Protect the .NET application

Introduction

Virbox Protector support to protect/encrypt the .NET application and .NET Core 3.0 above applications, protect/encrypt the .dll and executive file directly.

Virbox Protector support to protect .NET application both in GUI tool and CLI tool.

Here we use Virbox Protector GUI tool to show the protection process for .NET application step by step. for how to use CLI tool to protect .NET application, pls refer the User Manual or contact us.

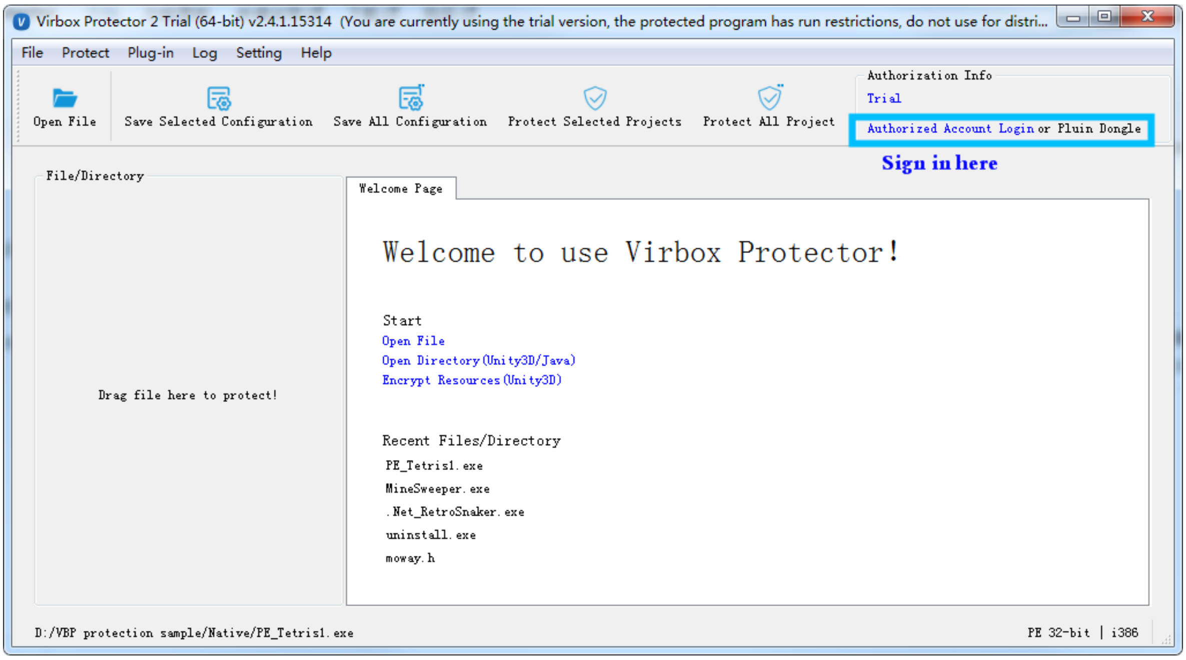
Prerequisites

Sign-up Virbox Protector and install the Virbox Protector;

Open Virbox Protector and sign in with your account;

💡Above pre-requisition is for test/evaluation Virbox Protector only.

To protect formal and commercial release software, pls purchase and get the related Virbox Protector license.



Virbox Protector 2 Trial (64-bit) v2.4.1.15314 (You are currently using the trial version, the protected program has run restrictions, do not use for distri...

Welcome to use Virbox Protector!

Start
Open File
Open Directory(Unity3D/Java)
Encrypt Resources(Unity3D)

Recent Files/Directory
PE_Tetris1.exe
MineSweeper.exe
.Net_RetroSnaker.exe
uninstall.exe
moway.h

D:/VBP protection sample/Native/PE_Tetris1.exe

PE 32-bit | i386

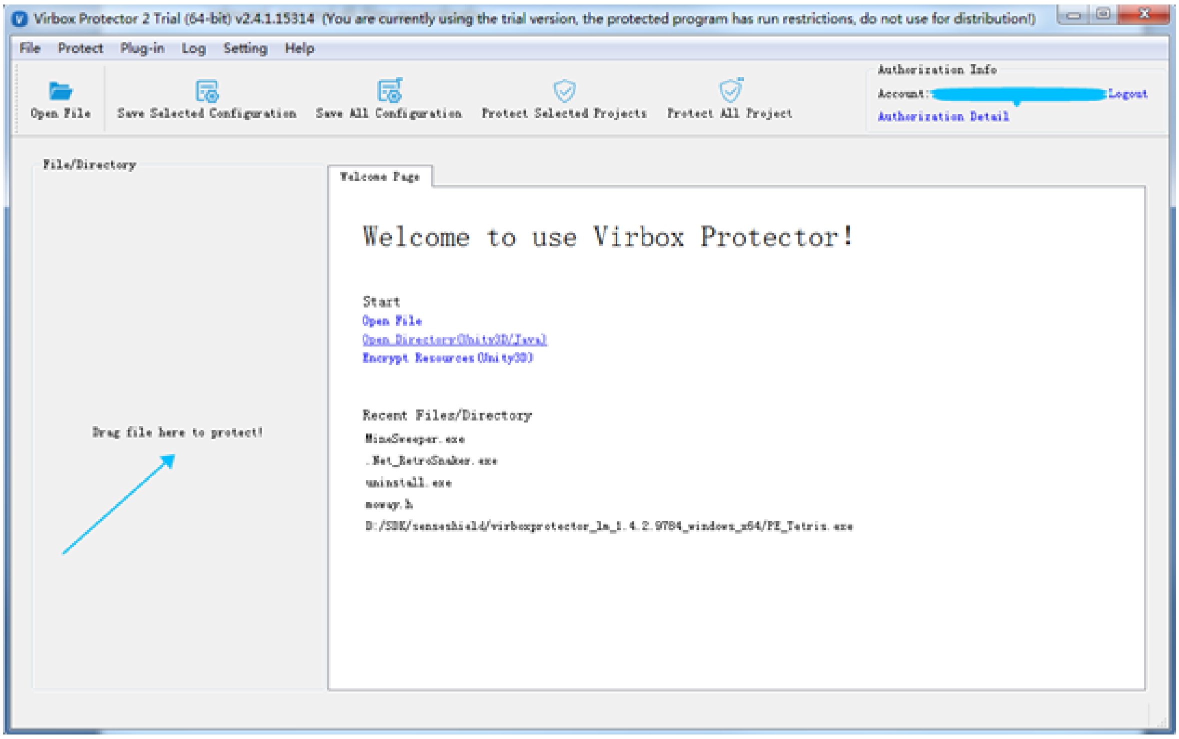
Protect your .NET application in 5 steps

1. Import .NET file: drag the .NET file which need to be protected to Virbox Protector;
2. Set the configuration of "Function Option"; (Protect specified function)
3. Set the configuration of "Protection Option"; (Protect the .NET apps in general)
4. Click to Start the "Protection" Process
5. Backup the source file. rename the protected file to source file name and save the "configuration" file

Protection Process

1. Import .NET file: Drag .NET file into Virbox Protector

Drag the .NET file into the Virbox Protector, in the sample case, the .NET file we used is DotNetGame.exe;



Virbox Protector 2 Trial (64-bit) v2.4.1.15314 (You are currently using the trial version, the protected program has run restrictions, do not use for distribution!)

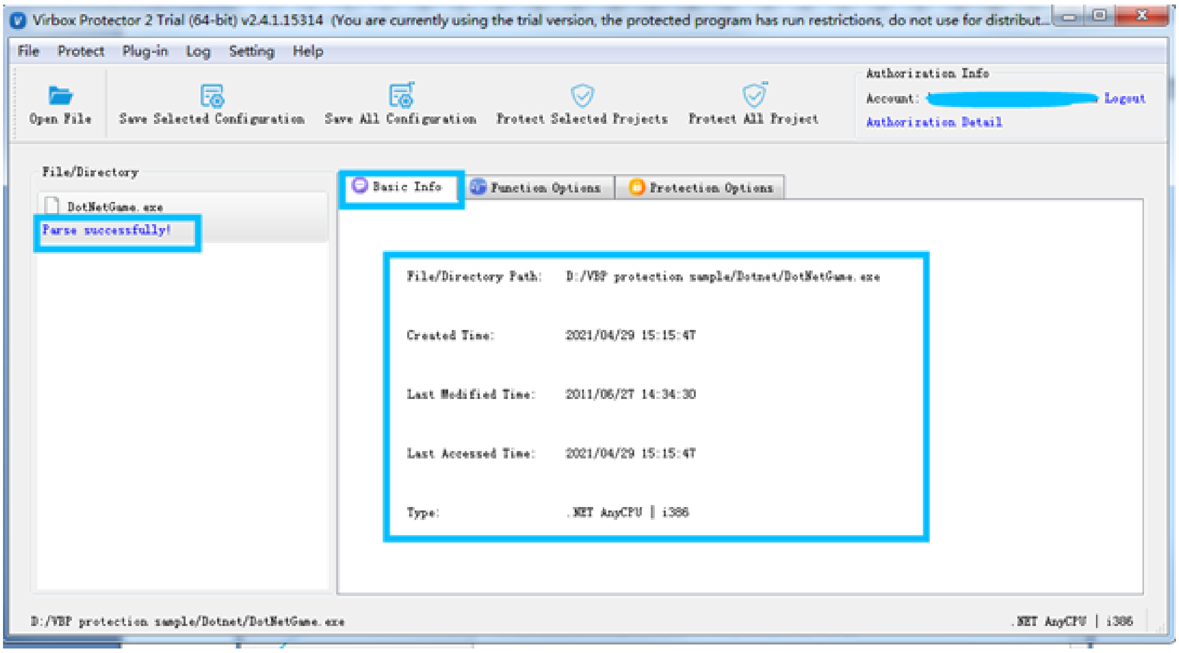
Authorization Info
Account: [redacted] Logout
Authorization Detail

Welcome to use Virbox Protector!

Start
Open File
Open Directory(Unity3D/Java)
Encrypt Resources(Unity3D)

Recent Files/Directory
MineSweeper.exe
.Net_RetroSnaker.exe
uninstall.exe
moway.h
D:/SDK/senseshield/virboxprotector_lm_1.4.2.9784_windows_x64/PE_Tetris.exe

Then Virbox protector will parse the .NET exe sample automatically. and show .NET file information in the "Basic info" tabs:


Virbox Protector 2 Trial (64-bit) v2.4.1.15314 (You are currently using the trial version, the protected program has run restrictions, do not use for distribut...
File
Protect
Plug-in
Log
Setting
Help
Open File
Save Selected Configuration
Save All Configuration
Protect Selected Projects
Protect All Project
Authorization Info
Logout
Authorization Detail
File/Directory
Basic Info
Function Options
Protection Options

Account: [redacted]

DotNetGame.exe
Parse successfully!

File/Directory Path: D:/VBP protection sample/Dotnet/DotNetGame.exe

Created Time: 2021/04/29 15:15:47

Last Modified Time: 2011/06/27 14:34:30

Last Accessed Time: 2021/04/29 15:15:47

Type: .NET AnyCPU | i386

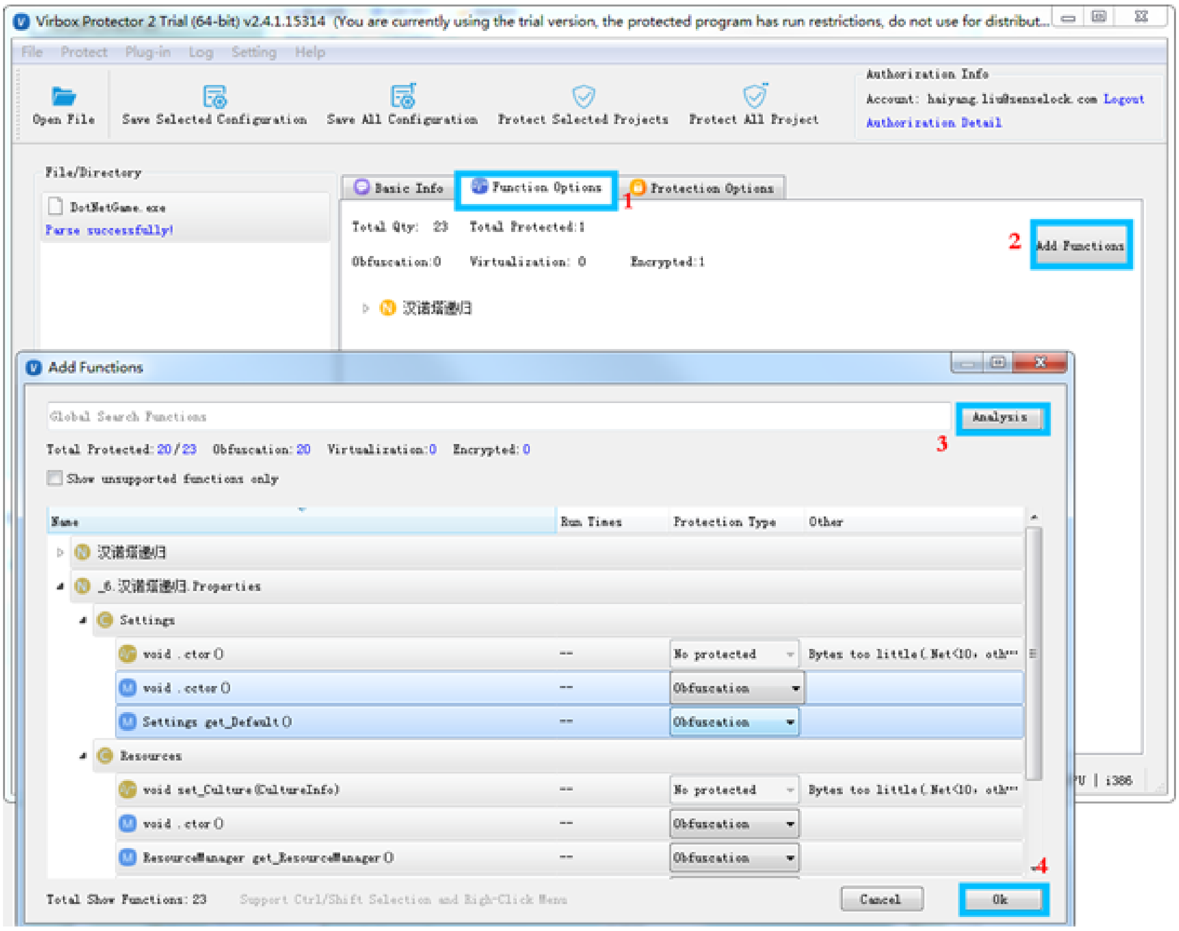
D:/VBP protection sample/Dotnet/DotNetGame.exe .NET AnyCPU | i386

2. Set the configuration of "Function Option"; (Protect specified functions of the .NET file)

Developer may design your protection scheme via setting of Function Option and protection Option tabs.

For those critical functions of .NET files which need to be protected, Developer may select and define protection mode to each function via "Function Option" tabs:

2.1 Go to "Function option" and click "**Add Functions**", click the exe file shown in the box, Virbox Protector will show and list more functions:



Virbox Protector 2 Trial (64-bit) v2.4.1.15314 (You are currently using the trial version, the protected program has run restrictions, do not use for distribut...

Authorization Info
Account: haiyang.liu@senselock.com Logout
Authorization Detail

File/Directory
DotNetGame.exe
Parse successfully!

Total Qty: 23 Total Protected:1
Obfuscation:0 Virtualization: 0 Encrypted:1

汉诸猫邀归

Add Functions

Global Search Functions

Total Protected: 20/23 Obfuscation: 20 Virtualization:0 Encrypted: 0

□ Show unsupported functions only

Name	Run Times	Protection Type	Other
汉诸猫邀归			
_6.汉诸猫邀归.Properties			
Settings			
void .ctor()	--	No protected	Bytes too little(.Net<10, oth...
void .cctor()	--	Obfuscation	
Settings get_Default()	--	Obfuscation	
Resources			
void set_Culture(CultureInfo)	--	No protected	Bytes too little(.Net<10, oth...
void .ctor()	--	Obfuscation	
ResourceManager get_ResourceManager()	--	Obfuscation	

Total Show Functions: 23 Support Ctrl/Shift Selection and Righ-Click Menu

2.2 Select the functions which you want to protect: Virbox Protector provides 3 kinds of protection mode for developer selection: *No Protected, Obfuscation, Encryption;* and the security to each protection mode comparison from high to low is: Code encryption>Obfuscation;

Click "*OK*" when finalized the setting.

1. Ctrl+A to select all of functions, and right click, to select the protection mode, then you can quickly select the all functions with same protection mode respectively;
2. Considering the program execution performance may be impacted, so we don't suggest to protect all of .NET functions, instead of to select those critical and important functions to protect only.
3. For some functions may not support the protection mode set to "Encryption", pls change the protection option from "Encryption" to "No Protect" or "Obfuscation" mode, if prompt message pop-up;
4. "Analysis", since protection may impact the .NET application execution performance, Virbox Protector provides "Analysis" Function (The button on the top right corner of Main Menu,) to developer to verify when the protection mode to each function has been selected. then developer can evaluate/simulate the program execution performance before the protection finalized. if execution performance is not satisfied, developer can change protect option to some function which frequently called. "No Protect" to improve the performance.

3. Set the configuration of "Protection Option"; (Protect the .NET project in general)

Go to "Protection Option" tabs, Set and Protect the .NET file in General:

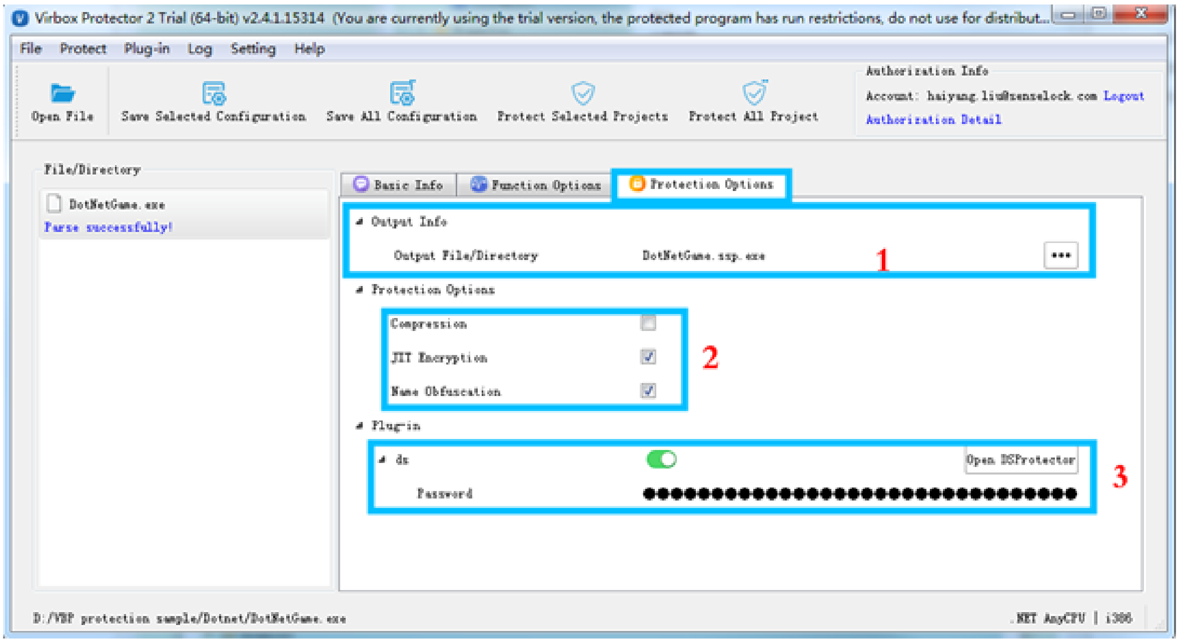
Besides to protect the specifies critical functions, Virbox Protector supports to protect .NET application in fundamental, with multiple technology: Compression, Name of Obfuscation, JIT encryption, and also provides with Plug in unit: DS Protector to protect .NET data resource.

Developer may set and define following factors in the "Protection Option" tabs

3.1 Output Info: Set output path and protected .NET filename, as shown in the "box 1" marked with blue frame

3.2 Protection Option Setting: Protect the .NET file in fundamental, In General, include "Compression", "JIT Encryption" and "Name of Obfuscation", only need to click, and JIT encryption and Name of Obfuscation selected by Virbox Protector on default.

3.3 Plug-in Unit Setting: If Developer has data resource need to be protected, switch on "ds" button to open "DS Protector" to protect relevant data resource via "DS Protector" and set the password to protected data resource.



Virbox Protector 2 Trial (64-bit) v2.4.1.15314 (You are currently using the trial version, the protected program has run restrictions, do not use for distribut...

Authorization Info
Account: haiyang.liu@senselock.com Logout
Authorization Detail

File/Directory
DotNetGame.exe
Parse successfully!

Output Info
Output File/Directory DotNetGame.ssp.exe

Protection Options
Compression □
JIT Encryption ☑
Name Obfuscation ☑

Plug-in
ds ●
Password ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

D:/VBP protection sample/Dotnet/DotNetGame.exe

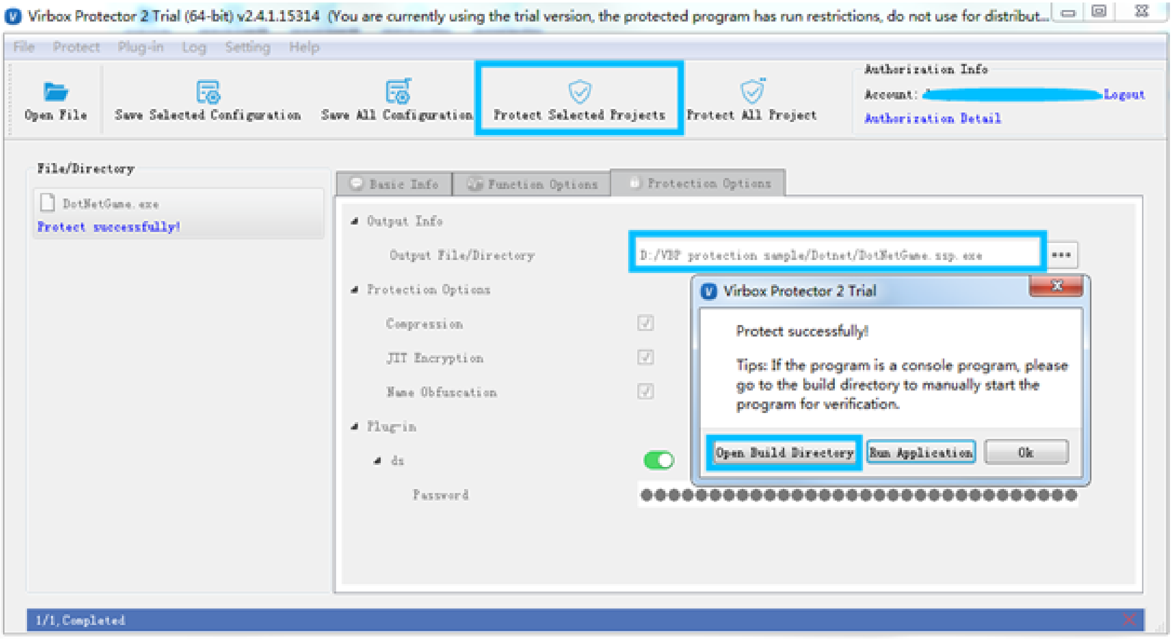
.NET AnyCPU | i386

Remove the "Strong Name" to your .NET project before Protection and add "Strong Name" after protection completed.

1. .Net JIT encryption means it encrypt all of the IL instructions of method in the .Net Program, and the instructions will be decrypted only when the JIT compiling proceed in the .Net Virtual Machine, This can be used to prevent static decompiling and prevent the IL code being Dumped in memory.
2. Name of Obfuscation: Rename the .Net program method name and class name with random string, the name that exported for external call will not be changed.

4. Click to Start the "Protection" Process

Click "Protect selected Project" to start protection;


Virbox Protector 2 Trial (64-bit) v2.4.1.15314 (You are currently using the trial version, the protected program has run restrictions, do not use for distribut...
File Protect Plug-in Log Setting Help
Open File
Save Selected Configuration
Save All Configuration
Protect Selected Projects
Protect All Project
Authorization Info
Logout
Authorization Detail
File/Directory
Basic Info
Function Options
Protection Options
Open Build Directory
Run Application
Ok

Account: [redacted]

DotNetGame.exe
Protect successfully!

Output Info
Output File/Directory D:/VBP protection sample/Dotnet/DotNetGame.ssp.exe
Protection Options
Compression ☑
JIT Encryption ☑
Name Obfuscation ☑
Plug-in
ds
Password ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

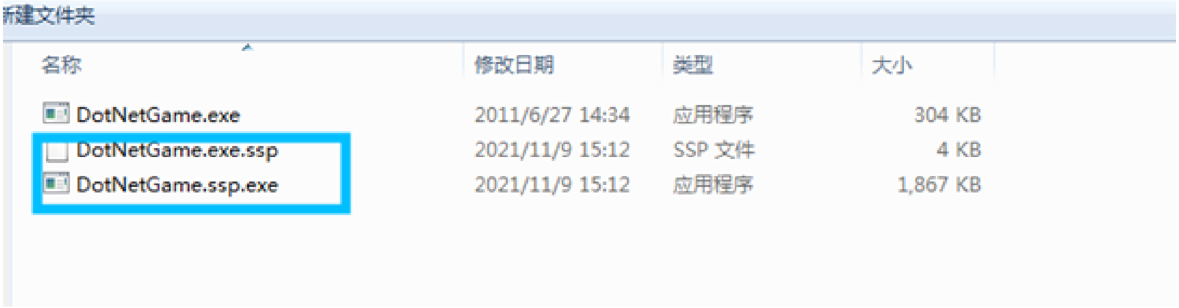
Virbox Protector 2 Trial

Protect successfully!

Tips: If the program is a console program, please go to the build directory to manually start the program for verification.

1/1,Completed

Then go to the output folder, you will find 2 news file has been generated, in the sample, we have set the output path: D:/VBP protection sample/Dotnet/DotNetGame.ssp.exe



名称	修改日期	类型	大小
DotNetGame.exe	2011/6/27 14:34	应用程序	304 KB
DotNetGame.exe.ssp	2021/11/9 15:12	SSP 文件	4 KB
DotNetGame.ssp.exe	2021/11/9 15:12	应用程序	1,867 KB

The new file which name DotNetGame.ssp.exe, is the protected .net application;

The new file which name DotNetGame.exe.ssp, is the configuration file which stored the protection option setting.

5. Backup the source file, rename the protected file to source file name and save the "configuration" file

Next, you need to rename the original .NET file, the un-protected file to new name and keep it, don't publish this original file. and rename the "DotNetGame.ssp.exe", the protected .NET file to "DotNetGame.exe. then you can distribute this protected file to your enduser or further testing before released.

Please Don't distribute the configuration file: DotNetGame.exe.ssp, to your enduser. please keep it, if you use CLI mode to protect your .NET application, it is useful configuration file when you use Virbox Protector CLI mode later.

Appendix: Using label to mark the critical functions in .NET project

Virbox Protector support to protect the critical functions with 2 protection modes:

Code Encryption and Code Obfuscation

Developer may set a label to mark the protection mode to the function will be protected in code building process, and it can be quoted and viewed in the code, so, when the compiling completed, developer drag the apps into the Virbox Protector, the GUI will show the protection mode set in the code accordingly, here is label sample for code:

```
 //Label
namespace Virbox{
    //Code Obfuscation
    class Mutate : System.Attribute
    {
    }
    //Code Encryption
    class Encrypt: System.Attribute
    {
    }
}
public class main
{
    [Virbox.Mutate]//Code Obfuscation
    public static void test1(string[] args)
    {
        System.Console.WriteLine("hello Virbox.Mutate!");
    }
    [Virbox.Encrypt]//Code Encryption
    public static void test2(string[] args)
    {
        System.Console.WriteLine("hello Virbox.Encrypt!");
    }
    public static void Main(string[] args)
    {
        test1(args);
        test2(args);
    }
}
```