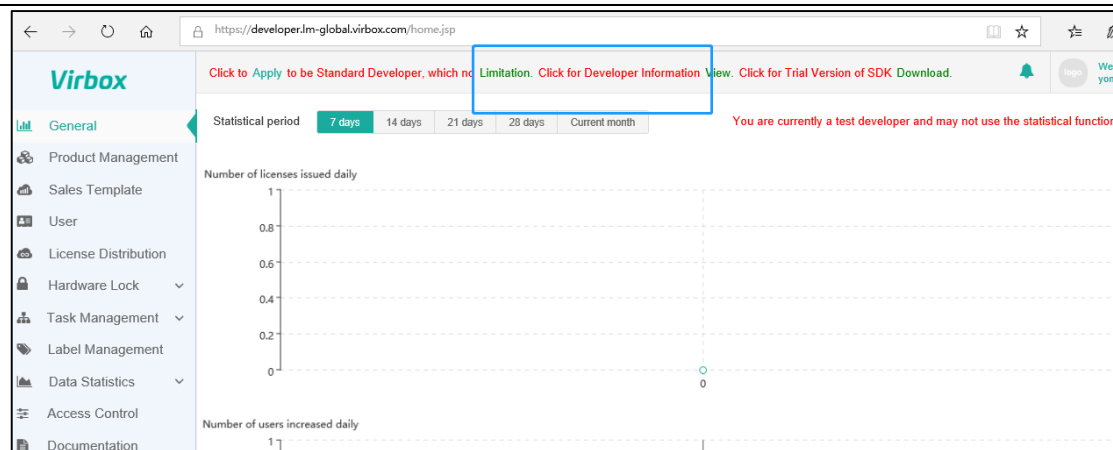
Click "**view**", you can copy it here.

◆ **Chipset S/N** (Optional): If you input Chipset S/N here, then protected Software will be only valid and executed with lock with corresponding Chipset S/N in software User Lock.

## 4.4 Protection Setup by use of Virbox Protector

Developer can configure following parameter before software protection according to specific software features, functions, etc.

- **Select Functions be protected**;
- **Setup Protection Options**;
- **Setup Prompt Message Information;**
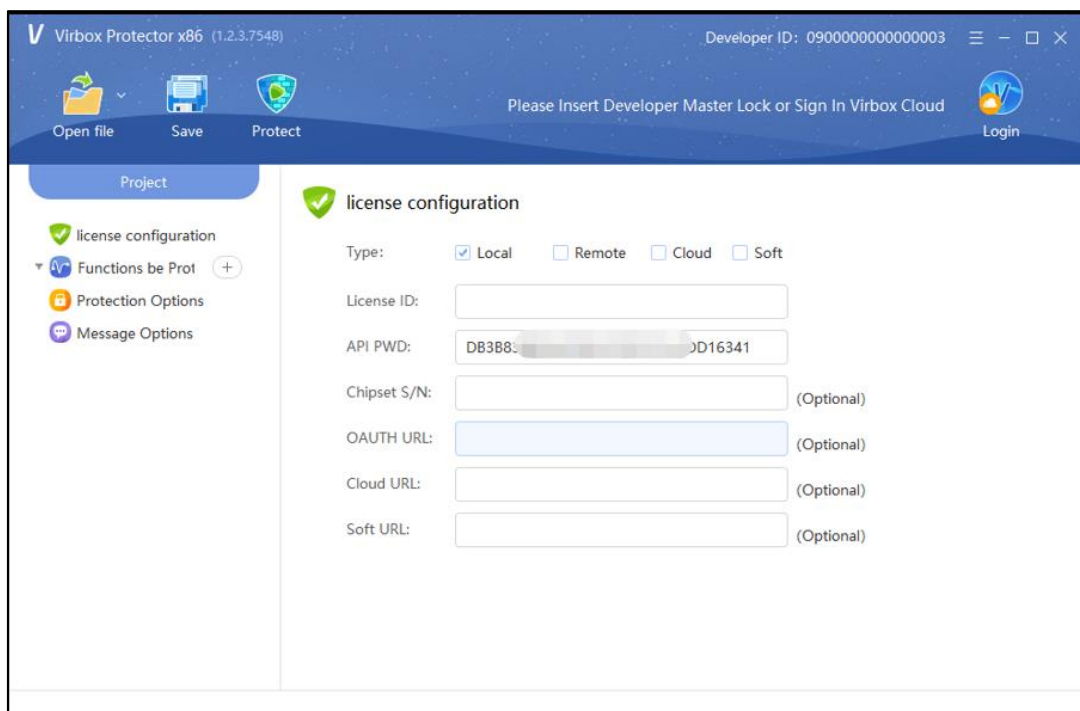
The following are the detail explanation and configuration.

4.4.1 Select Functions to be protected
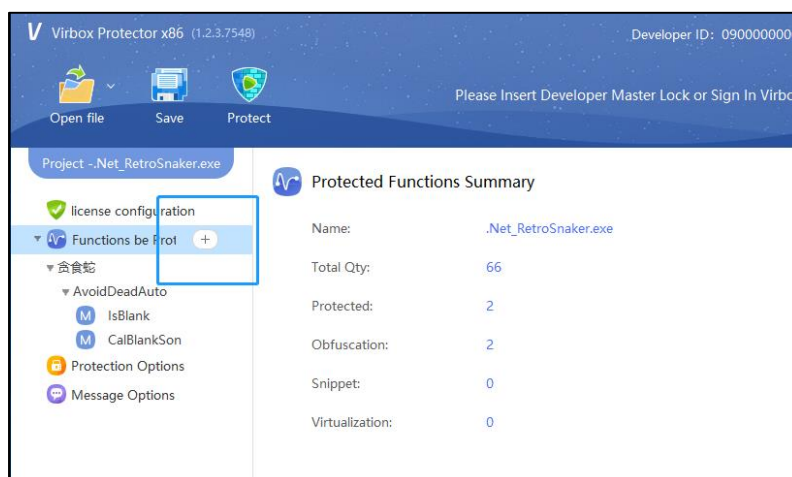
Click "**+**" (See picture attached). Usually, software developer need to balance the performance and protection level before software protection.

Note: Be careful to select and protect these frequently called functions, since it may decrease software execute performance after protection and encryption.

The **Virbox protector** will list all of the functions used in this software in the left pane, and the functions called times will be displayed in right pane. We can also start "**Analysis**" functions by click "**Analysis**" before protect software to get the "Running times" as a reference before select function protection mode.
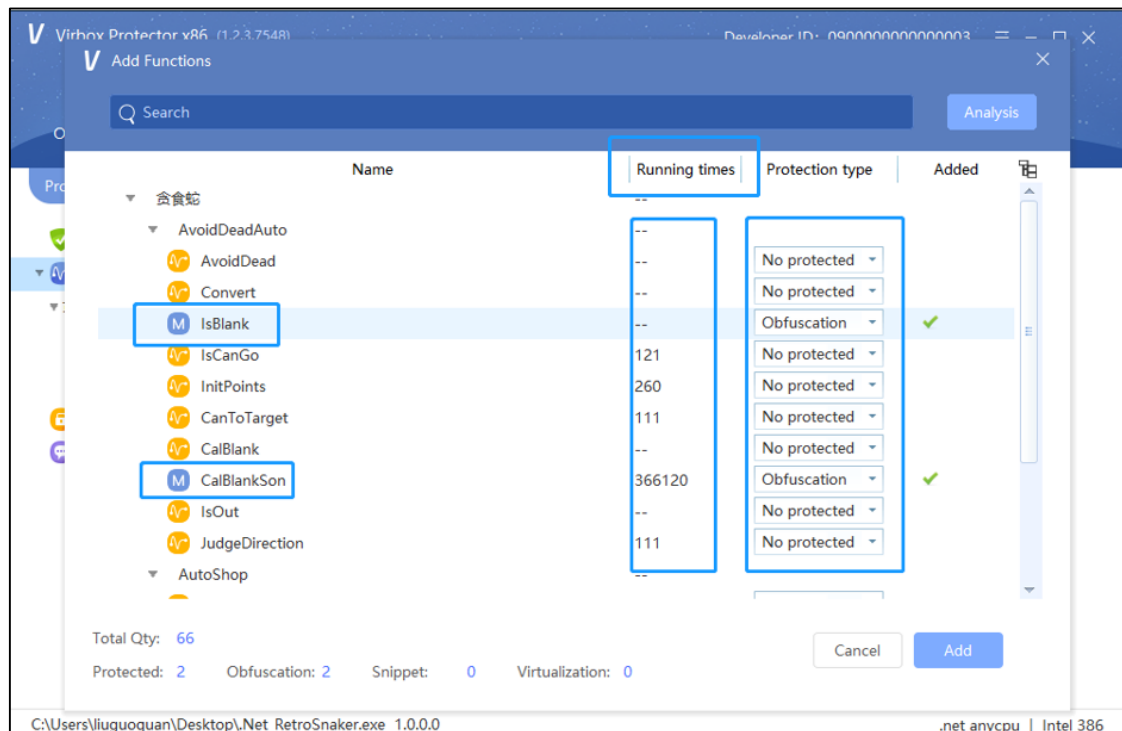
**Running times:** the Functions called times during this analysis process.

Usually, software developer need to balance the performance and protection level before software protection.
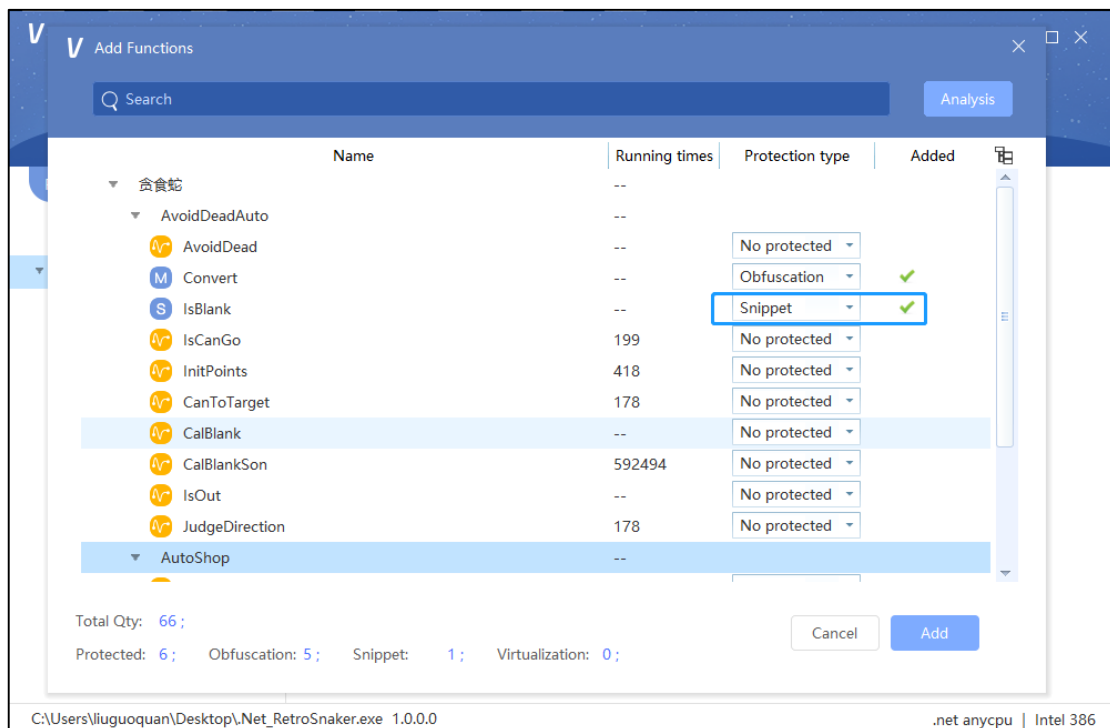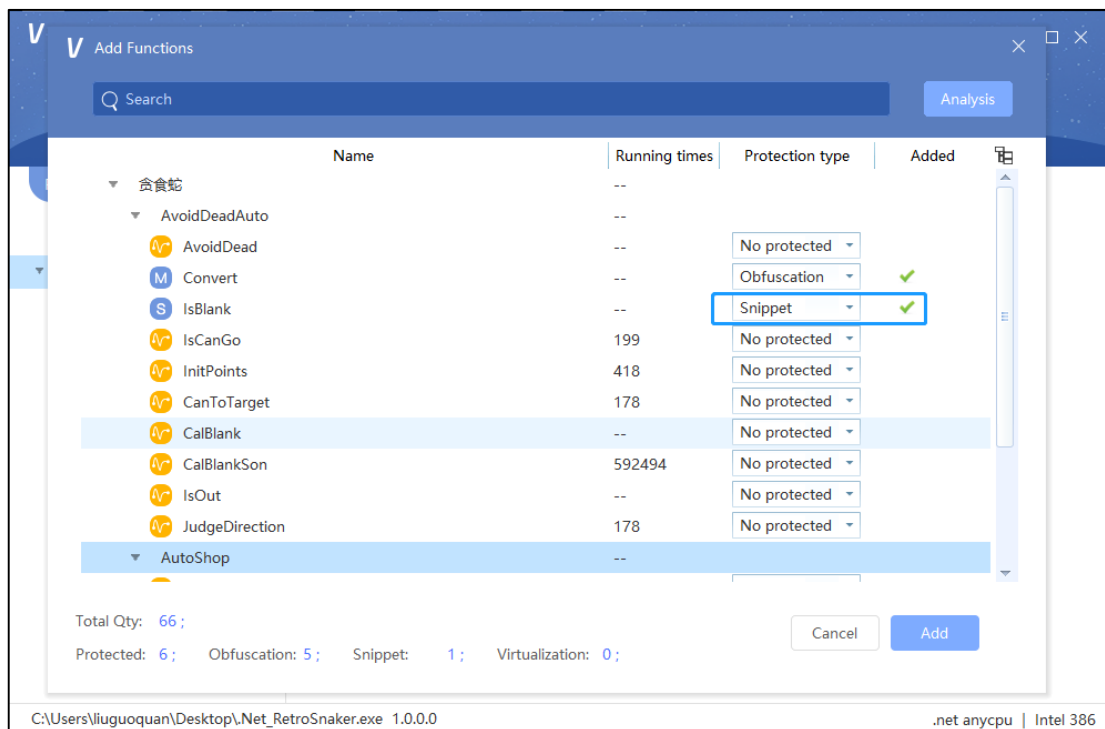

To protect the functions of the software, following functions protection option can be selected: **No protected**, **Obfuscation**, **Snippet**, **Virtualization.**

◆ For functions which are called frequently, Select "**No Protected**" option, since if you protect the functions which is called frequently, it will decrease execute performance when software executed;

Note: You will find "**Call Times**" for each function after press "**Analysis**" button, after you have run the software to be protected for some time;
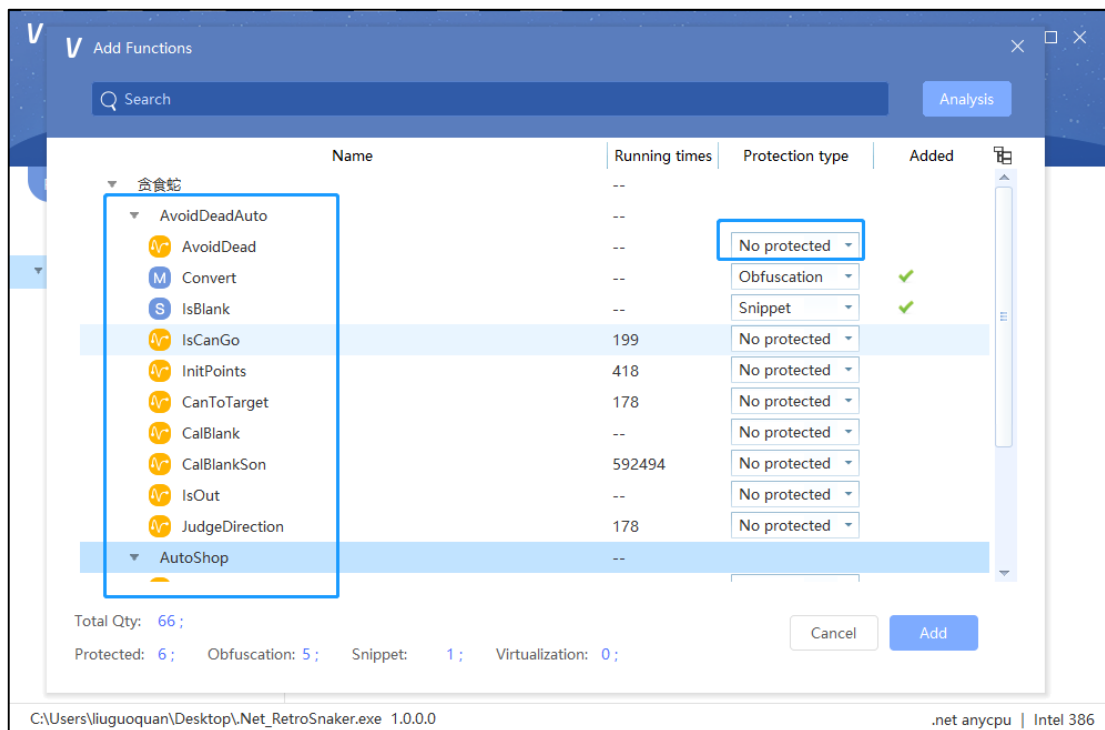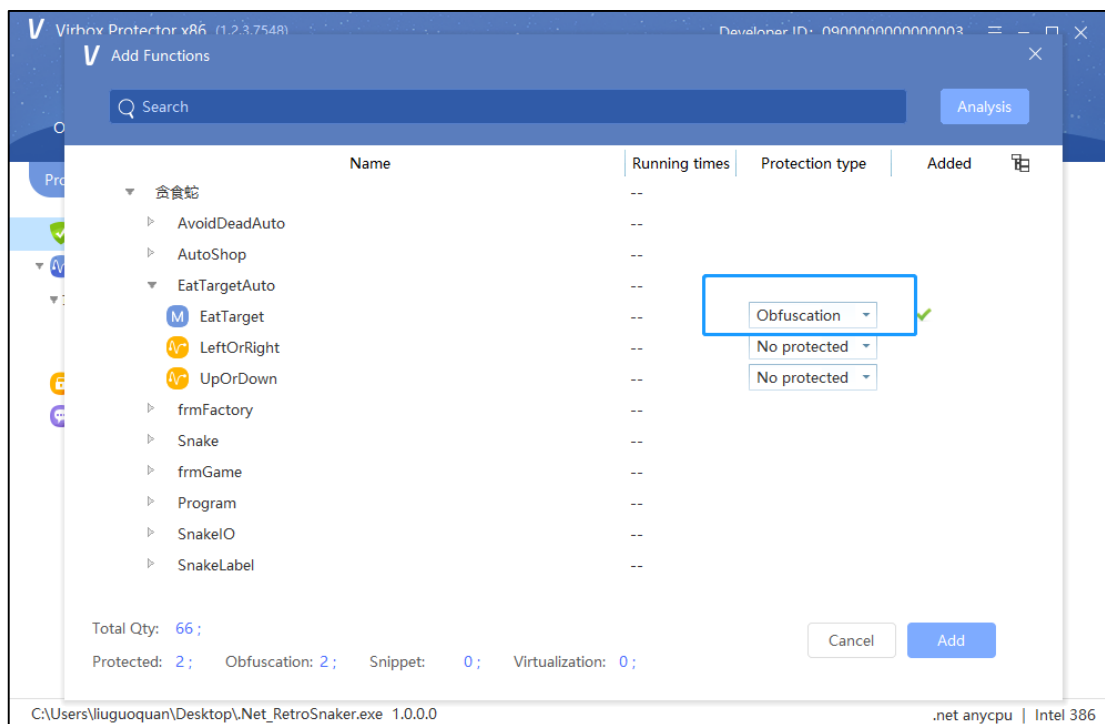

◆ Select "**Code Snippet**" Protection option for important Functions, which will increase protection level for those important functions, this will add security level.

◆ Select "**Obfuscation**": **Virbox Protector** will translate the code instruction into a stream of pseudo-code that neither the machine nor the human can recognize. When the pseudo-code executed, the software will interpret to restore the code into the original code. To let it executable.

◆ Select "**Virtualization**": Virbox Protector will compile instructions commands into virtual code and run them in the virtual machine.

Note: For **.Net** Programs, Support function protection options: **No protect, Obfuscation, and Snippet**;

For **Other** Programs: Support Function protection options: **No protect, Obfuscation, Snippet and Virtualization**.

Here is suggestion:

◆ Select "**Code Snippet**" Protection option for Important Functions, which increase protection level for those important functions or IP;
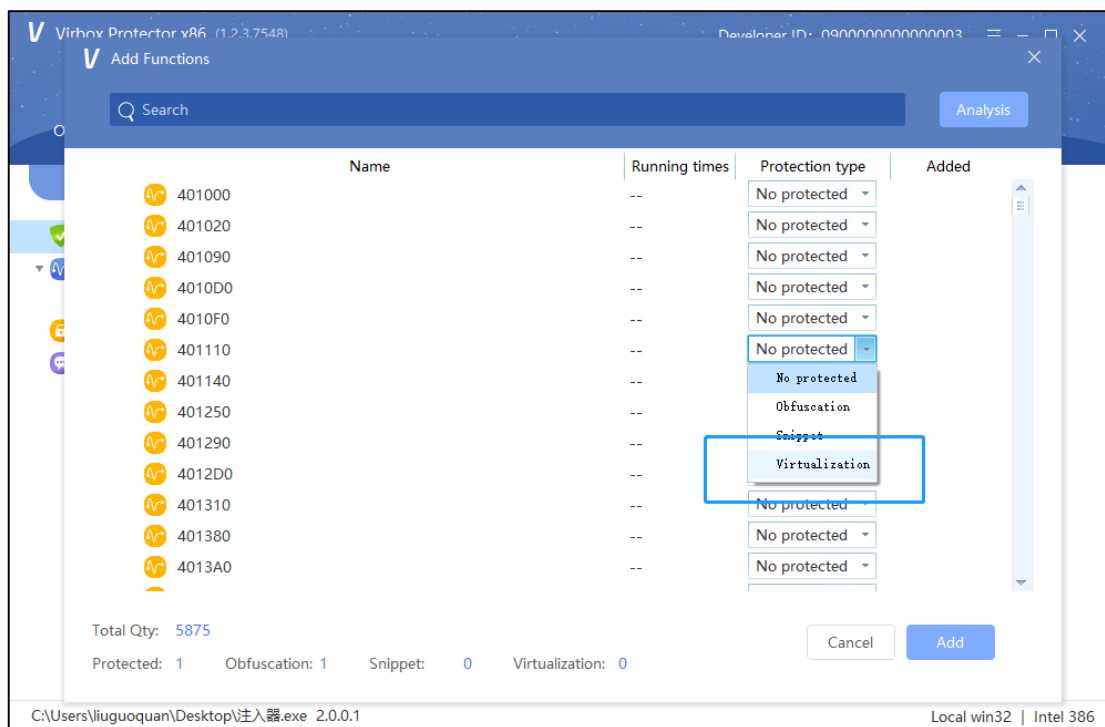
But do not select too many functions and protected with "**Code Snippet**", since it will decrease software execution performance when select too many functions be protected with this option. Because it will consume too much computer resource.

4.4.2 Setup Protection Options for protected software

Protection Option setting will be different for different program, Virbox Protector also provides "**Protection Option**" functions for professional developer when they protect software application, This "**Protection Option**" functions have little difference for PE (local program) and .NET application due to the difference of PE and .NET technology. Developer can select and setup these "**Protection Option**" in actual project.

For **.NET program**, following options could be set and selected:
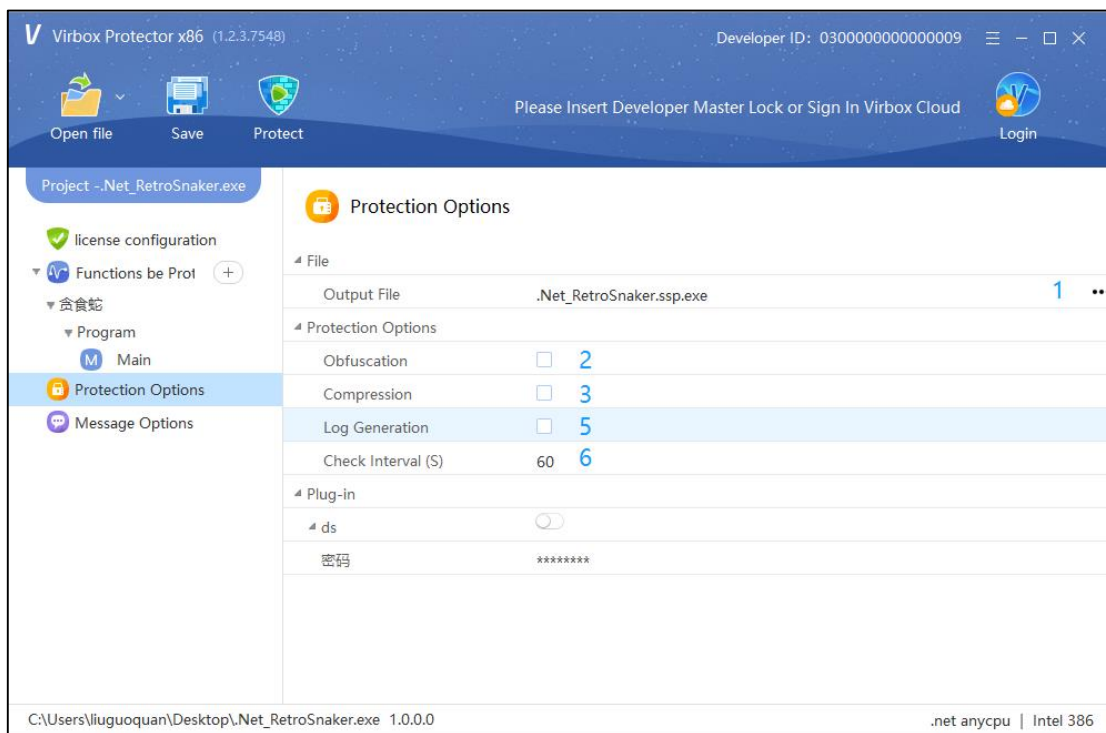
For **java** and other **local program (PE)**, following options can be set and selected:
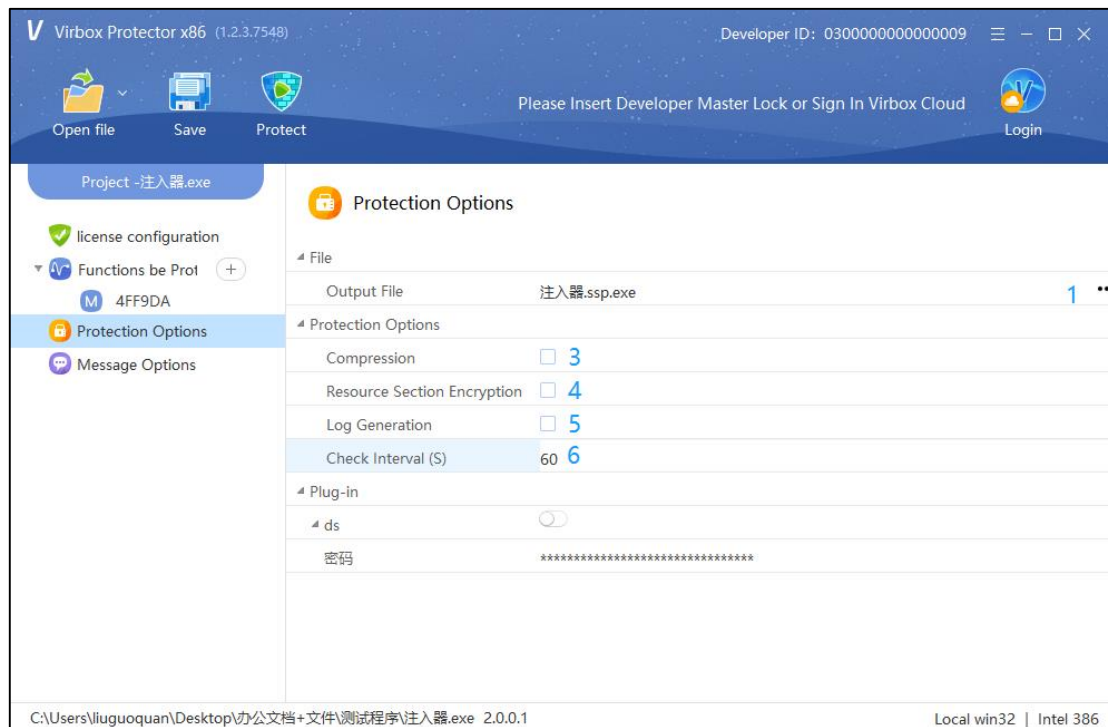
Press the "**Protection Option**"

1. **Output File**: Here you can change the output file path of the software.

2. **Name Obfuscation:** Obfuscation to each Functions name;

> **Note:** Only support .Net program, do not support IIS type program.

3. **Compression**: Compression means to compress the application after protection and reduce size of application, it will also prevents static anti-compile the software application by hacker who use static anti-compiler tools. When you select Compression: It will keep and control the size of protected software application not too big size. Also will enhance protected software's Security level after compression;

> **Note:** Do not support .Net dynamic library, ARX library compression.

4. **Resource Section Encryption:** Encrypts the resource section of the protected program, and requires the user to use the corresponding license to decrypt the program when executing the program.

> **Note:** Encrypt the resource section. Only local programs are currently supported.

5. **Log Generation**: Log file will be created when select this option, when the protected software have problem when it is running, the generated log will be helpful for trouble shooting;

6. **Check Interval:** (In Seconds): Setup license check interval in seconds. If no valid license has been found in next check interval, the executed application will either quit or prompt error message if developer setup prompt message. If developer set "**Check Interval**" time to be 0 second, then the application will not check license.

> **Note: Plug-in**, this is for **Resource Section Encryption,** if you want to protect resource, you need to open this option. For detail information please refer the related document.

4.4.3 Message Option

◆ Setup the prompt message information to software user when License expired, includes setup the title of Message, time left before license expired, left counts (Usage Consumption) and other message.

This is helpful for software user to understand software operation status and locate the problem happened when the protected software are running.
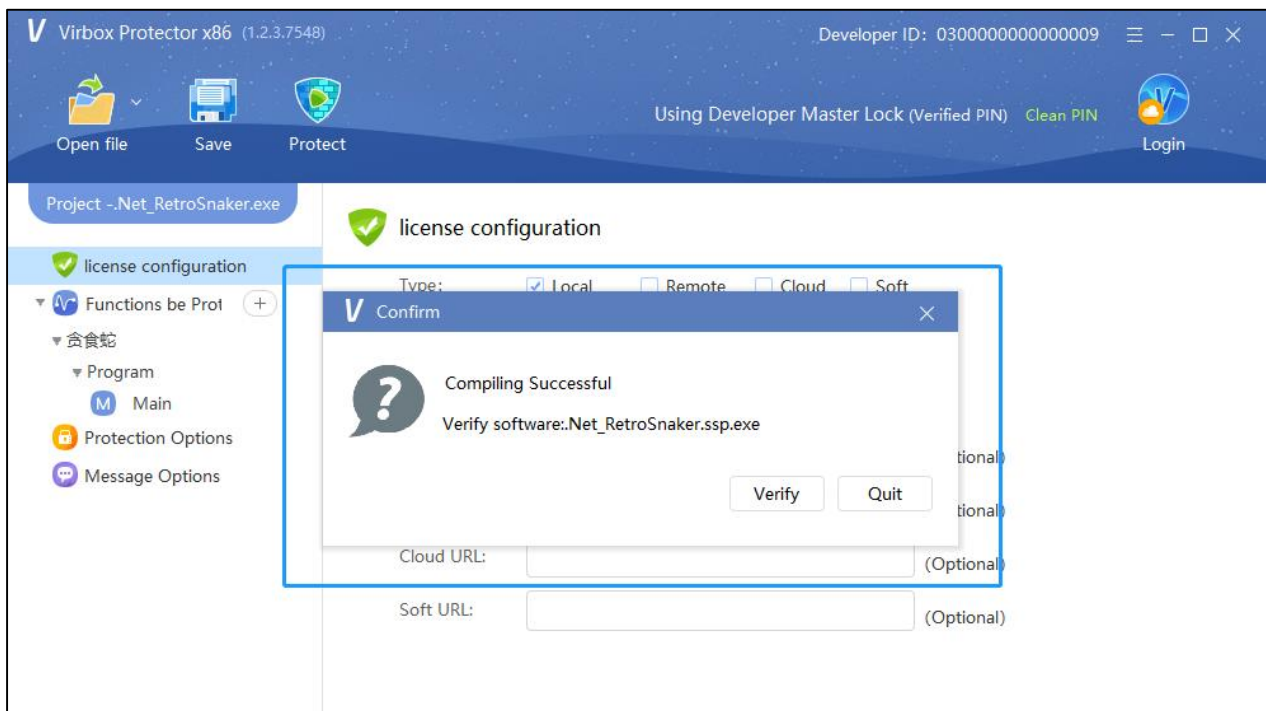
> **Note:** Please set language to **English** as the arrow remind in the picture, default is Chinese.
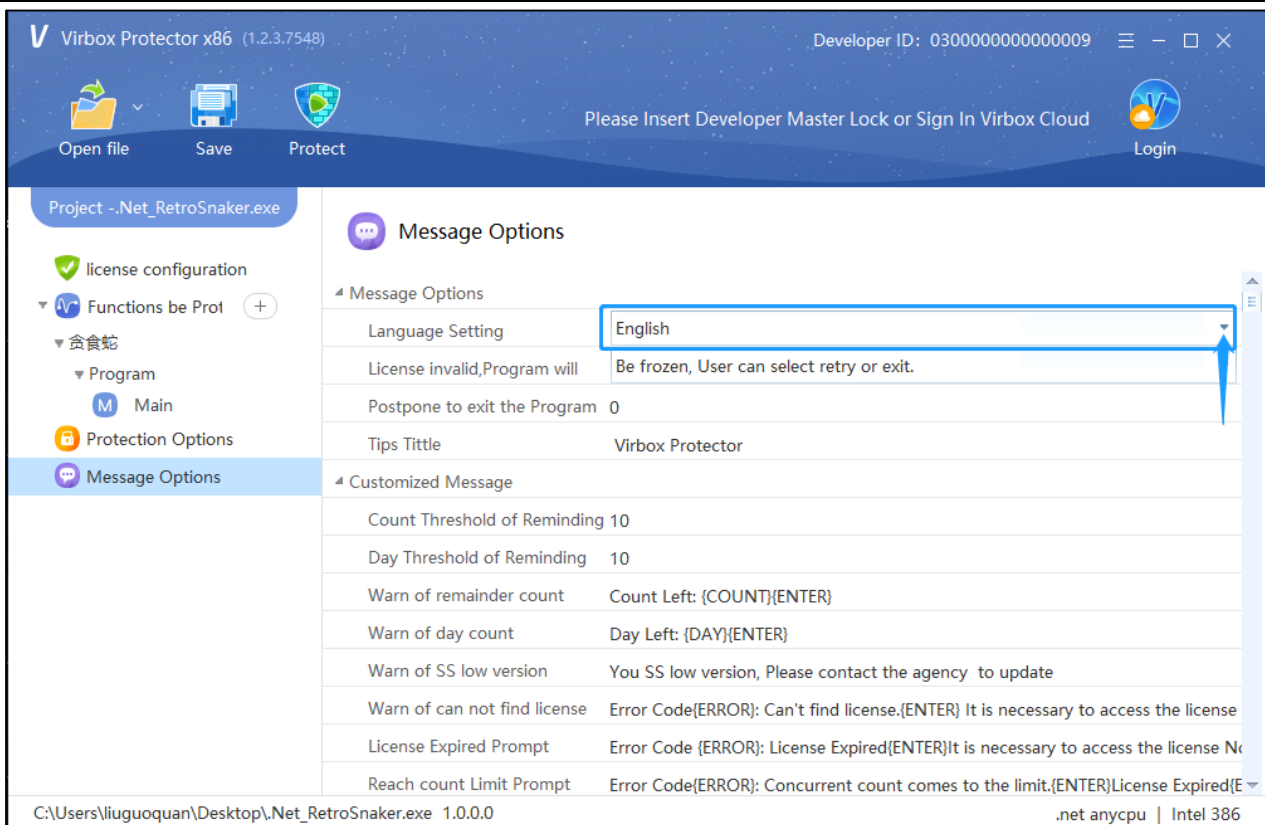
4.5 Protect the Software:

When you complete each option Setup, click the Button "**Protect**" on the top of Menu to protect this software;
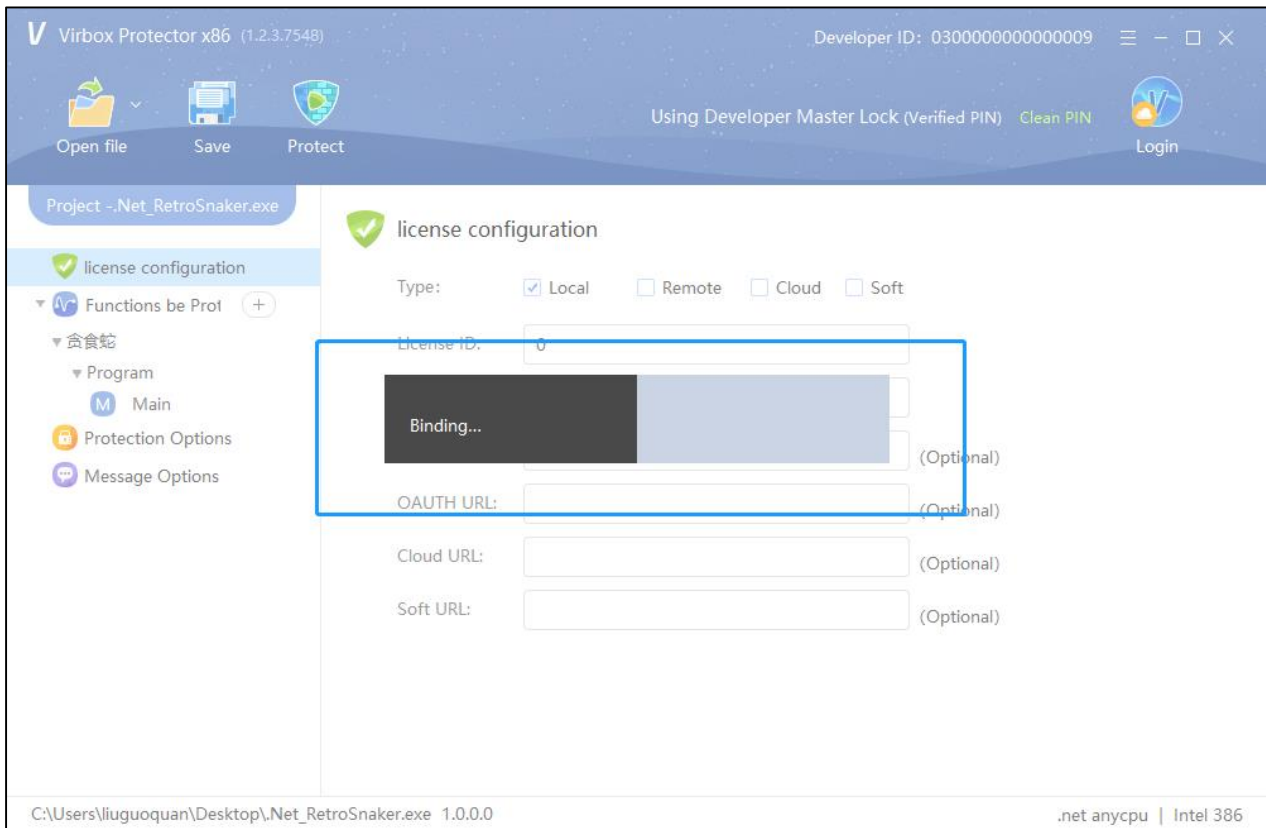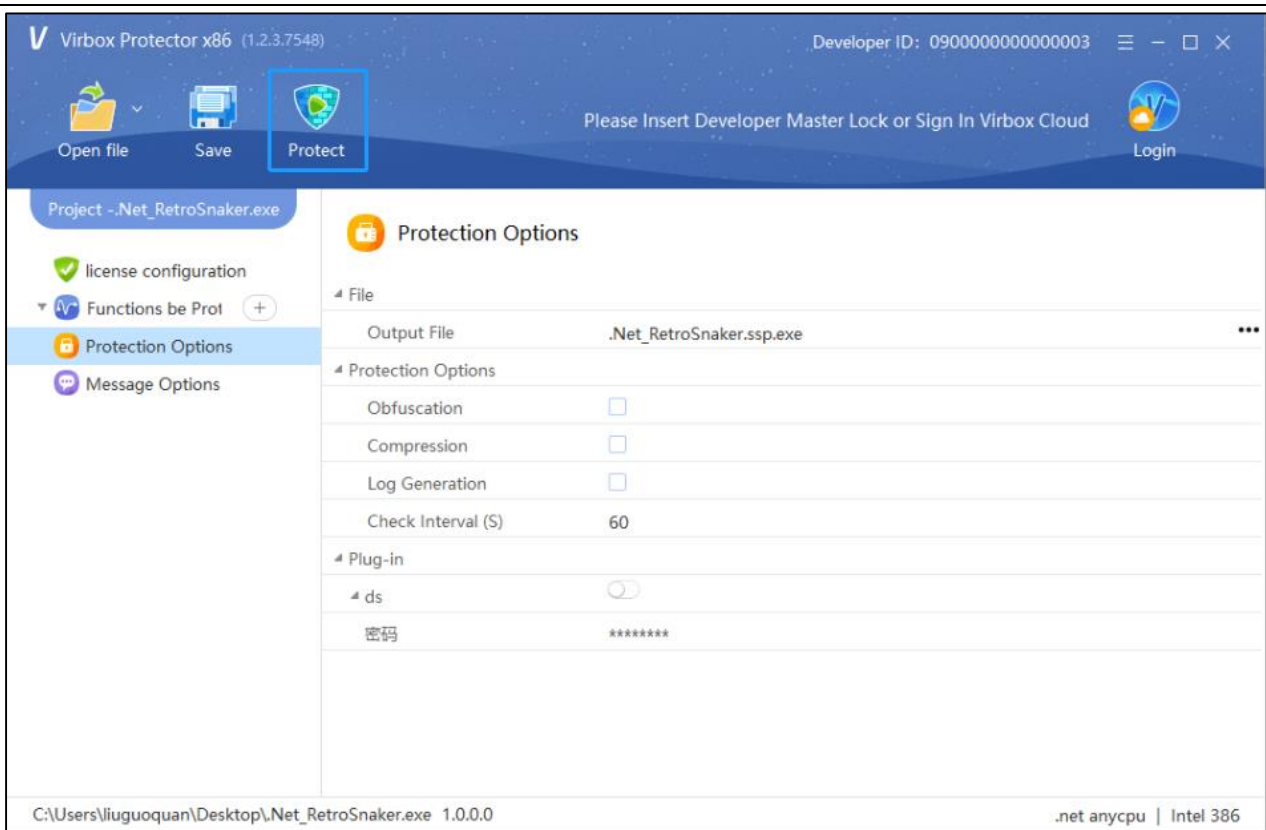
Virbox Protector will pop up to **verify** the license after protection completed, press "**Verify**" button of "**Pop up Window**", then a prompt message will pop up and show: "**No license has been found, please insert User Lock or login Cloud Account**".
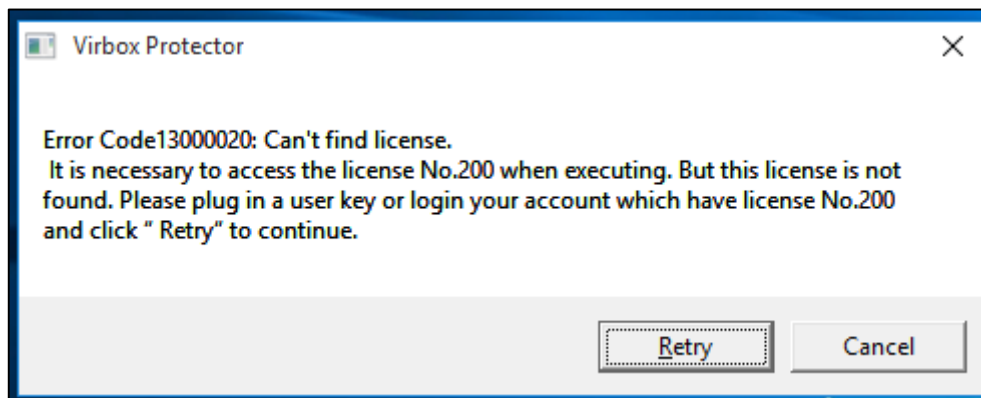
The **reason** to pop up this message is because of Virbox split the software protection and licensing into 2 steps, and you just complete the protection of software and haven't issue the license to EL5 dongle or issue soft license or cloud license yet.

4.6 Protected Software

Now we can take a look at the folder before software protection and after protection.

The original folder before Software protection shows as below:

Only the original software could be found.

The folder is shown as below, when software protection finished:

1. Original Software application;

2. A configuration file has been generated after software protection which contains configuration information and API password accordingly;

3. The protected software, with all kinds of encryption option you setup earlier; We Suggest you to modify this application name to be the original application name;

Software protection has been completed till now, next we will create correspondence sales template for different market segment by use of **Virbox Developer Utility** (Virbox Local License Manager) in next chapter.

Tips: when you are protecting the software, if it is showing this information:

1."Please Insert Developer Master Lock or Sign in Vibox LM"
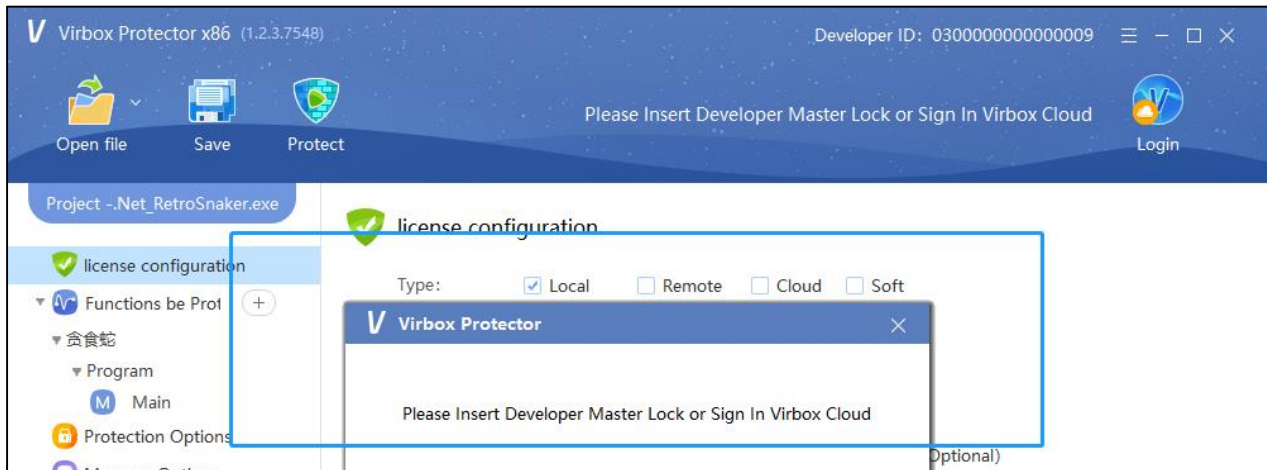
It reminds you need to **insert** the User Lock (dongle).

2. PIN of developer Master Lock not verified, please verify the PIN in Virbox Protector:
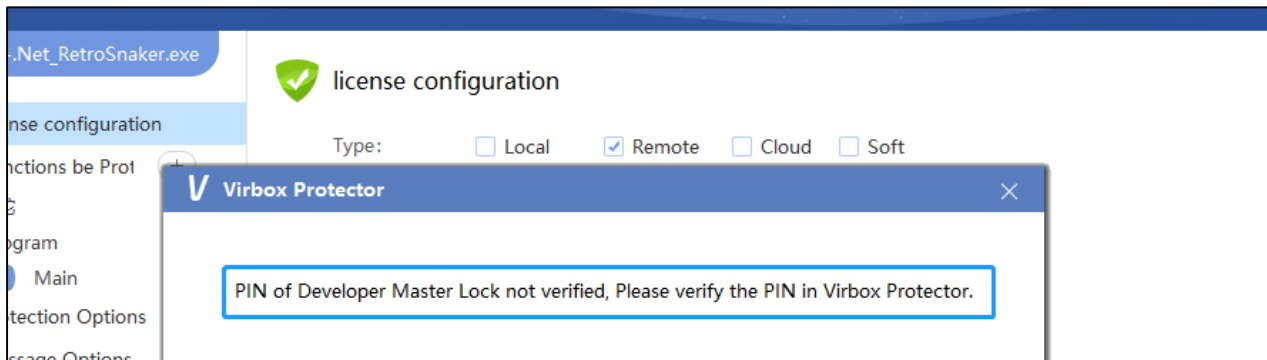
This is because "**Virbox Developer Utility**" have occupied the PIN, you need to exit "Virbox Developer Utility".

5. Issue License

In Chapter 3, we have created "**XYZ**" product by use of Virbox Developer Utility and protected this XYZ Product (we take a "**snake**" to be an example for this XYZ product. And protected this product by use of Virbox Protector in Chapter 4. In this chapter, we will use **Virbox Developer Utility** to create sales template for this product and issue license to User Lock (hardware lock).

5.1 Create a new Sales Template (By use of Virbox Developer Utility)

Why we need a Sales Template?

Except some software application are customized to specific project, most of software applications are developed for mature markets and sell these software in volume, the bigger the market in potential, the more quickly delivery software required.

The purpose to create sales template is to support developer for Licensing software in volume and deliver software more quickly to target software user according to different market strategy.

Create a new Sales Template:

Open Virbox Developer Utility, click "**Product management**", you will find the product "**XYZ**" which we have created in chapter 3.

Click "**License Template/Issue**" on the left pane;
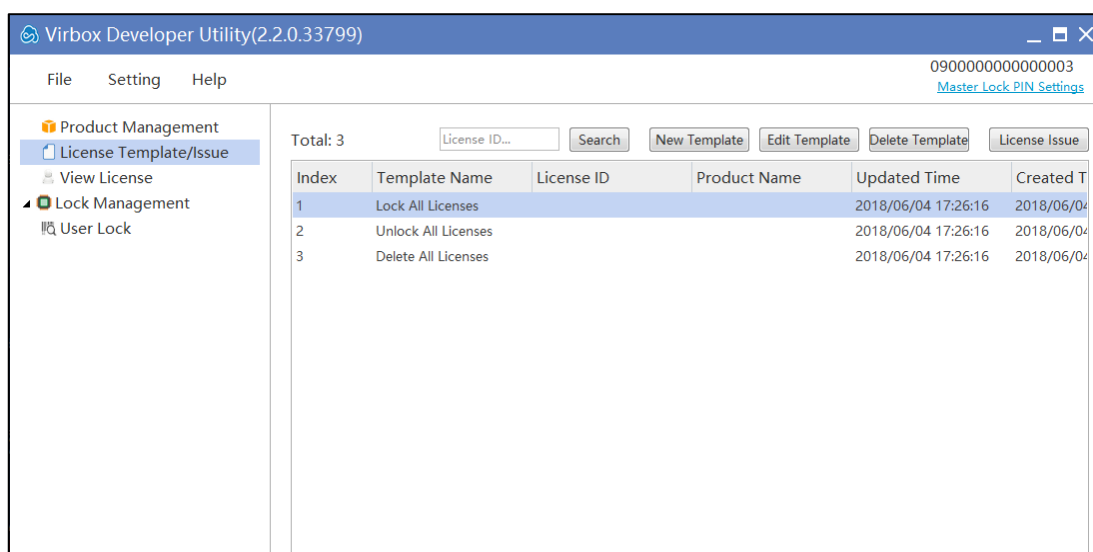
Click "**New Template**" to create a new sales template: then "**Select Product**" pane will popup
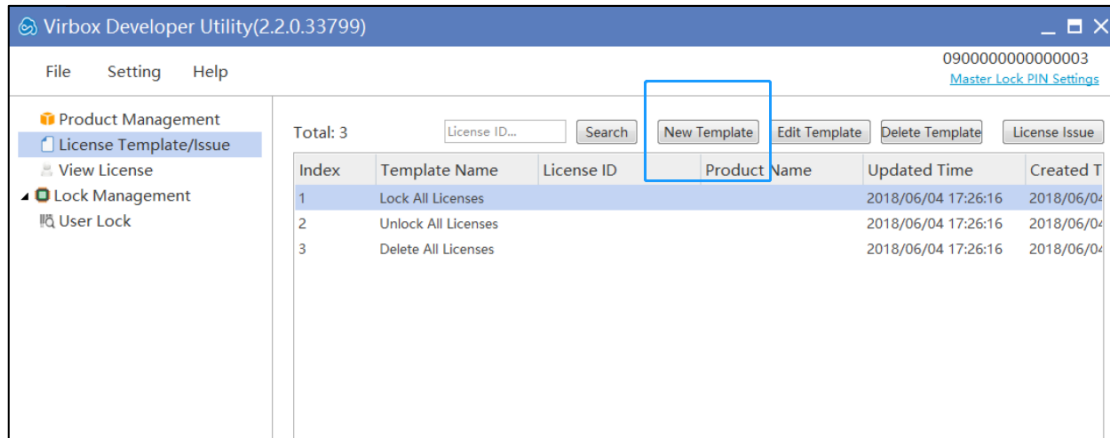
Select the product "**XYZ**" which we have created from Pane "**Select Product**" and click "**Next**":
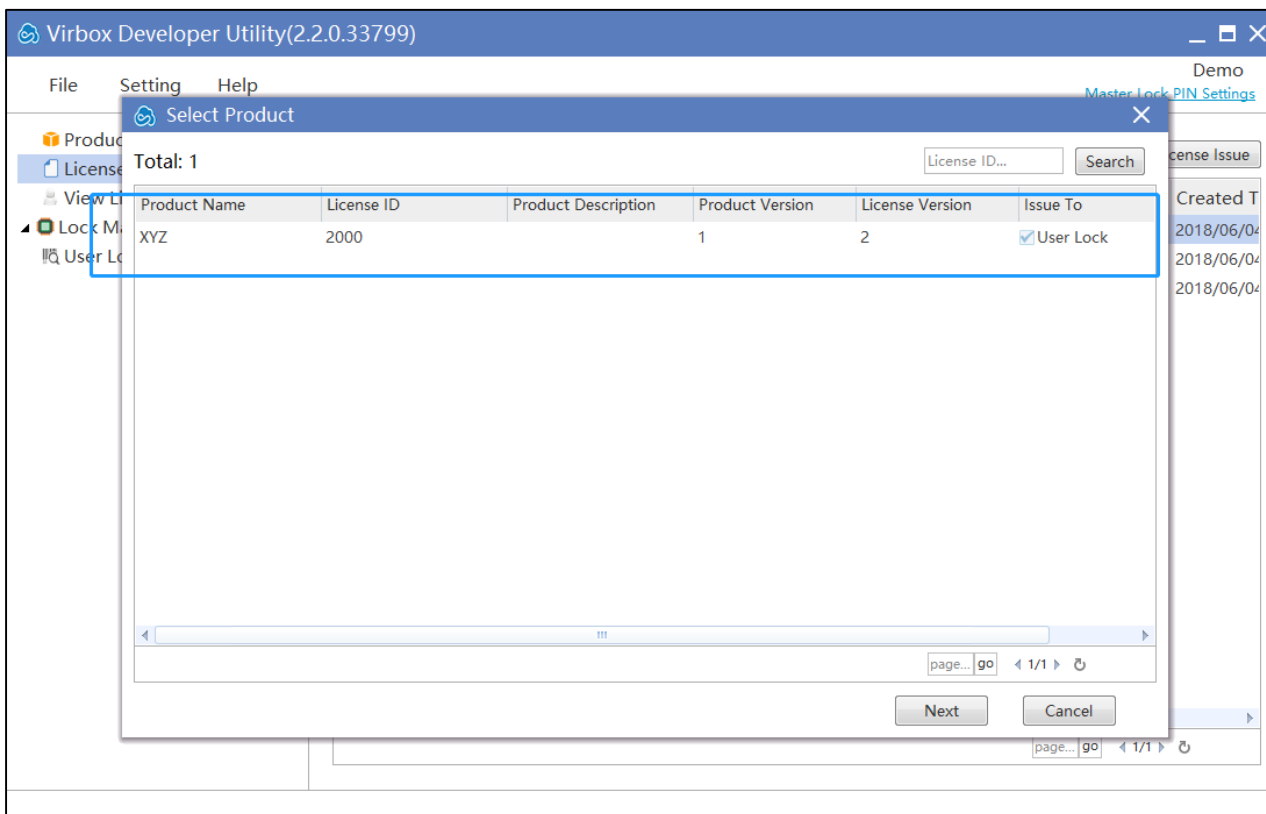
The new sales template window will pop up:
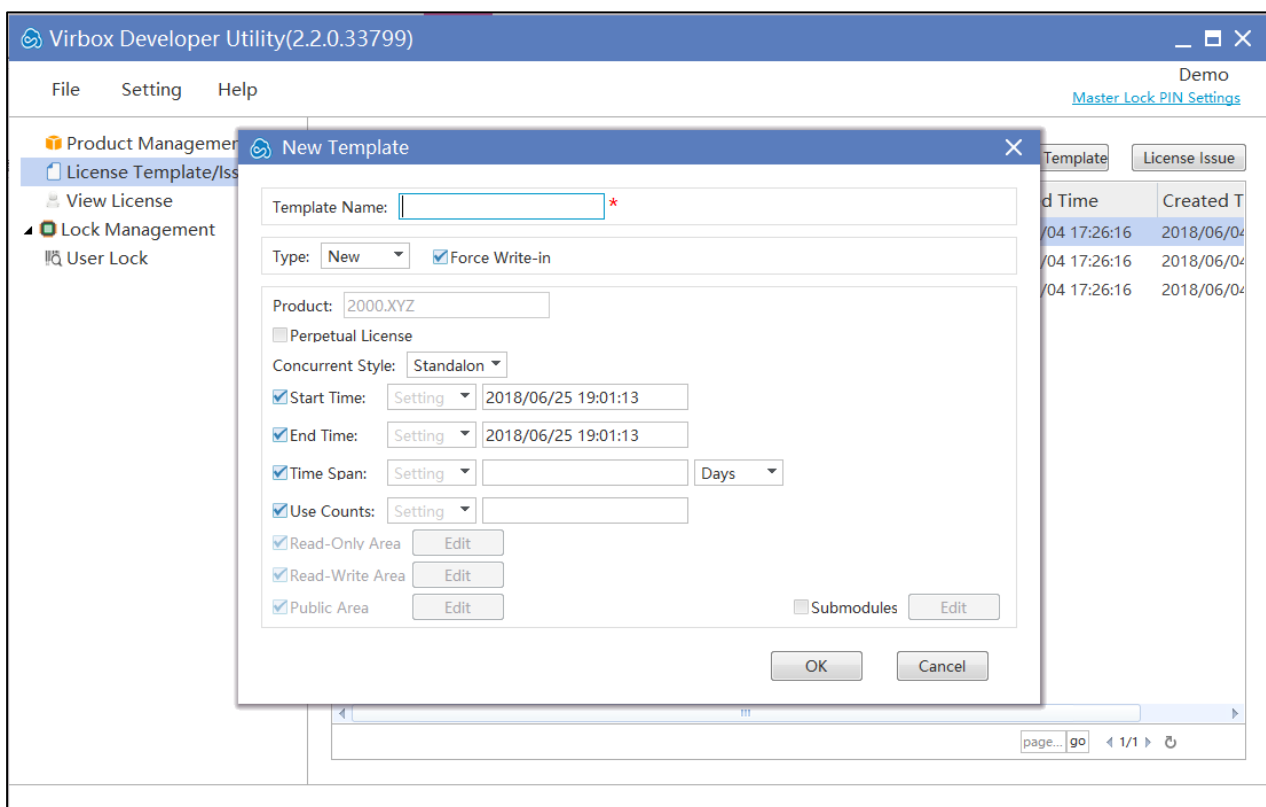
- Enter **Template Name** into the "**Template Name**" field. In general, the name of the template definition should be clearly recognized, easy to find, and preferably consistent with the corresponding business scenario.

- Select **Template Type**" New" (For Template Type, you can select "**new**" for new Template, for existed Template, you can select "**Update**" for updating or "**Delete**" if this product template will not be used in future;

- **Setup License Time:**
  - ◆ Switch on **Perpetual License:** issue license to be a "**Perpetual License**", then this license issued to software user will be perpetual license and never be expired;

- if switch off "**Perpetual License**", you can setup License valid time period;

  > **Note:** License with start time limitation (1.Setup a specified time to be license start time 2. Setup the license issuing time to be license start time):

  - ◆ **Setup specified time period**: Setup License starting time and ending time, the license will be valid only during specific time period;

  - ◆ Setup the **license issuing time** to be the license start time, and setup license valid time period, in combination with the setting of time span, the license will be expired till time period is out of date;

  - ◆ **Time Span**: License start time start from when software user first time to use the software, the license will be expired when time period setting out;

  - ◆ **Use Counts** (Consumption): Set a limited number of use conditions, decrement when every time to

login and use software, and license will be invalid when counts to zero.

Click "OK" to create the Sale Template you want to create, then new sales template will be created successfully.
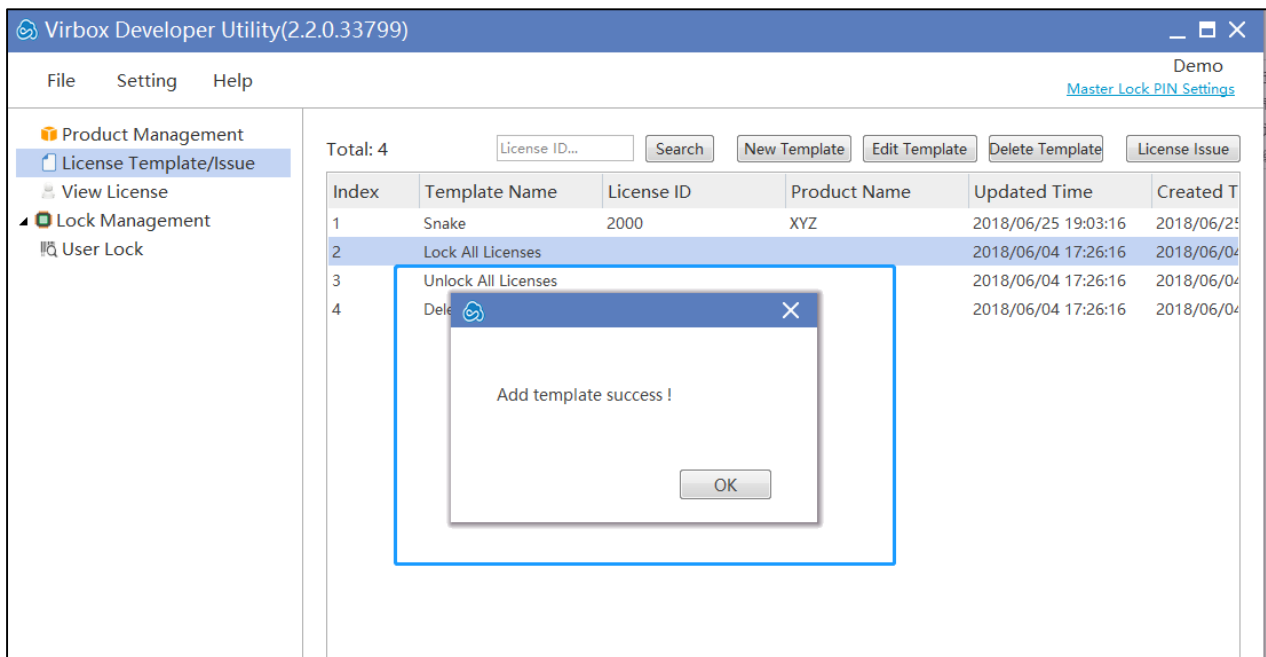
5.2 License Issuing

■ Click "**License Issue**" on the Top of right of Panel in the "**Virbox Developer Utility**"
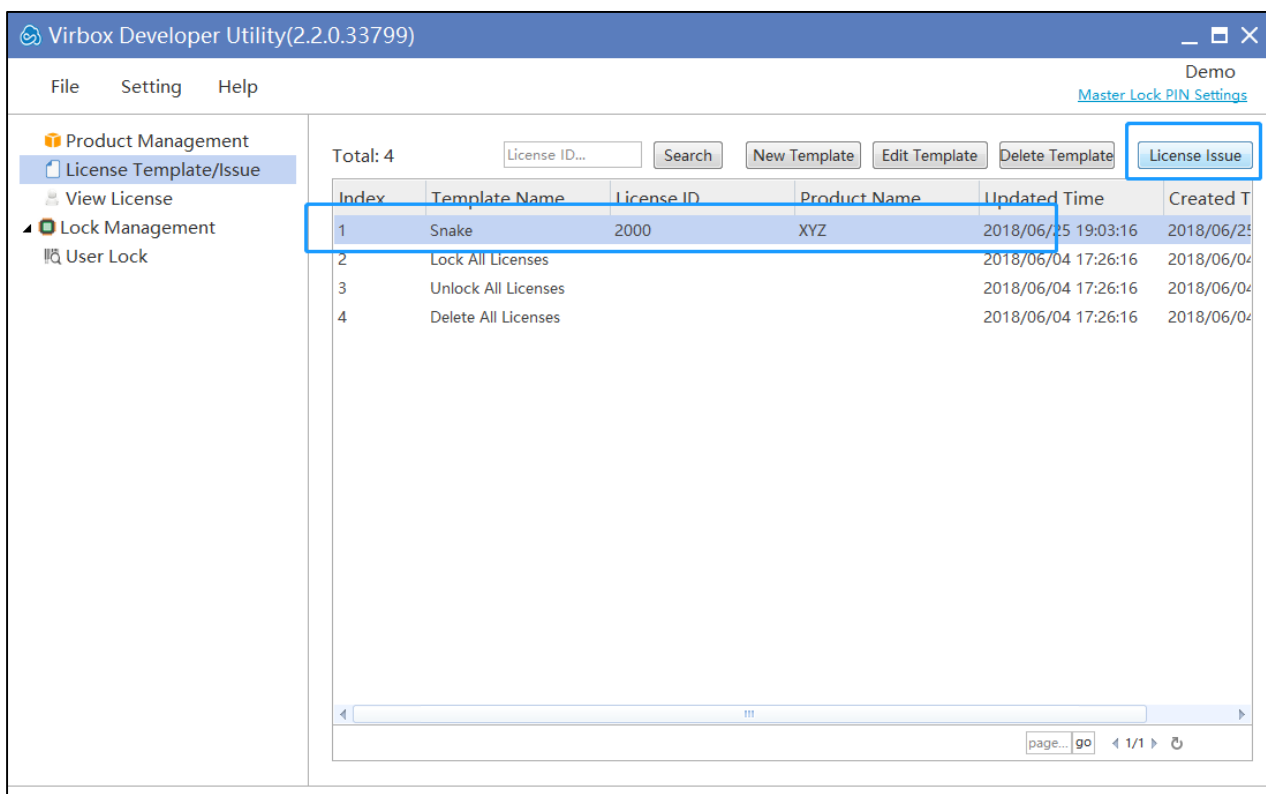
Select the **Sales Template** you have created in last step, we choose "Snake" sales template.

Insert Virbox Master lock and User lock into the USB slot, (it is recommended for software developer to use USB HUB before issue license to Hardware based license if you have much Lock need to be issue license to), select (By click) the hardware Device you want to issue license to.
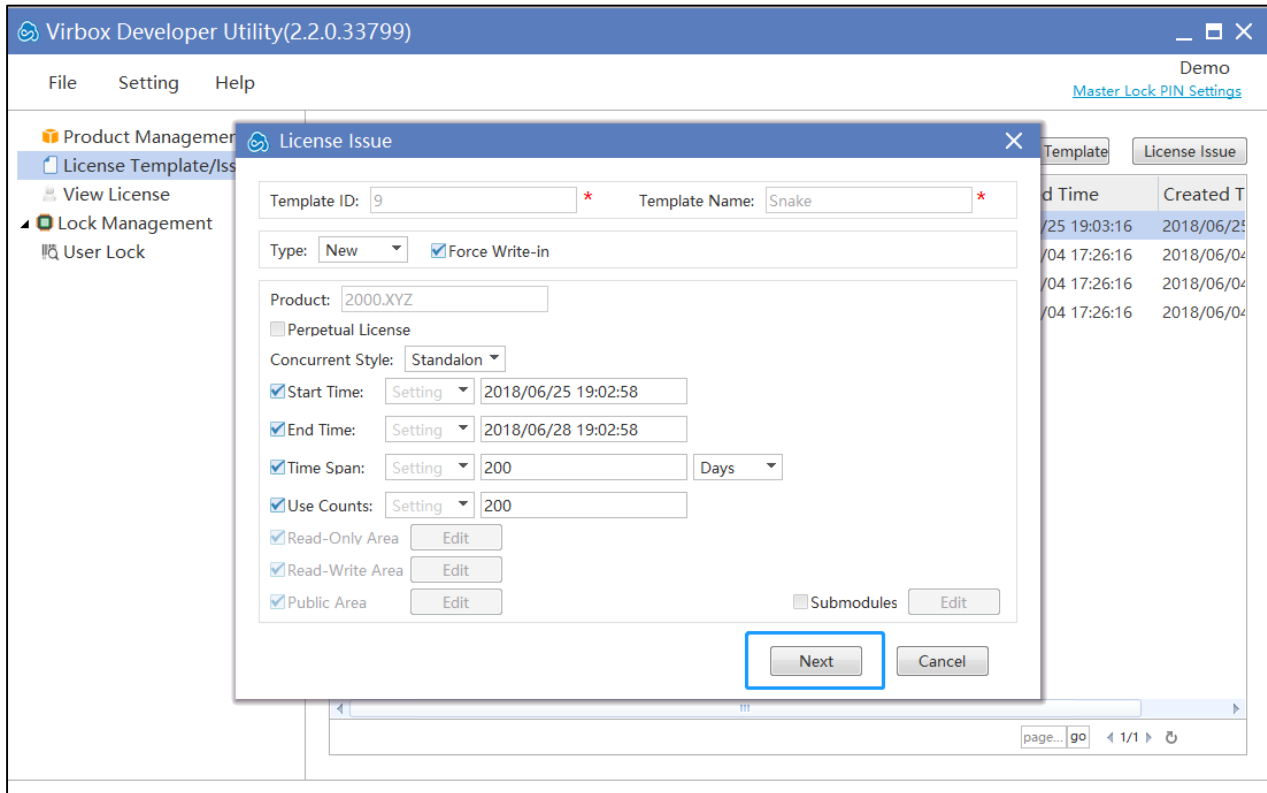
Select lock SN and click "**issue**" button on the right bottom of Pane to issue license to selected **EL5 User lock**.
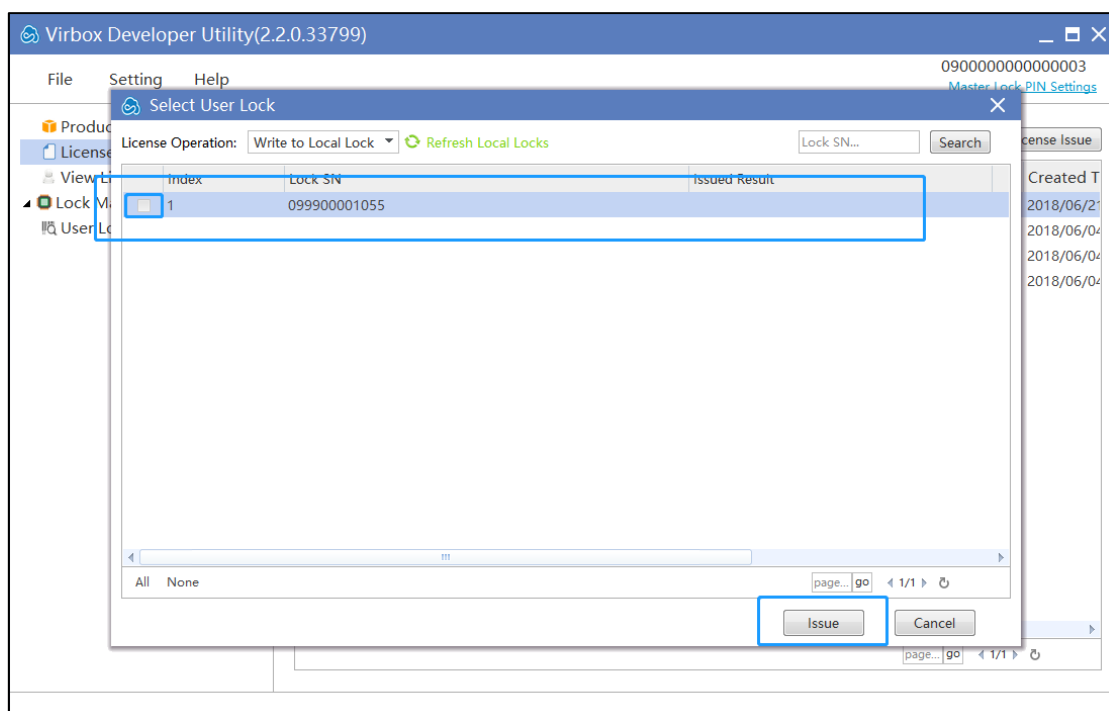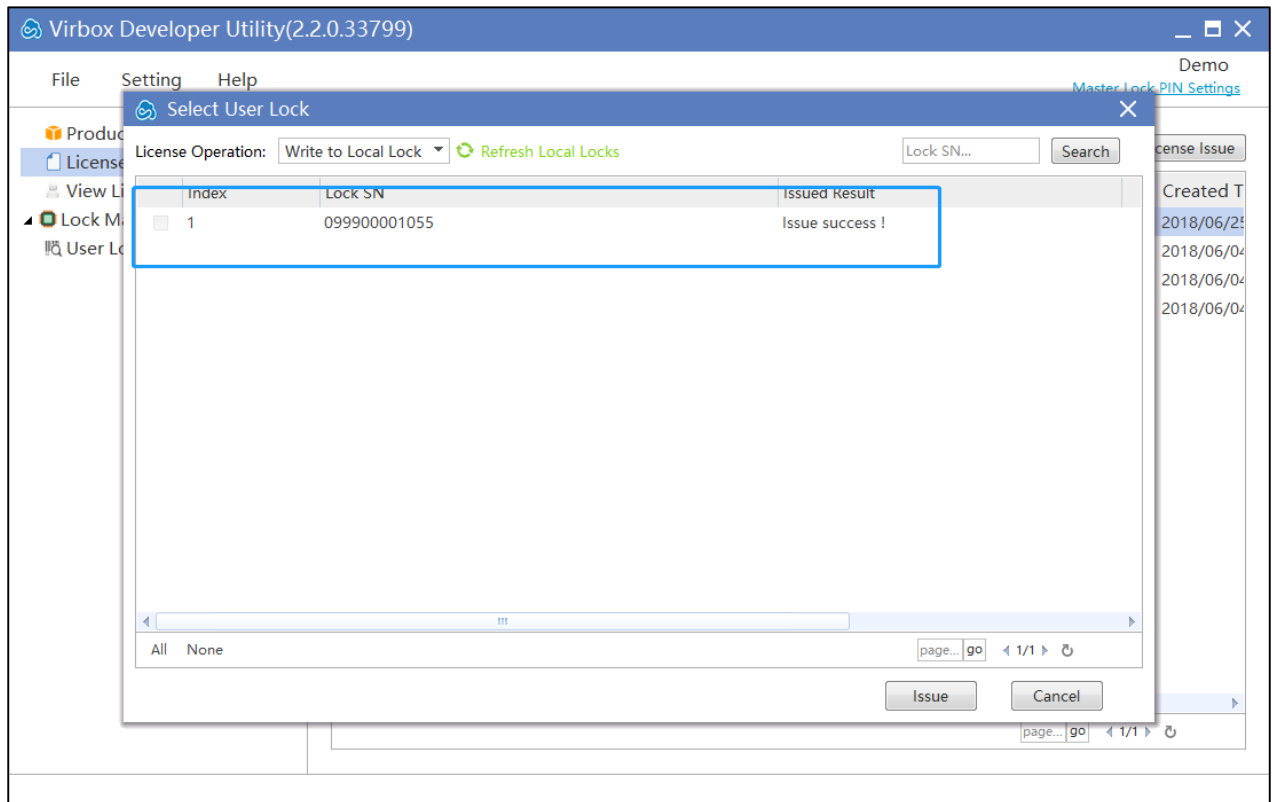
Now the license are issued successfully.

Also, you can view the license you just issued.
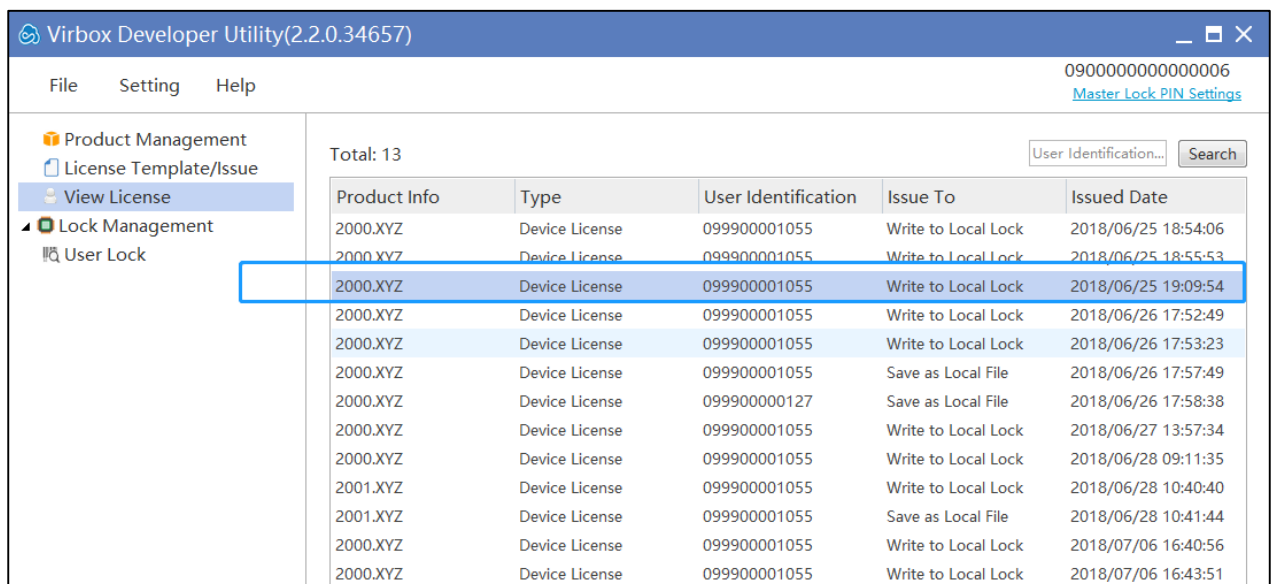
"**Double click**" the **license** for detail license information.
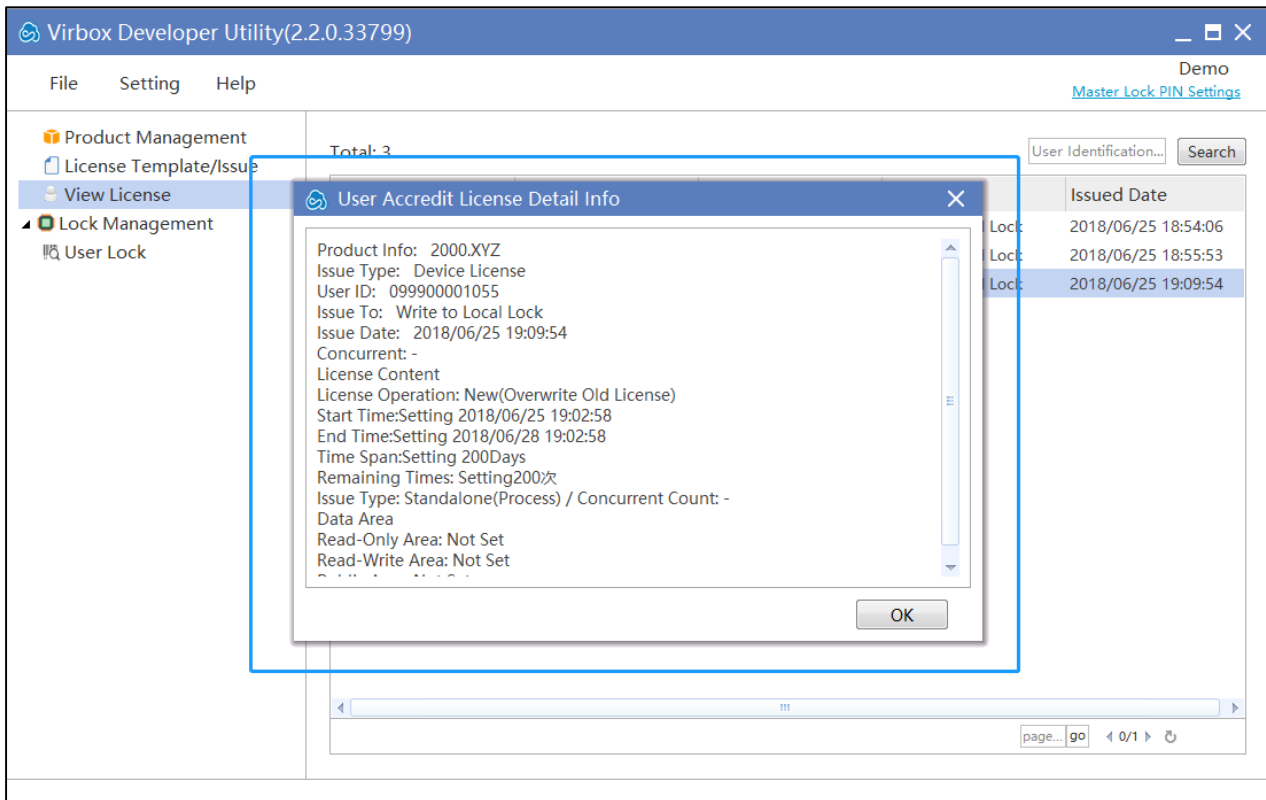
So far, License issue to selected EL5 user lock has been completed.

6. License Verification & Using Protected Software

- In practical case, Software developer can make a **package** to Virbox User License Tool with protected software by use of software packaging tool, and software user can install software and Virbox User license Tool into their computer when they got whole package.

- Please insert EL5 User Lock into the computer of software user, then start to execute "**Virbox User License Tool**" for License verification (please install Virbox User License Tool in advance on your "User desktop". Virbox User License Tool Download link:

  https://lm-global.virbox.com/

- Click "**Dongles**" item to check the local dongle plugged in your computer, like the picture showing blow:
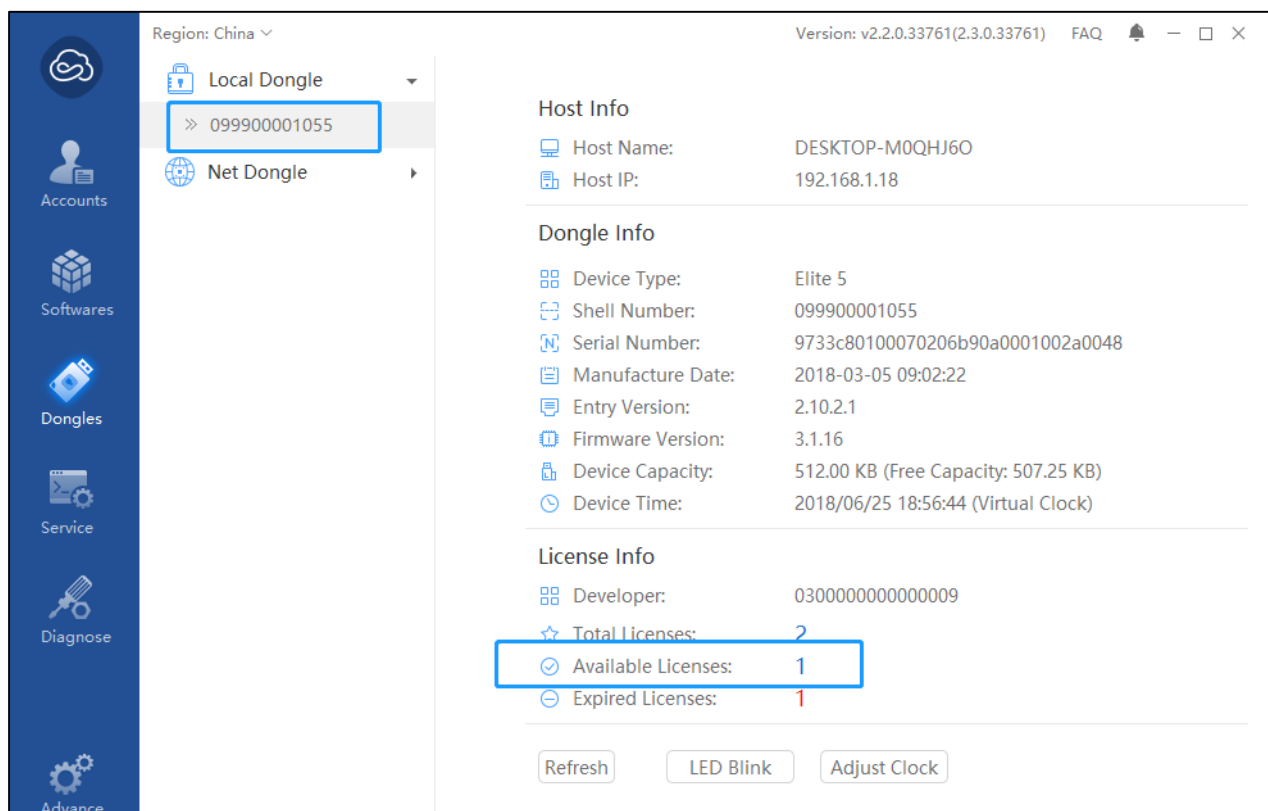
- Click Virbox EL5 to check if license stored in this User lock. If yes, then next step:

Execute the protected software, the protected Software will be automatically verify the license and software will be executed successfully.
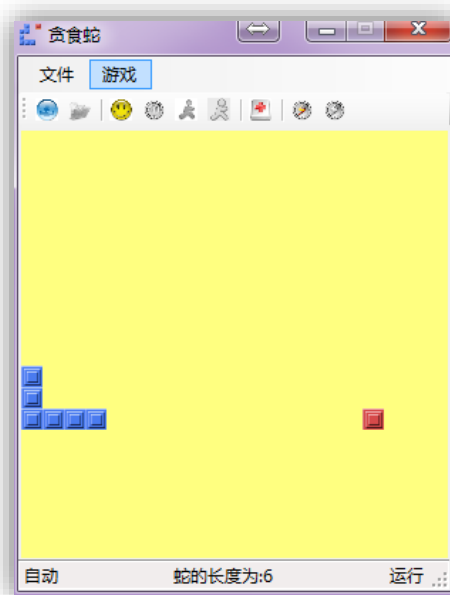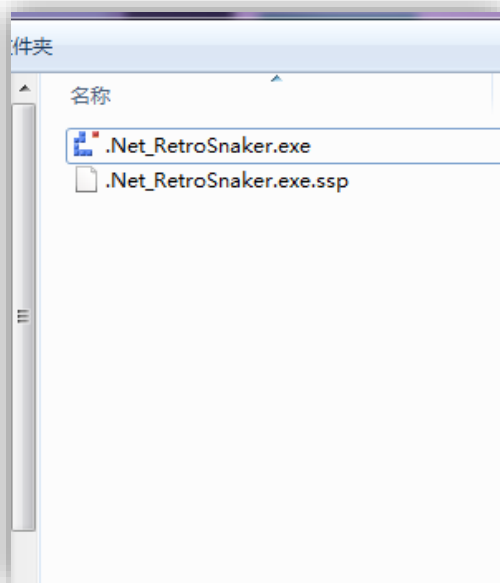
After you have execute the protected software, if you haven't inserted the User Lock, or no valid license has been found in the User lock, it will show:

7. Virbox User License Tool

- The functions of Virbox User License Tool is setup security tunnel between Protected Software application and EL5 dongle which stored license, it is not necessary for developer to maintain this tool in daily operation, Virbox will provide continuously update/upgrade this tool and reduce developer's workload and help developer focus on to develop their software only.

- Virbox User License Tool uses API for license verification and support device independently, Virbox User License Tool support license verification to all kinds of license repository: Hardware based Dongle, Soft Lock and cloud based lock.

- Virbox User License Tool support Security API, Security driver software and other security technology, it provides dynamic security and protection to the software to be protected.

- Every software user must install the Virbox User License Tool for license verification, it is not necessary for software user to download and install developer SDK, and just install this user license tool for software execution, please go to following website to download latest version of Virbox User License tool.

  Download Link：

  https://lm-global.virbox.com/

Any Question or Technical inquiry to Virbox solution, please visit Virbox LM website (https://lm-global.virbox.com/) for downloading latest Virbox Software and get online support from Virbox Technical team!

Summary

We have briefing for Software developer the whole Operation process of:

- How to define and well plan a software product ID (License ID)=>Virbox Developer Utility;

- How to use Virbox Protector to protect/encrypt the software application=> Virbox Protector;

- How to create Sales Template in Virbox Developer Utility;

- How to Issue license to selected hardware based dongle (Virbox EL5) =>Virbox Developer Utility;

- Executed protected Software with Virbox EL5 (Stored License): License verification via Virbox User License Tool in the software user premise.

Appendix

Glossary

Virbox Elite 5 Acme	Virbox El5 Acme is latest Generation of Virbox hardware Lock which improved both in Hardware performance and Security Performance. Virbox El5 Acme is key component and License repository of Virbox LM solution. Virbox El5 Acme can be used to be a standalone dongle without connect to Virbox LM, and also can be used seamless integrated with Virbox LM with additional and advance feature available. Virbox El5 Acme support and suitable to deploy in tough industry environment. Software Developer can use this product to protect the Software copyright and IP. It will supports developer to protect software with most security technology, best performance and easy to use. For detail Specification of Virbox El5 Acme, please refer to the Virbox EL5 Acme datasheet.
Virbox LM	Virbox LM is cloud based Software protection, License Entitlement solution and cloud service which provides software developer with lowest total cost ownership, Top Security of Software Copyright Protection and Easy to use in whole software life cycle. By use of Virbox LM, Developers can achieve extremely protection to software copyright/IP and flexible to issue license to software user with minimal effort and investment. Virbox LM One Stop Solution consist of following components: Virbox License Manager (Virbox Developer Center), Software Protection (Envelope) Tools (Virbox Protector), Local License Manger (Virbox Developer Utility) and Virbox License Service and User License Tool (Virbox User License Tool) and other support tools and documents. Virbox License Type supports: Hardware lock (Elite 5 Dongle), Soft Lock (Soft license) & Cloud Lock (Cloud license) and suitable to deploy in different Software implementation scenario, on-line, offline, firewall isolated environment etc. Virbox provides flexible license mode to support ISV/software developer Software monetization which includes: Perpetual, trial, time based, feature on demand, subscription, concurrent, etc.
Virbox Developer Center	Virbox Developer Center consists of Developer website and Open API, It provides cloud based Service and website for License Issue and License

	Entitlement solution to software developer, Developer may use [Virbox Developer Center] (https://developer.lm-global.virbox.com/) to manage software product, user management, License Issue and Entitlement, Virbox Developer Center is online License solution for software developer, By use of Virbox Developer Center, it is not necessary for developer to build up in house License entitlement system and save the investment both in Capex and Opex.
Virbox Protector	Virbox Protector is the latest envelope tools for software protection and encryption, Virbox Protector integrated multi security technology including Virtual Machine, Code Snippet (Code Fragmentation) and other static and dynamic technology/Service and provides top secure protection level to developer's software, Developer may protect software automatically by select protection options without any coding competence and can save lot of workload and effort in software protection process.
Virbox Developer Utility	Virbox Developer Utility is local License Manager provided by Virbox LM, this Utility helps developer to issue the license to hardware lock (Virbox EL5) quickly. With Virbox Developer Utility, Developer will save capex and opex and not necessary to spend money to build up the In House License System.
Virbox User License Tool	A software installed in software user's site that can be used for license verification, update and transfer service, Virbox User License Tools works with Virbox License service and provides static and dynamic protection service to software installed in software user's site.
Product	Virbox Use "Product" refer to the Software application developed by software developer, software publisher which need to encrypt, protect the "product" by use of Virbox Protector.
Sales Template	The Sales mode for mature commercial software should support different sale mode and charging policy to meet the requirement of software users: pay per year/month/day, per usage, or pay for perpetual license. Above charge policy is independence with Product functions but depends on sales strategy to each marketsegment. So, Virbox designed the following "Concept" in Virbox License system to reduce duplicate workload for developer in protection and license process: *Sales Template*, developer may setup the different limitation to same product in different Sales Template to meet different sales and marketing strategy.
License ID	License ID is the unique indicator which used in the software protection and license issuing/distribution process in the Virbox LM system, which represents

	the License No. for software. For details introduction to Virbox License Management and License concept, please refer to "Virbox License System" Developer must assign associate License ID to the product created. And the License ID must not be duplicated assigned and used for other product. The License ID associated with specific product will be use unique ID No. and Indicator to presents for this product in all protection and license process. The protected software will verify the associated License when software user execute the software.
Account	Account sign up by "user" in Virbox developer Center or Virbox User Center, For software developer, they can sign up account in Virbox developer center to evaluate and test the Virbox Solution for software protection and licensing to their product; For Software user, they can sign up an account or assign a account in Virbox User center by software developer, this user account will be the unique identifier for user to use and verify license issued by developer;
Master Lock	Virbox Solution provides 2 kinds of hardware lock for software developer: **Master Lock** and **User lock**; master lock is the unique Identity for each Software developer to protect software and issue license, it is mainly used for software encryption , protection, issue license and issue upgrade package to EL5 user lock.
User Lock	User lock is the hardware based lock deliver to software user which contains the license file issued by Software developer, Virbox Provides following Virbox EL5 user lock to developer: EL5 Acme, EL5, EL5 RRTC, EL5 Genii.
Soft Lock	Soft Lock contains software license, saved in local safety environment. Which used to verify the protected software. Software developer may issue the Soft license from Virbox Developer Center to licensed software user account, Soft lock supports both online mode and offline mode.
Cloud Lock	The cloud license (cloud lock) is one of license type supported by Virbox LM, , Cloud License issued by developer from Virbox Developer Center and stored in Virbox Cloud and used to verify the protected software. The cloud license must be bound with the software user account. Users can use the protected software in online status (Access internet) and successfully logged in Virbox User Account.
API	Virbox SDK provides a complete package of APIs (Application Program Interface) for license management and licensing that will help software

	developer get the most licensing function out of the Virbox licensing system. Developers can flexibly implement their own encryption scheme by calling these APIs, and combine the functions of encryption, decryption and data area provided by Virbox license to realize deeply protection scheme and further increase the difficulty of cracking.
Control API	This API is the management interface of Virbox License Manager, here referred to as Control API. Control API will be mainly used and provides the inquiry to the hardware lock (dongle)'s information, inquiry to license terms and status, inquiry to license session etc. More details to how to use Control API and use case, please refer to Virbox License Architecture.
Runtime API	The API interface to access Virbox license, referred to as Runtime API, is the most critical interface for the Virbox licensing system. Runtime API is the key API interface for developer to use and call API, the software of Developer will use this API to access license. More details to how to use runtime API and use case, please refer to Virbox License Architecture.
d2c API	Virbox SDK provides "Developer Utility", the local License Manager, for developer to issue the license to hardware lock (Virbox El5) quickly. D2c API provides the interface to developer to issue license to hardware lock. Developer may call the "D2C API" to issue license with more flexible operation and flexible to combine different license terms. the d2c package created by d2c API is the only license update package which can be recognized and identified by Virbox EL5 hardware lock, d2c package includes digital signature and encryption to the license terms which will guarantee the integrity and security of license data, on the other hands, the Virbox EL5 hardware lock provides the function to anti-replay, all d2c license update package will be used one time in the hardware lock only. Note: Calling d2c API is quite complicate process, more details, please refer to sample file.
Open API	Open API is the API that Virbox LM provides to developers to access the Virbox Developer Center. Open API can be used for integration with existed third party system in developer site, such as CRM or ERP system. Developers may use and call this OPEN API for user sign up, license issue, license distribution and other operations via third party system. For details, please refer to [**Open API Guide** V2.0**/Virbox Developer Center]**

API Assistant	API Assistant is a quick starter tool that helps software developers learn and understand the Virbox API. Execute the API via friendly GUI prompts message to view the API execution result, and can also get the demo code. You can quickly familiarize with API and functions without coding. API Assistant is suitable for developers to quickly learn and understand the usage/calling of the API and verify the feasibility of the encryption scheme.
Code Fragmentation Execution	"Code Snippet Execution" or we can named with more simple and easy understanding: "Code Fragmentation Execution". Code Snippet Execution will utilized latest and mature technology in "Extracting the coding" and select and extract large amount of "coding" from original program code, and executed in the security virtual environment after encryption and obfuscation and integrated with Virbox Encryption Compiling Engine, Virtualization and driving technology, all technology integrated together makes protected software in more security during execution process. The Code Snippet Execution" can be simply understand as breaking down the functions or modules of software into code of fragments and execute these "fragments" into a secure environment, so that the crackers can't start to use hacker tools to analysis and get the original code and execution result. "Code Snippet Execution" is major milestone and breakthrough in the Software Encryption and Protection field. In addition to high Security, Code Snippet also rely on and work with "Virbox License Service" middleware to shield the interface from the fundamental layer and also compatible with Virbox Cloud Lock and Soft Lock, and help developer to realized business agility with different kind of license type.
Anti-Hacker Service	The Anti-Hacker Service is composed of kernel state protection component and suspicious feature database collection component. It will keep on upgrade and collect the suspicious features of hacker, which will be used to help to protect the software being protected. And will protect the memory from being tampered. To make the software protection from static to be dynamic.

Let's Start Your Software Protection and Licensing Journey!

Virbox will help you to protect your software copyright/IP Value and Create Revenue for you.