v1.1.1

**VPAND.COM**

Virtual Processor Infrastructure for Code Reverse Engineer and VMProtect.

Loading very hard for Qt.wasm, wait a second please...

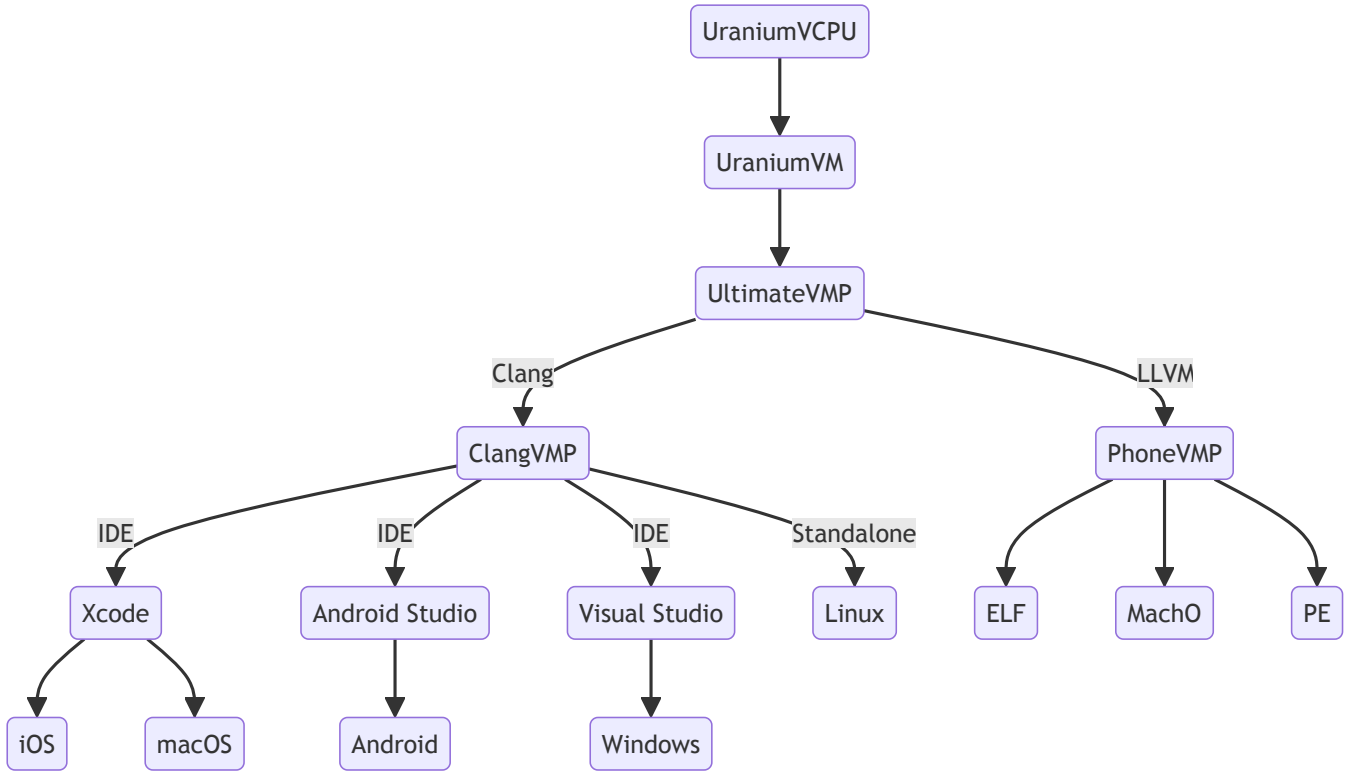
Powered by LLVM/Clang.

# ClangVMP User Manual

## UltimateVMP

**UltimateVMP** (Ultimate Virtual Machine Protection), is an **arm/arm64/x86/x86_64** assembly level code virtualization encryption software for Darwin (**macOS/iOS**), **Linux** (Ubuntu/**Android**), **Windows** and other operating systems. It re-encodes the binary instructions of the target function into a private instruction format and then interprets the encoded instruction directly at run time. Unlike low-intensity code encryption such as obfuscation and shell, VMP code will not restore the original instruction throughout the whole execution process, so it can achieve high code encryption strength, greatly raising the threshold of reverse engineering, so as to achieve the purpose of protecting software assets. UltimateVMP currently supports platforms including **macOS, iOS, Linux, Android, Windows**, and supported architectures including **x86, x86_64, arm, and arm64**.

UltimateVMP includes two products. One is ClangVMP(based on the Clang compiler), it encodes **C/C++/ObjC/ObjC++/Swift**/etc.(static native programming language) function into VMP data during compilation process. The other is PhoneVMP, it encodes assembly instructions into VMP data from binary file(like **MachO/ELF/PE**). All of them are based on virtual processor infrastructure UraniumVM from vpand.com. Their relationship is as follows:




This manual focuses on ClangVMP.

## ClangVMP

**ClangVMP** is a Clang/LLVM based code virtualized compiler. It encodes **C/C++/ObjC**/ObjC++/Swift/etc. (static native programming language) function into its private VMP data during compilation process. The

VMP data will be directly interpreted by ClangVMP runtime library without restoring the original instructions. Because of this mechanism, reverse engineering on this kind of code will be much more harder than raw machine code.

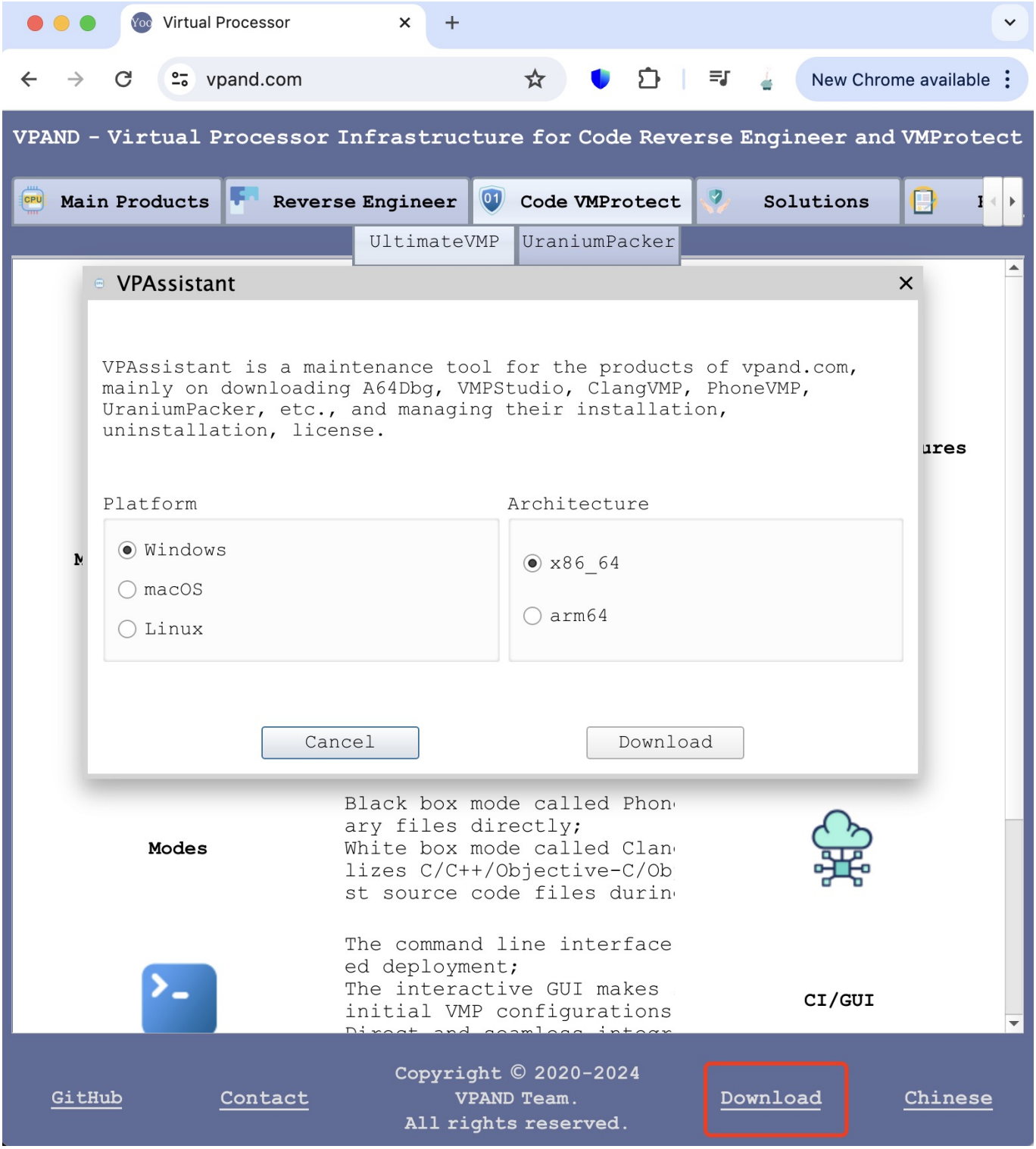
Till now, ClangVMP supports running on **macOS, Windows and Linux**, and supported virtualized architectures including **x86_64 and arm64**. The following is a sample for version output on macOS installed to Xcode toolchain directory:

```
ClangVMP@vpand.com bin % ls -l
total 352320
lrwxr-xr-x  1 vpand  wheel         9 Apr  8 08:22 clang -> clang-vmp
lrwxr-xr-x  1 vpand  wheel         9 Apr  8 08:22 clang++ -> clang-vmp
lrwxr-xr-x  1 vpand  wheel        13 Apr  8 08:22 clang++-org -> clang-
vmp-org
lrwxr-xr-x  1 vpand  wheel        13 Apr  8 08:22 clang-org -> clang-vmp-
org
-rwxr-xr-x  1 vpand  wheel  82115424 Apr  7 22:19 clang-vmp
-rwxr-xr-x  1 vpand  wheel  98264160 Apr  7 11:47 clang-vmp-org
-rw-r--r--  1 vpand  wheel         6 Apr  7 22:19 version.txt

ClangVMP@vpand.com bin % ./clang-vmp --version
ClangVMP v1.1.0 Apr  7 2024 22:15:50, A LLVM/Clang(19.0.0git) based
VMProtect Compiler.
Powered by http://yunyoo.cn/ , https://vpand.com/ .

clang version 19.0.0git (https://github.com/apple/llvm-project.git)
Target: arm64-apple-darwin23.4.0
Thread model: posix
InstalledDir:
/Applications/Xcode.app/Contents/Developer/Toolchains/ClangVMP.xctoolchain
/usr/bin
```

## Download

All of our products are hosted in vpand.com, you can download the assistant tool called **VPAssistant** to fetch your interested product like ClangVMP.

Please note that you should download **the exact platform and architecture** which matches your current running OS, all the real product download through VPAssistant highly depends on the architecture that it's running on. For the native performance, you'd better not download x86_64 version on arm64 macOS even though it can directly run on it with Rosetta 2.




## Install

As the VPAssistant on different platform(like Windows, Linux and macOS) is **absolutely the same**, unless some feature is just available on that specified platform, otherwise all the generic feature screenshots are from macOS. Here we go.

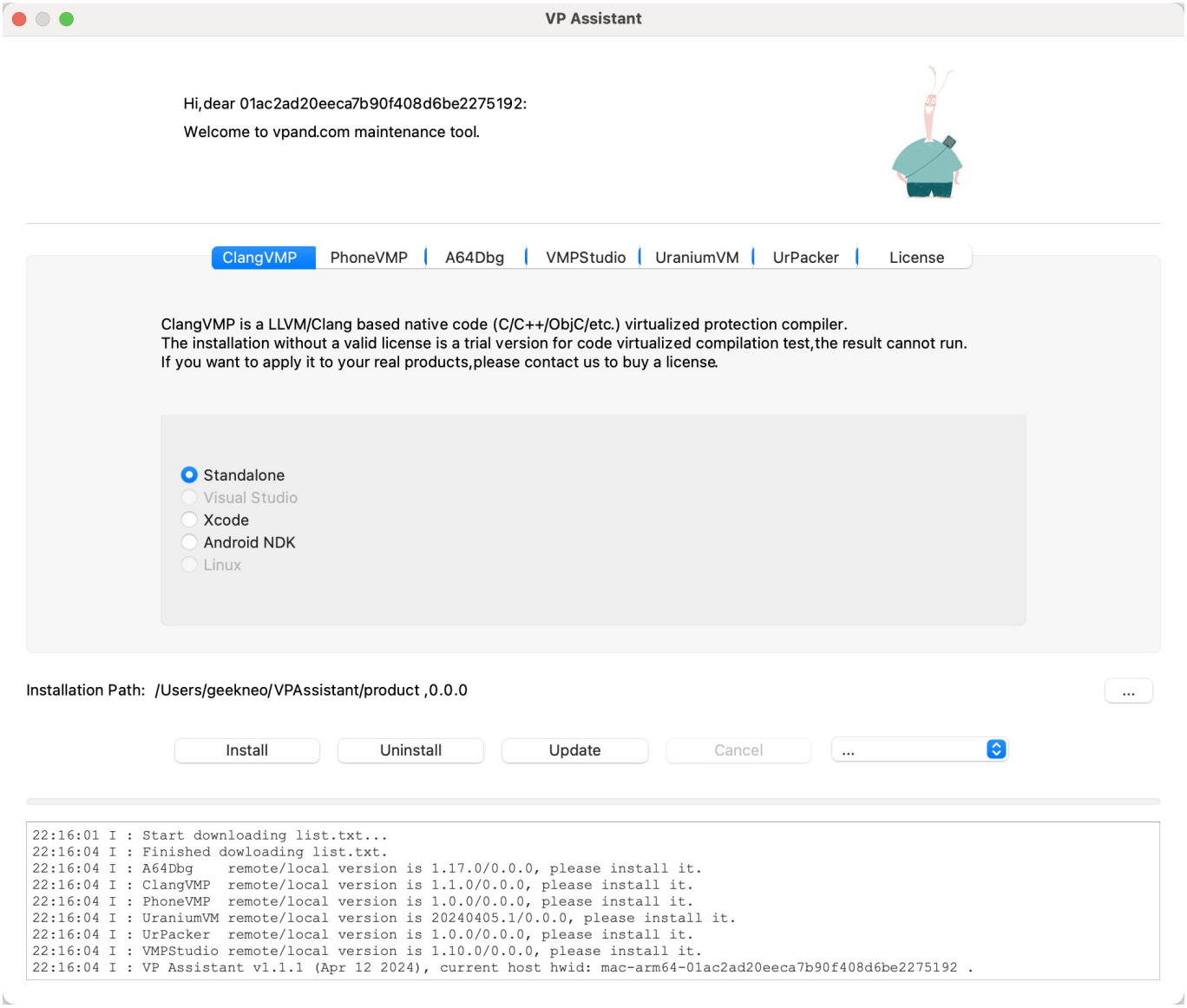
After download, unzip and launch VPAssistant, we're gonna be in the **ClangVMP** tab widget. The default installation path is(You can **change it with the "..." button** on the right):

```
macOS/Linux : ~/VPAssistant/product
```

```
Windows     : SysDrive:\Users\user-name\VPAssistant\product
```

Every time when VPAssistant finishes launching, at the end of logs there'll be a line for your running OS triple: os-arch-hwid. It's the key to authenticate your computer to fetch a valid ClangVMP license, copy and send to us before you want to purchase and install a license.

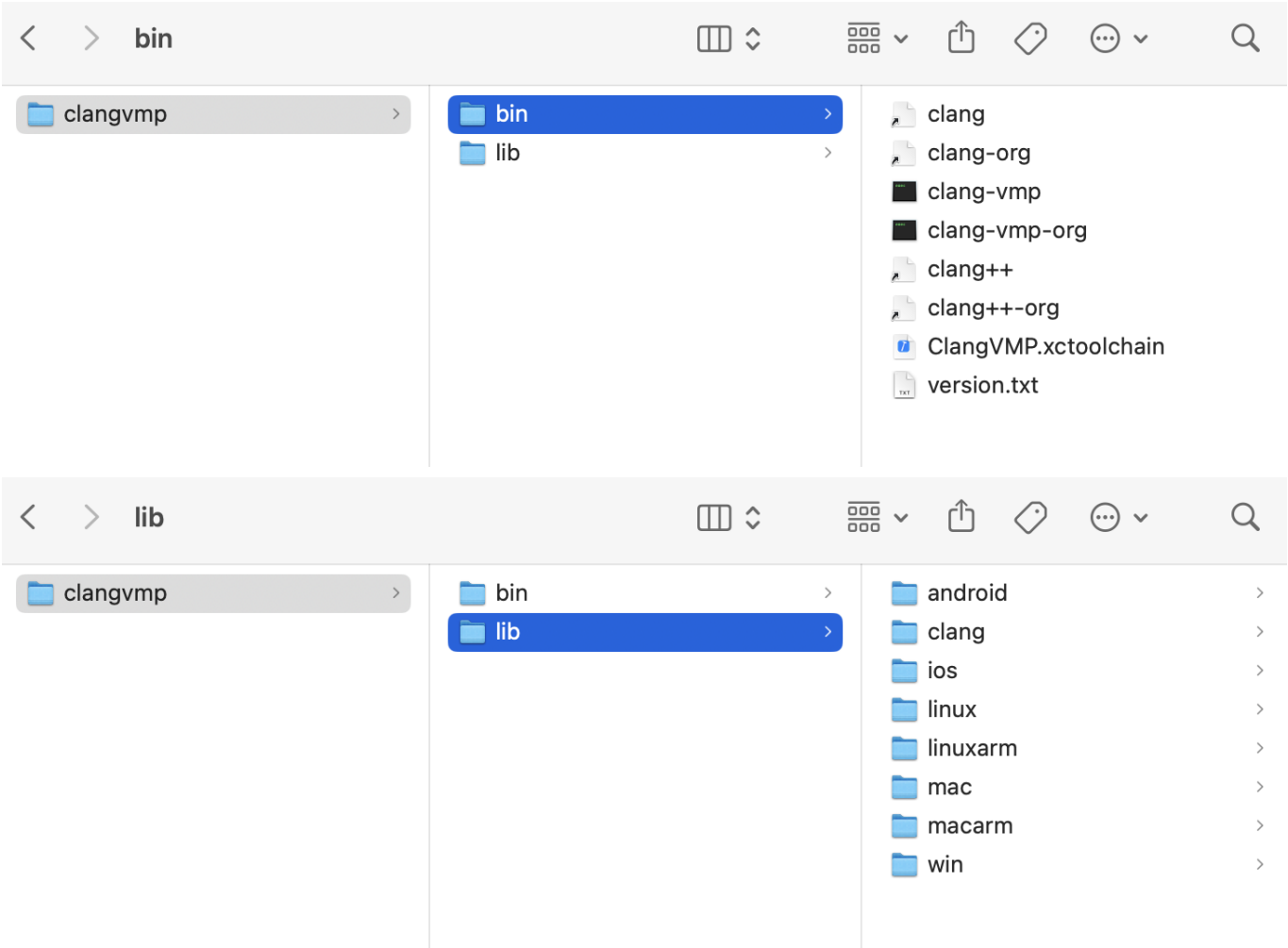
```
current host hwid: mac-arm64-01ac2ad20eeca7b90f408d6be2275192
```




## Standalone

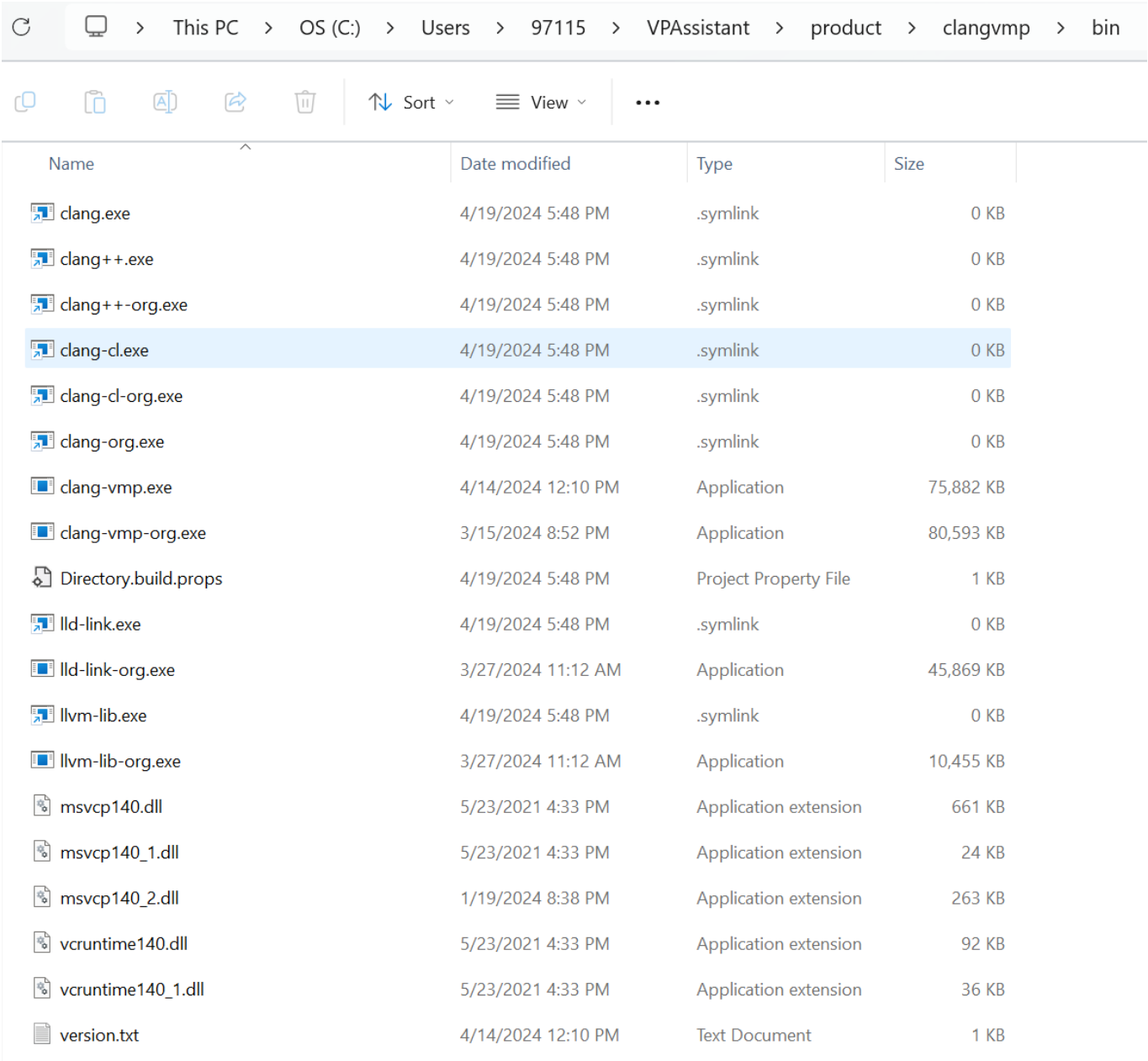
The standalone installation type is suitable for any platform, it's usually for user who likes **makefile**, **ninja** or **cmake** CLI build system(but for **exe/dll** build on **Window**, please prefer **Visual Studio** installation type for both CLI and IDE compatible by **clang-cl/lld-link**). After installation, it's nothing special as the generic clang compiler but needs a clangvmp.json(The VMP configuration section has detailed description) configuration file to apply its virtualized compilation feature.

Its bin and lib directory are as follows(Windows and linux are nearly the same):




## Visual Studio

The Visual Studio installation type will install ClangVMP as a llvm toolchain for its project solution file. Its bin directory is as follows:



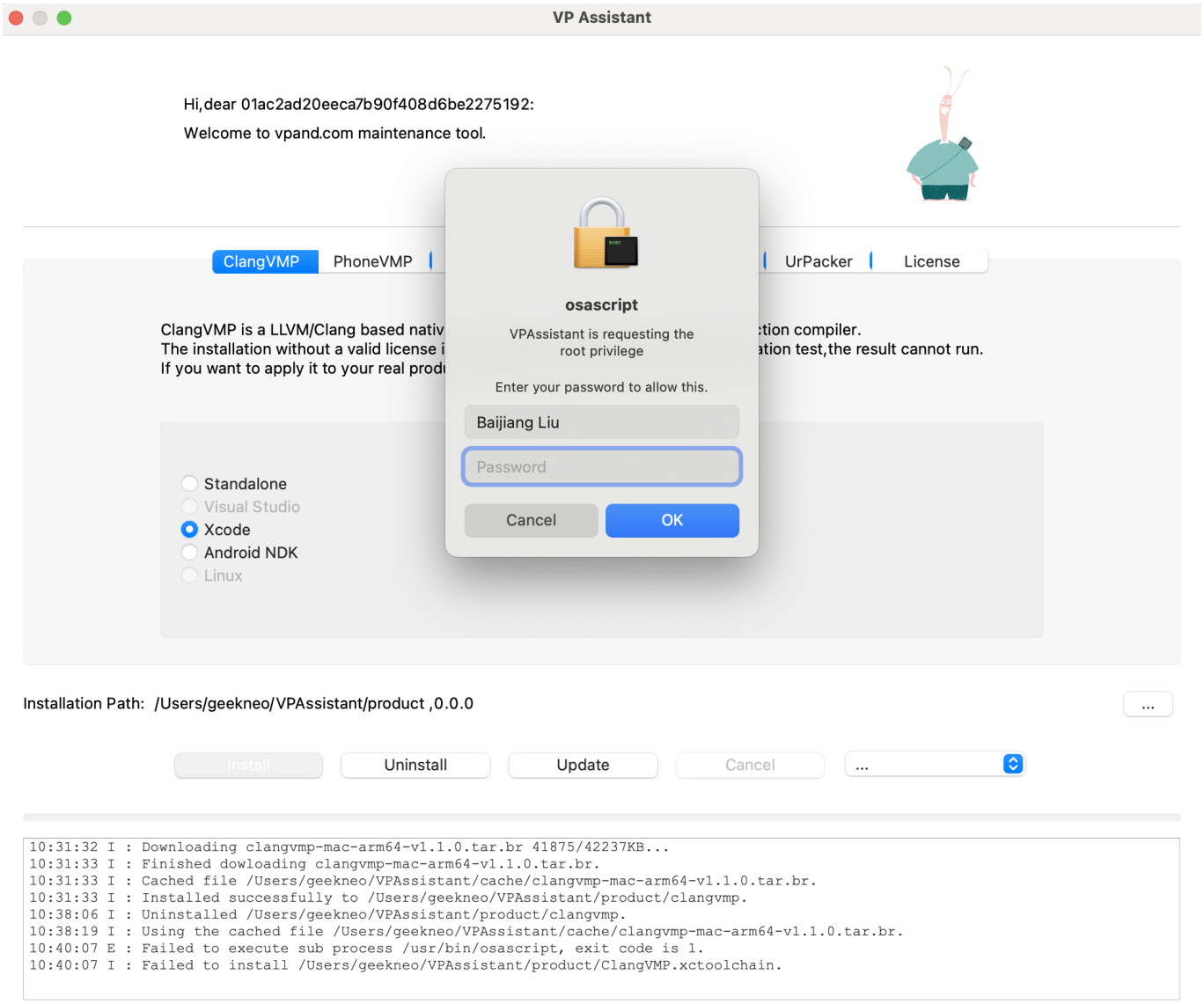

By the way, if you want to build exe/dll on Windows, no matter whether you use Visual Studio or not, the **Visual Studio** installation type should be chosen but **not Standalone**. Because only this kind of installation has **clang-cl.exe/lld-link.exe** which can compile/link exe/dll correctly and is compatible with both CLI like cmake and IDE like Visual Studio.

### Xcode

The Xcode installation type will install ClangVMP as a toolchain package into **Xcode.app**. Its fixed installation path is:

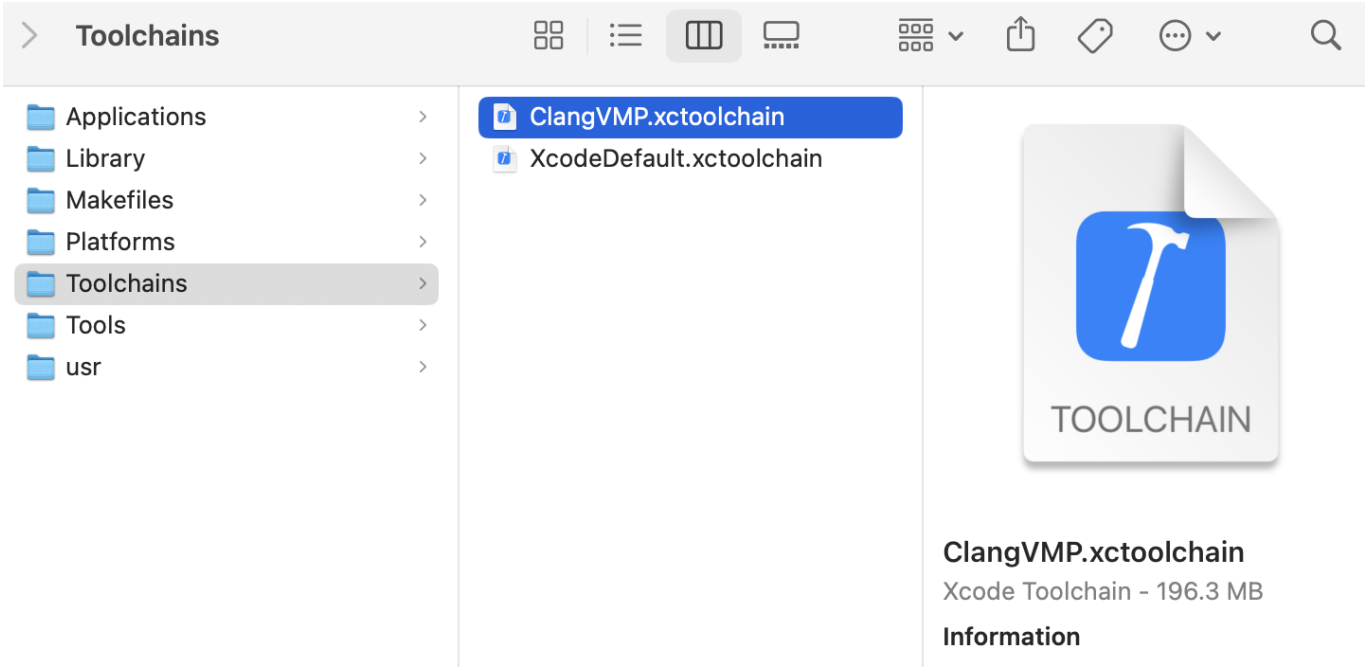
```
/Applications/Xcode.app/Contents/Developer/Toolchains/ClangVMP.xctoolchain
```

During the installation, you'll be confirmed to input the root password to move ClangVMP toolchain to Xcode.app internal directory.



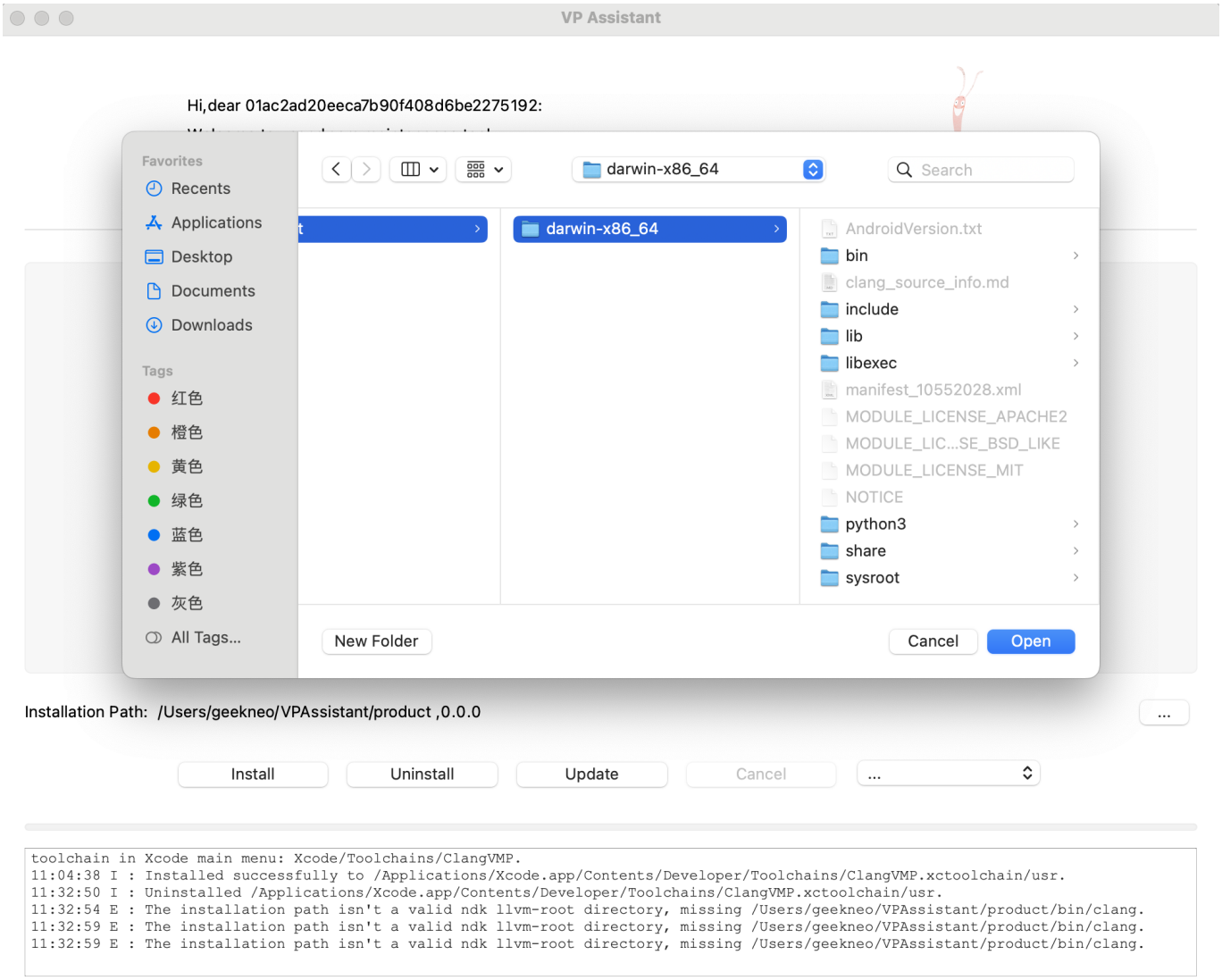

```
10:31:32 I : Downloading clangvmp-mac-arm64-v1.1.0.tar.br 41875/42237KB...
10:31:33 I : Finished dowloading clangvmp-mac-arm64-v1.1.0.tar.br.
10:31:33 I : Cached file /Users/geekneo/VPAssistant/cache/clangvmp-mac-arm64-v1.1.0.tar.br.
10:31:33 I : Installed successfully to /Users/geekneo/VPAssistant/product/clangvmp.
10:38:06 I : Uninstalled /Users/geekneo/VPAssistant/product/clangvmp.
10:38:19 I : Using the cached file /Users/geekneo/VPAssistant/cache/clangvmp-mac-arm64-v1.1.0.tar.br.
10:40:07 E : Failed to execute sub process /usr/bin/osascript, exit code is 1.
10:40:07 I : Failed to install /Users/geekneo/VPAssistant/product/ClangVMP.xctoolchain.
```

If you enter the right root password, then everything is ready for you to apply virtualized compilation in Xcode IDE.

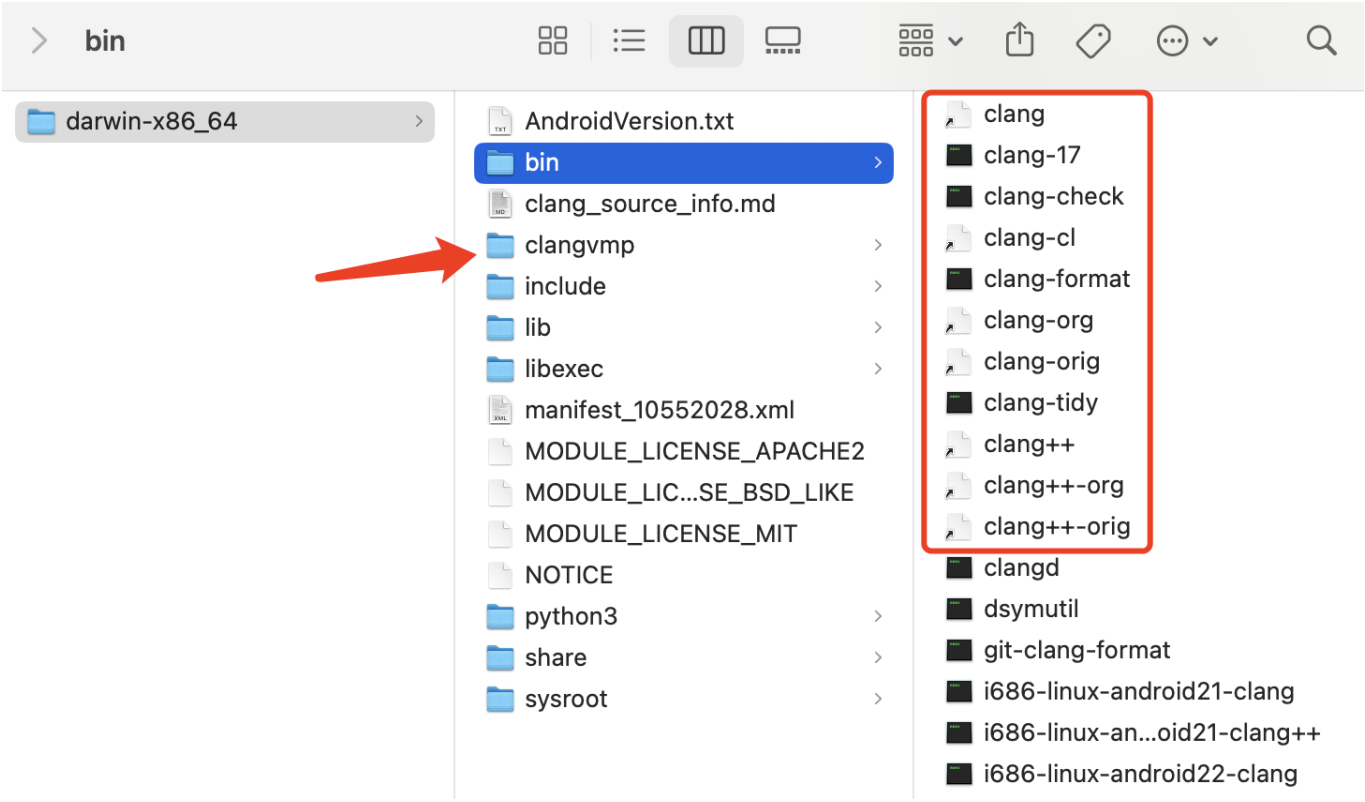



Android NDK

The Android NDK installation type will install ClangVMP into **Android NDK LLVM** toolchain. Before installation, you should select the llvm root directory of the target NDK toolchain manually.




After installation, the ndk llvm toolchain directory will be as follows:

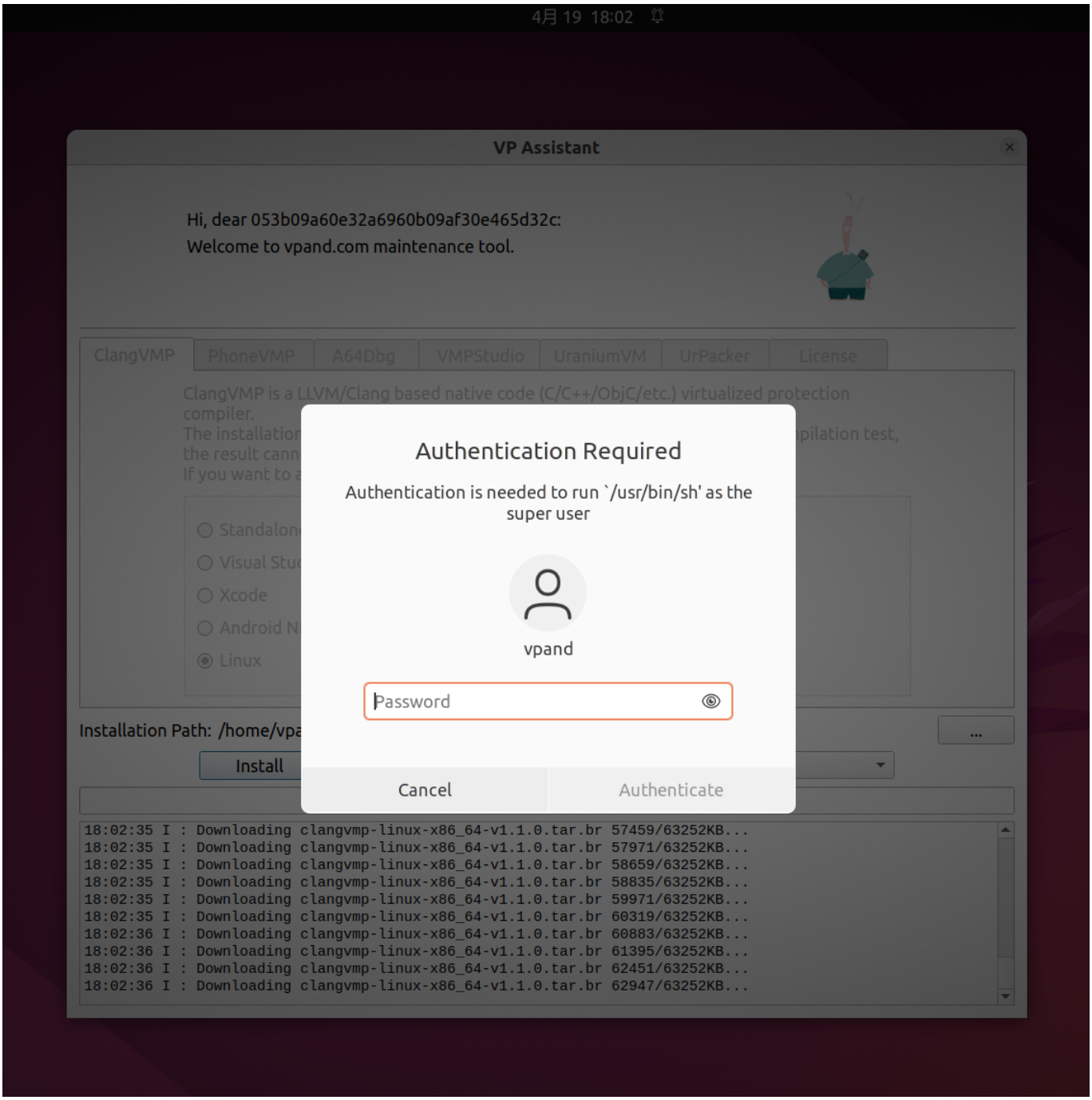



## Linux

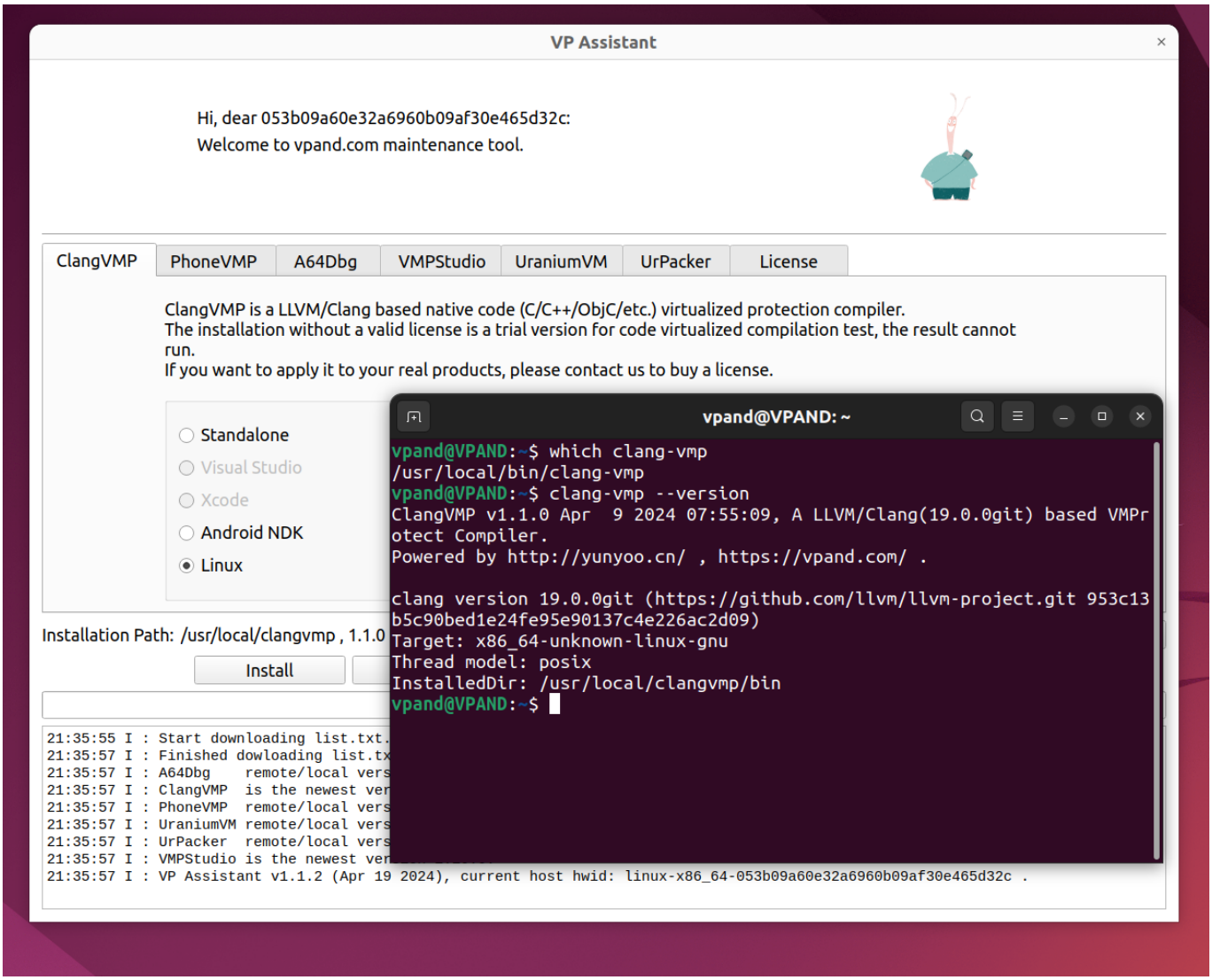
The Linux installation type will install ClangVMP as a cli tool into **/usr/local**. Its fixed installation path is:

```
/usr/local/clangvmp
```

During the installation, you'll be confirmed to input the root password to move ClangVMP toolchain to /usr/local directory.




If you enter the right root password, then everything is ready for you to apply virtualized compilation with clang-vmp cli compiler.



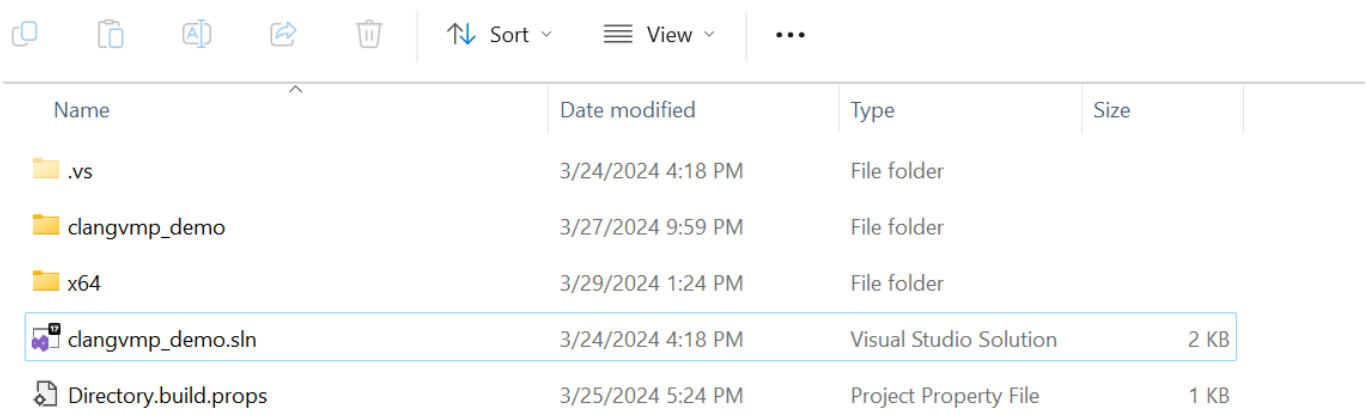

# IDE Configuration

## Visual Studio

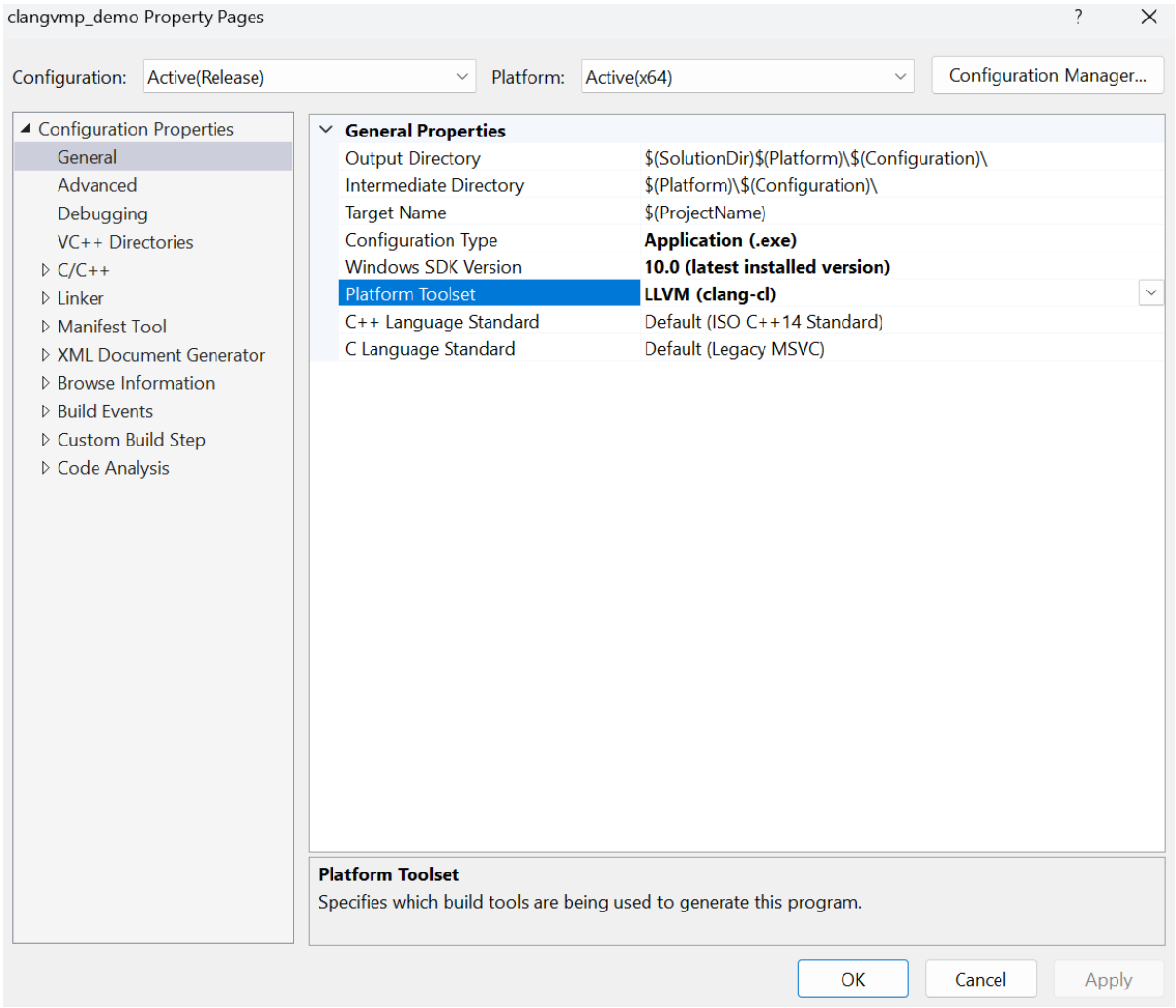
To apply this llvm like toolchain to Visual Studio project, you should do the following steps:

- 1. Copy the **Directory.build.props** to your **.sln** located directory, it's a xml file used to let Visual Studio locate this llvm toolchain:

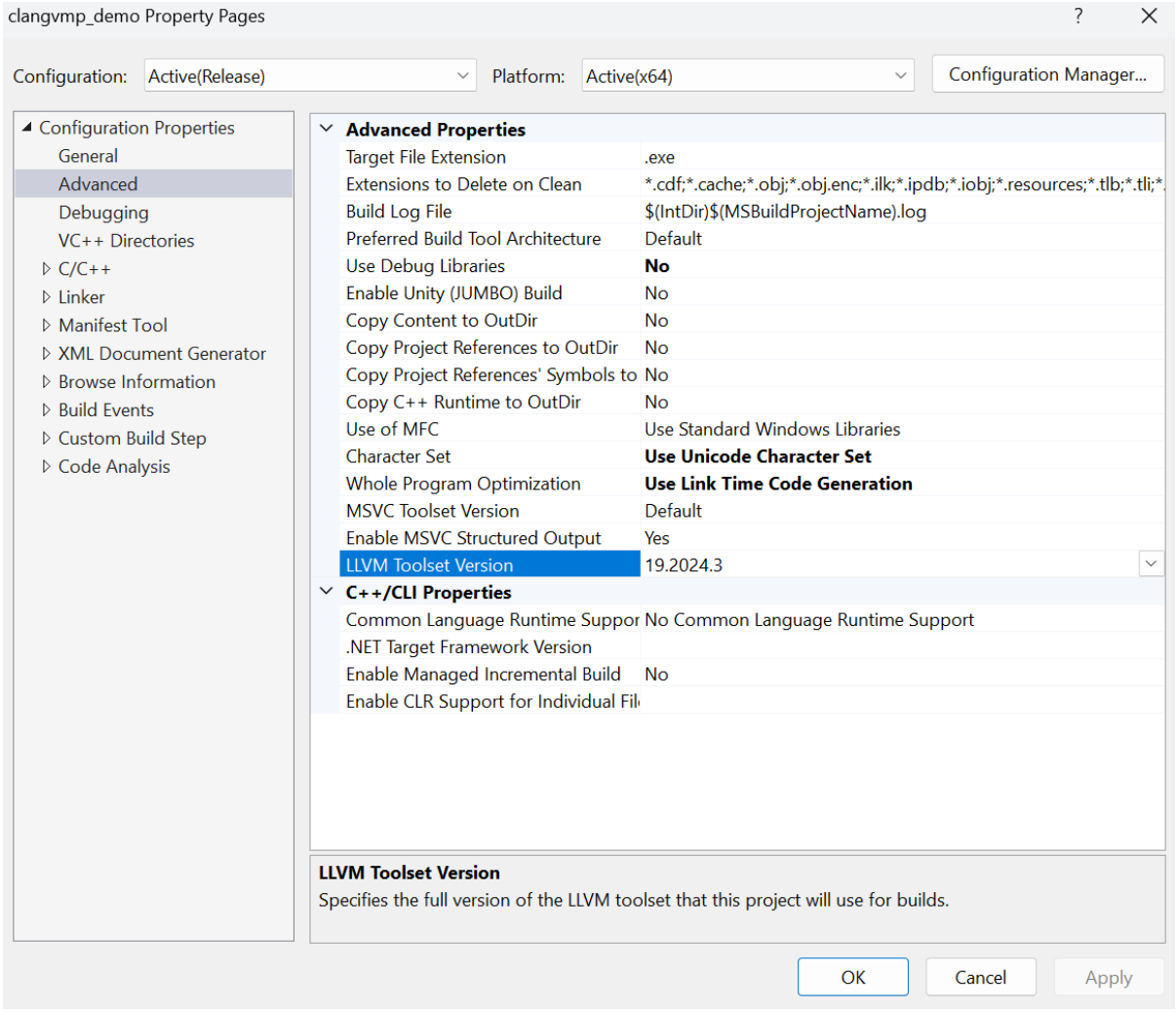
```
<Project>
  <PropertyGroup>
    <LLVMInstallDir>/.../VPAssistant/product/clangvmp</LLVMInstallDir>
    <LLVMToolsVersion>19.2024.3</LLVMToolsVersion>
  </PropertyGroup>
</Project>
```



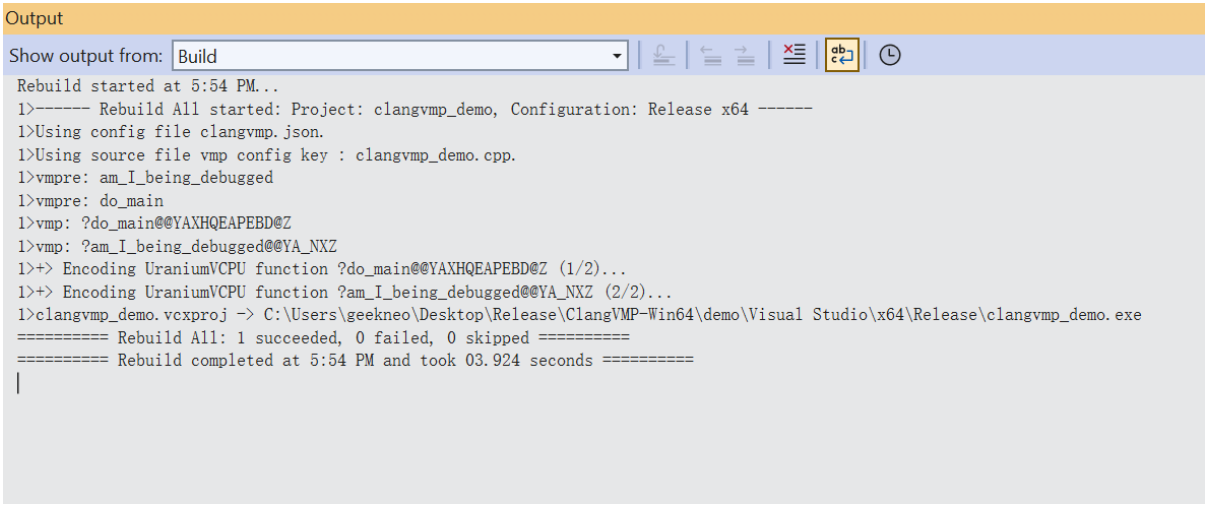

- 2. In Visual Studio Solution Property Pages, set General/Platform Toolset as **LLVM(clang-cl)**:




- 3. In Visual Studio Solution Property Pages, set Advanced/LLVM Toolset Version as LLVM-Main-Version.Year.Month(e.g.: **19.2024.3**, this is defined by ClangVMP llvm toolchain):

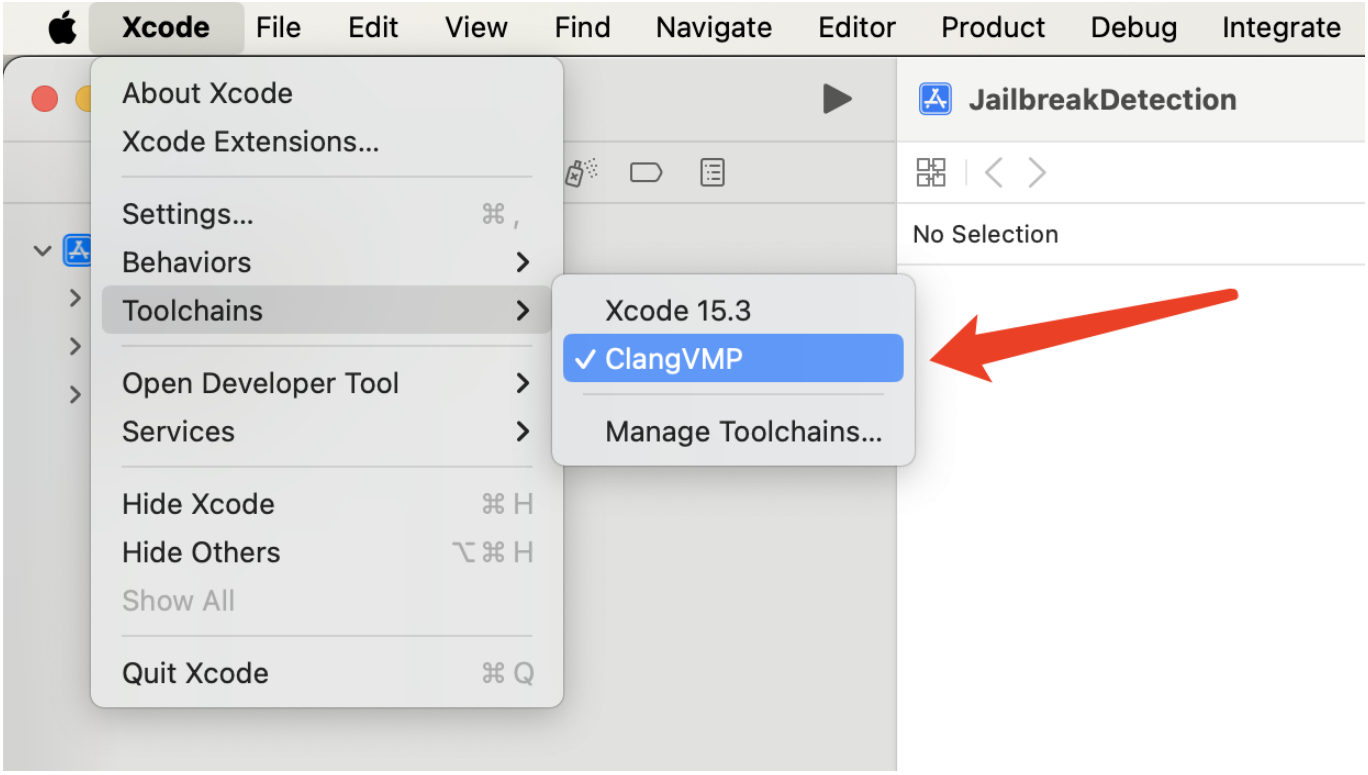



- 4. Make a test build to check whether everything goes well:

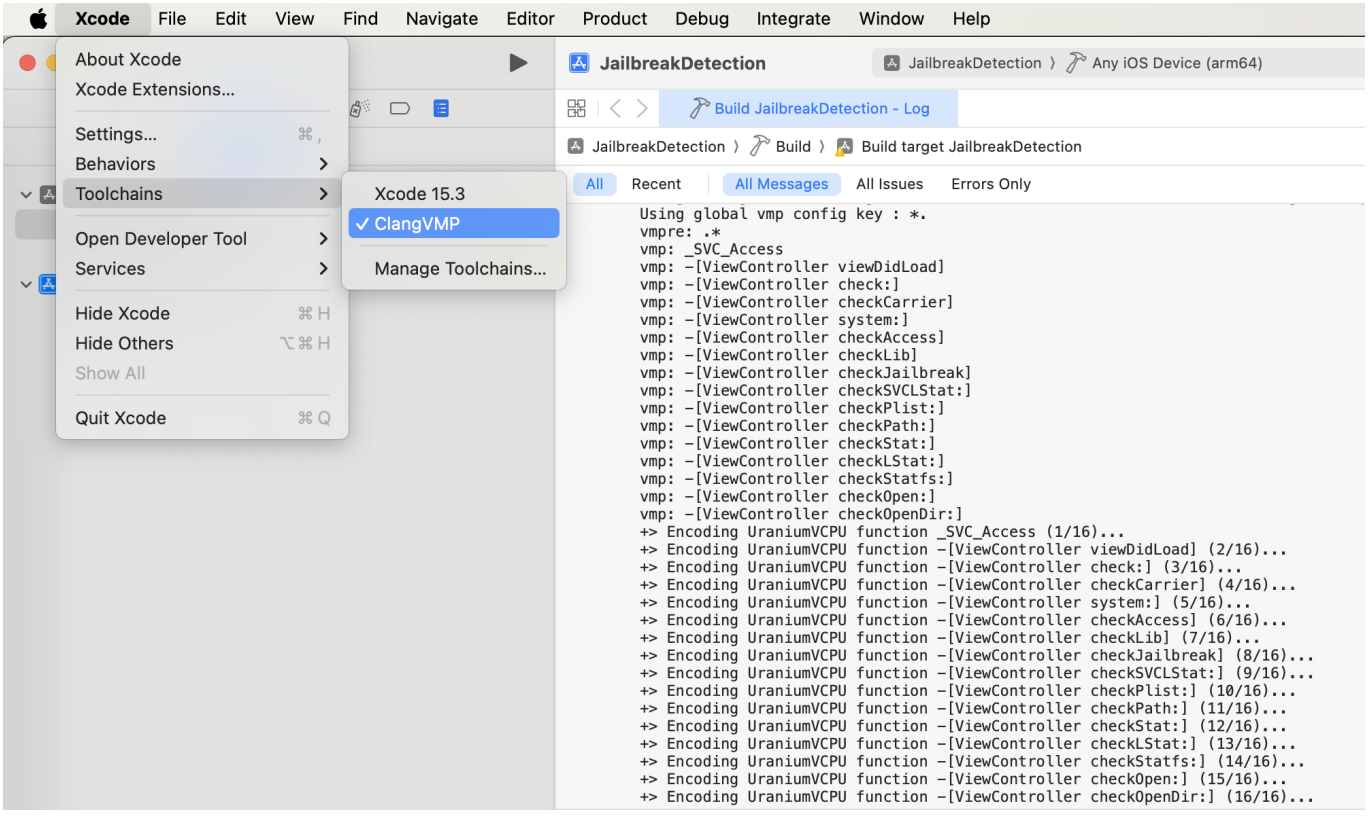



## Xcode

You can switch the Xcode and ClangVMP toolchain from main menu **Xcode/Toolchains** at anytime.




Make a test build to check whether everything goes well:




## CLI Configuration

If you prefer command line build system, there's a little detail for you to follow:

- **Never use clang-vmp directly but use clang or clang-cl instead**, because the name of clang main program is used as an argument style detector, e.g.: clang-cl uses the **Microsoft cl.exe** argument style, clang uses the **GNU gcc** argument style.

- **You must assign clang or lld-link in clangvmp/bin as your linker driver program**, because our custom linker will add the **libRTClangVMP** library to the final link library list. If you use the system default linker, then some errors like undefined symbols from ClangVMP may occur during linking.

### CMake

If you are using CMake to generate the final build script for macOS/iOS/Android/Linux, here's the simple cmake example(In this case, clang is the default linker driver, so we don't have to assign the linker manually):

```
cmake .../CMakeLists.txt_dir -DCMAKE_C_COMPILER=.../clangvmp/bin/clang -
DCMAKE_CXX_COMPILER=.../clangvmp/bin/clang -DCMAKE_BUILD_TYPE=Release
```

### CMake for Windows

If you are using CMake to generate the final build script for Windows, here's the simple cmake example(On Windows, the default linker will be directed to system cl or llvm/lld-link, so we have to manually assign the clangvmp/lld-link as the building linker):

```
cmake .../CMakeLists.txt_dir -DCMAKE_C_COMPILER=.../clangvmp/bin/clang-
cl.exe -DCMAKE_CXX_COMPILER=.../clangvmp/bin/clang-cl.exe -
DCMAKE_LINKER=.../clangvmp/bin/lld-link.exe -DCMAKE_BUILD_TYPE=Release
```

## VMP Configuration

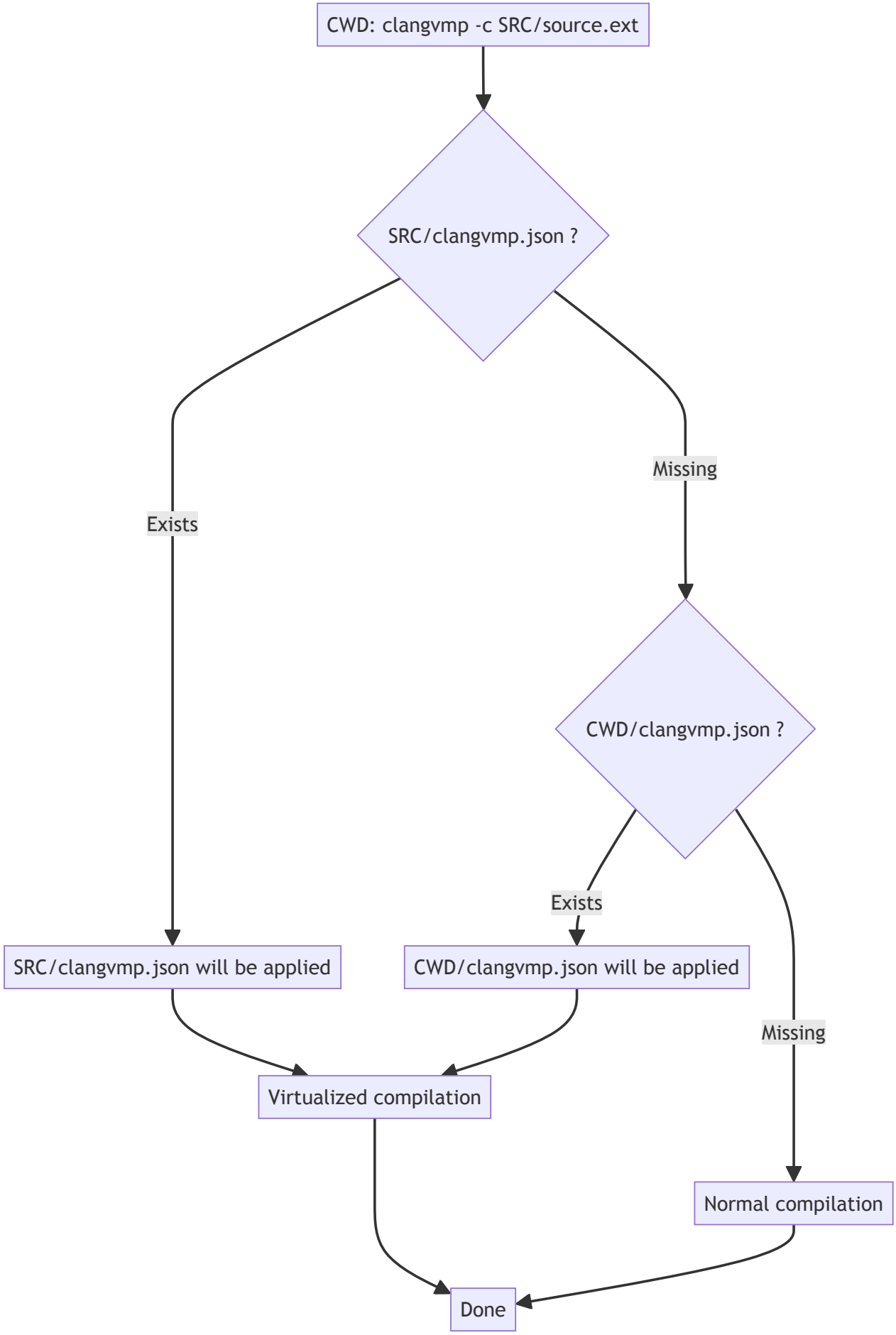
Unlike other Clang compiler-based source code encryption products such as **OLLVM**, ClangVMP doesn't specify the encryption configuration using command line arguments or attribute annotations, but instead uses a **clangvmp.json** encryption configuration file to specify the encryption options. The generic format of clangvmp.json is as follows:

```
{
    "source_name.ext" : {
        "vmpre" : ["symbol_regexpr"],
        "obfre" : ["symbol_regexpr"]
    }
}
```

During compilation, the loading rule for the clangvmp.json configuration file is:

- **Firstly**, look for clangvmp.json in the folder where the input **source code file** is located, if found, use this configuration, otherwise go to Secondly;
- **Secondly**, look for clangvmp.json in the **current working path** of the compiler (for Xcode, this is the path where xcodeproj is located; for NDK, this is the parent directory of jni). If found, use this

configuration, otherwise turn to normal compilation;




Key source file

**source_name.ext**: source code file name including its extension, such as helloworld.c, helloworld.cpp, helloworld.cc, helloworld.m and helloworld.mm. If this file name as a key in clangvmp.json, then the compiler will apply its symbol array to virtualize or obfuscate that matched function.

### Key vmpre

**vmpre**(VMP regular expression): any function name symbol which matches this regular expression array will be **VMP virtualized**. e.g.: ".*" means all symbols, "vmpfn" means symbols contain substring vmpfn. Visit Regular Expression for more information.

### Key obfre

**obfre**(Obfuscation regular expression): any function name symbol which matches this regular expression array will be **OLLVM obfuscated**.

### Demo

The following clangvmp.json means:

- All the function symbols in **UVMInterpreter.cpp** contain substring "interp" will be virtualized, contain substring "main" will be obfuscated.
- All the function symbols in **UVMRuntime.cpp** contain substring "exec" will be virtualized, contain substring "load" will be obfuscated.

```
{
    "UVMInterpreter.cpp" : {
        "vmpre" : ["interp"],
        "obfre" : ["main"]
    },
    "UVMRuntime.cpp" : {
        "vmpre" : ["exec"],
        "obfre" : ["load"]
    }
}
```

## Raw vs ClangVMP

Here's the simple C/C++ code, let's see how the normal and virtualized compilation are going to generate the final assembly instructions.

```
static bool am_I_being_debugged(void) {
  FILE *fp = fopen("/proc/self/status", "r");
  char status[128];
  size_t rd = fread(status, 1, sizeof(status) - 1, fp);
  status[rd] = 0;
  fclose(fp);
  return strstr(status, "TracerPid:\t0") == nullptr;
}
```

```
int __attribute__((noinline)) do_main(int argc, const char *argv[]) {
  if (!getenv("NO_ANTIDBG")) {
    anti_debug();
  }

  // modify register to continue
  for (int i = 0; i < argc; i++) {
    printf(
      "You should change the register to quit this infinite loop %d.\n"
      "I'm being debugged(%s).\n",
      i,
      am_I_being_debugged() ? "true" : "false");
    sleep(2);
  }

  // what a nice day...
  puts("Have fun with A64Dbg UraniumVM virtualization debug mode~");
  return 0;
}
```

### Raw

The normal compilation with clang compiler, we'll get the following assembly function:

```
do_main:0004 ; int do_main(int argc, const unsigned __int8 **argv)
do_main:0004                 EXPORT _Z7do_mainiPPKc
do_main:0004 _Z7do_mainiPPKc                         ; CODE XREF:
main+24↓p
do_main:0004
do_main:0004 ; __unwind {
do_main:0004                 SUB             SP, SP, #0xF0
do_main:0008                 STP             X29, X30, [SP,#0x90+var_s0]
do_main:000C                 STP             X28, X27, [SP,#0x90+var_s10]
do_main:0010                 STP             X26, X25, [SP,#0x90+var_s20]
do_main:0014                 STP             X24, X23, [SP,#0x90+var_s30]
do_main:0018                 STP             X22, X21, [SP,#0x90+var_s40]
do_main:001C                 STP             X20, X19, [SP,#0x90+var_s50]
do_main:0020                 ADD             X29, SP, #0x90
do_main:0024                 MRS             X8, #3, c13, c0, #2
do_main:0028 argc = X19                              ; int
do_main:0028                 MOV             W19, W0
do_main:002C                 STR             X8, [SP,#0x90+var_90]
do_main:0030                 ADRP            X0, #byte_180@PAGE
do_main:0034                 ADD             X0, X0, #byte_180@PAGEOFF ;
name
do_main:0038                 LDR             X8, [X8,#0x28]
do_main:003C                 STUR            X8, [X29,#var_8]
do_main:0040                 BL              getenv
do_main:0044                 CMP             W19, #1
do_main:0048                 B.LT            loc_E8
do_main:004C                 MOV             W20, WZR
```

```
do_main:0050                ADD             X27, SP, #0x90+ptr
do_main:0054                ADRP            X21, #byte_227@PAGE
do_main:0058                ADD             X21, X21, #byte_227@PAGEOFF
do_main:005C                ADRP            X22, #byte_239@PAGE
do_main:0060                ADD             X22, X22, #byte_239@PAGEOFF
do_main:0064                ADRP            X23, #byte_23B@PAGE
do_main:0068                ADD             X23, X23, #byte_23B@PAGEOFF
do_main:006C                ADRP            X28, #byte_1E7@PAGE
do_main:0070                ADD             X28, X28, #byte_1E7@PAGEOFF
do_main:0074                ADRP            X26, #byte_1E2@PAGE
do_main:0078                ADD             X26, X26, #byte_1E2@PAGEOFF
do_main:007C                ADRP            X24, #byte_18B@PAGE
do_main:0080 i = X20                                ; int
do_main:0080                ADD             X24, X24, #byte_18B@PAGEOFF
do_main:0084
do_main:0084 loc_84                                 ; CODE XREF:
do_main(int,char const**)+E0↓j
do_main:0084                MOV             X0, X21 ; filename
do_main:0088                MOV             X1, X22 ; modes
do_main:008C                BL              fopen
do_main:0090                MOV             X25, X0
do_main:0094                ADD             X0, SP, #0x90+ptr ; ptr
do_main:0098                MOV             W1, #1  ; size
do_main:009C                MOV             W2, #0x7F ; n
do_main:00A0                MOV             X3, X25 ; stream
do_main:00A4                BL              fread
do_main:00A8                STRB            WZR, [X27,X0]
do_main:00AC                MOV             X0, X25 ; stream
do_main:00B0                BL              fclose
do_main:00B4                ADD             X0, SP, #0x90+ptr ; haystack
do_main:00B8                MOV             X1, X23 ; needle
do_main:00BC                BL              strstr
do_main:00C0                CMP             X0, #0
do_main:00C4                MOV             X0, X24 ; format
...
```

If we decompile it in IDA or any other decompiler tool, we'll get a perfect pseudo C source code implementation like this, nearly the original source code:

```
__int64 __fastcall do_main(int argc, const unsigned __int8 **argv)
{
  int v2; // w19
  unsigned int v3; // w20
  FILE *v4; // x25
  const unsigned __int8 *v5; // x2
  __int64 result; // x0
  unsigned __int64 v7; // [xsp+0h] [xbp-90h]
  char ptr[128]; // [xsp+8h] [xbp-88h]
  __int64 v9; // [xsp+88h] [xbp-8h]

  v2 = argc;
```

```
  v7 = _ReadStatusReg(ARM64_SYSREG(3, 3, 13, 0, 2));
  v9 = *(_QWORD *)(v7 + 40);
  getenv((const char *)byte_180);
  if ( v2 >= 1 )
  {
    v3 = 0;
    do
    {
      v4 = fopen((const char *)byte_227, (const char *)byte_239);
      ptr[fread(ptr, 1uLL, 0x7FuLL, v4)] = 0;
      fclose(v4);
      if ( strstr(ptr, (const char *)byte_23B) )
        v5 = byte_1E7;
      else
        v5 = byte_1E2;
      printf((const char *)byte_18B, v3, v5);
      sleep(2u);
      ++v3;
    }
    while ( v2 != v3 );
  }
  result = puts((const char *)byte_1ED);
  if ( *(_QWORD *)(v7 + 40) == v9 )
    result = 0LL;
  return result;
}
```

## ClangVMP

The virtualized compilation with clangvmp compiler, we'll get the following assembly function:

```
do_main:0004 ; __int64 __fastcall do_main(int, const char **)
do_main:0004                 EXPORT _Z7do_mainiPPKc
do_main:0004 _Z7do_mainiPPKc                         ; DATA XREF:
.data.rel.ro..L.vpand_com_ClangVMP_0:0398↓o
do_main:0004
do_main:0004 ; __unwind {
do_main:0004                 SUB             SP, SP, #0x400
do_main:0008                 STP             X0, X1, [SP,#0x400+var_400]
do_main:000C                 STP             X2, X3, [SP,#0x400+var_3F0]
do_main:0010                 STP             X4, X5, [SP,#0x400+var_3E0]
do_main:0014                 STP             X6, X7, [SP,#0x400+var_3D0]
do_main:0018                 STP             X8, X9, [SP,#0x400+var_3C0]
do_main:001C                 STP             X10, X11, [SP,#0x400+var_3B0]
do_main:0020                 STP             X12, X13, [SP,#0x400+var_3A0]
do_main:0024                 STP             X14, X15, [SP,#0x400+var_390]
do_main:0028                 STP             X16, X17, [SP,#0x400+var_380]
do_main:002C                 STP             X18, X19, [SP,#0x400+var_370]
do_main:0030                 STP             X20, X21, [SP,#0x400+var_360]
do_main:0034                 STP             X22, X23, [SP,#0x400+var_350]
do_main:0038                 STP             X24, X25, [SP,#0x400+var_340]
```

```
do_main:003C                    STP             X26, X27, [SP,#0x400+var_330]
do_main:0040                    STP             X28, X29, [SP,#0x400+var_320]
do_main:0044                    STP             X30, X17, [SP,#0x400+var_310]
do_main:0048                    BL
vpand_com_ClangVMP_9d4bf2e9b10ef523_1
do_main:004C                    MOV             X3, X0
do_main:0050                    BL
vpand_com_ClangVMP_9d4bf2e9b10ef523_0
do_main:0054                    MOV             X2, #0
do_main:0058                    B               vpand_com_ClangVMP_entry
```

If we decompile it in IDA or any other decompiler tool, we'll get a fixed pseudo C source code implementation like this, which will always keeps this kind of instruction sequence, saving register context and then entering ClangVMP virtual machine runtime library:

```
__int64 __usercall do_main@<X0>(const char **a1@<X1>, __int64 a2@<X0>,
__int64 a3@<X2>, __int64 a4@<X3>, __int64 a5@<X4>, __int64 a6@<X5>,
__int64 a7@<X6>, __int64 a8@<X7>, __int64 a9@<X8>)
{
  __int64 v9; // x9
  __int64 v10; // x0

  vpand_com_ClangVMP_9d4bf2e9b10ef523_1(a2, a1, a3, a4, a5, a6, a7, a8,
a2, a1, a3, a4, a5, a6, a7, a8, a9, v9);
  v10 = vpand_com_ClangVMP_9d4bf2e9b10ef523_0();
  return vpand_com_ClangVMP_entry(v10);
}
```

Oops, we can see nothing about this function, all of the raw instructions are encoded as ClangVMP runtime data. **As so, reverse engineering will be extremely hard. This is the core value of ClangVMP**.

## Trial version

The default installation without a valid license is a trial version for **code virtualized compilation test**, the result **cannot run**. If you want to apply it to your real products, please contact us to buy a license.

```
ClangVMP@vpand.com android % ndk-build -B
[arm64-v8a] Compile++      : antidebug <= antidebug.cpp
There's no license file ~/VPAssistant/license/clangvmp.license, please
contact us to buy a license.
---------------------------WARNING----------------------------
This trial version of ClangVMP is just used for compilation test, the
result cannot run!
--------------------------------------------------------------
Using config file jni/../../clangvmp.json.
Using global vmp config key : *.
vmpre: main
vmp: _Z7do_mainiPPKc
vmp: main
```

```
+> Encoding UraniumVCPU function _Z7do_mainiPPKc (1/2)...
+> Encoding UraniumVCPU function main (2/2)...
[arm64-v8a] Executable     : antidebug
```

## Licensed version

If you want to upgrade to a licensed version, here's the steps:

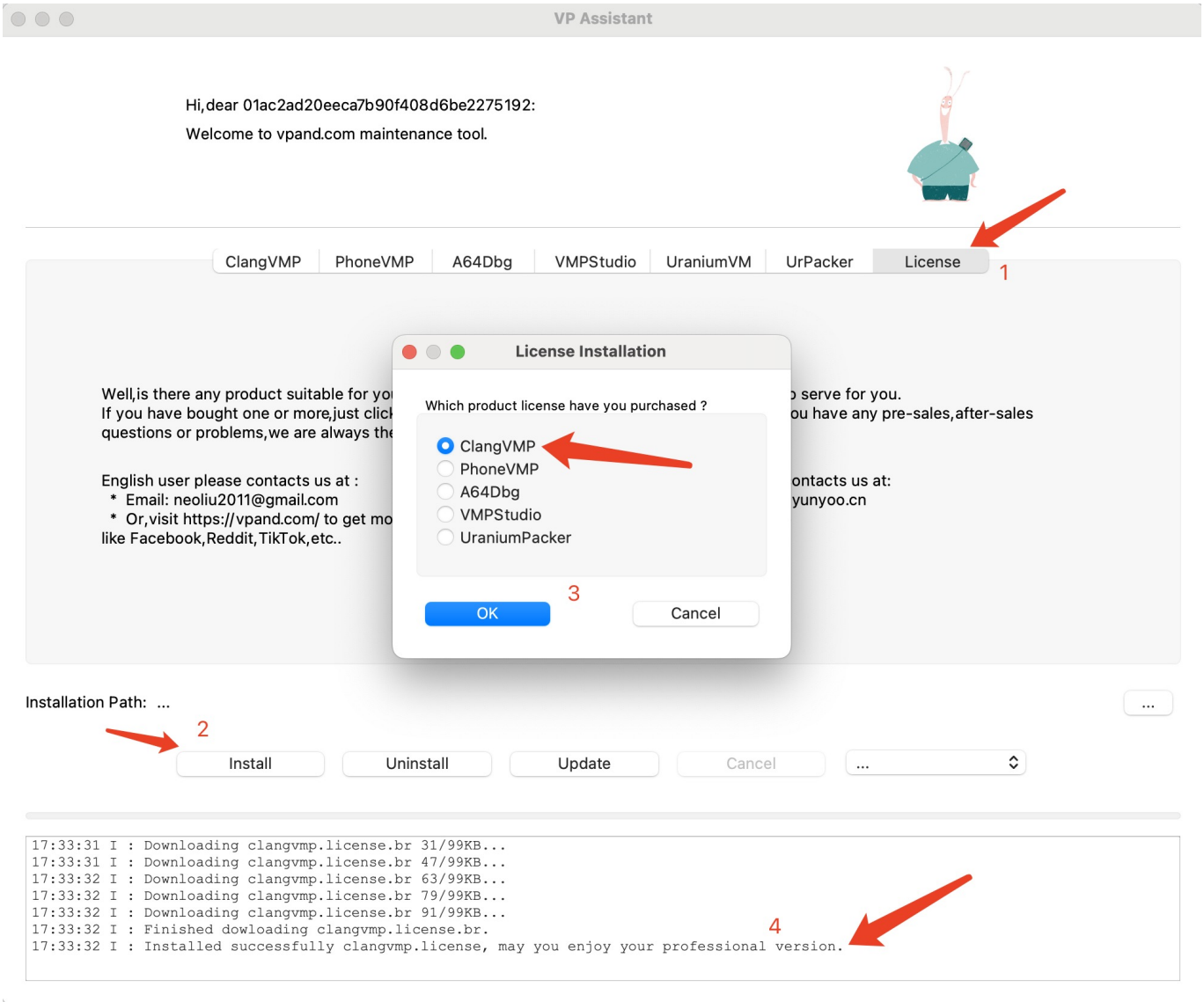
- 1. Contact us to pay for your license;

```
The price of ClangVMP: 9000$/year/os-arch/license
```

- 2. Send your computer os-arch-hwid(copy from VPAssistant startup log) to us;

```
22:53:37 I : VP Assistant v1.1.2 (Apr 19 2024), current host hwid: mac-
arm64-01ac2ad20eeca7b90f408d6be2275192 .
```

- 3. Switch to VPAssistant License tab widget, click Install button to download and install the license file;




With this license, we can virtualized compile our final executable product:

```
ClangVMP@vpand.com android % ndk-build -B
[arm64-v8a] Compile++      : antidebug <= antidebug.cpp
Using config file jni/../../clangvmp.json.
Using global vmp config key : *.
vmpre: main
vmp: _Z7do_mainiPPKc
vmp: main
+> Encoding UraniumVCPU function _Z7do_mainiPPKc (1/2)...
+> Encoding UraniumVCPU function main (2/2)...
[arm64-v8a] Executable     : antidebug
```

# Contact us

## Email

If you have any questions or problems on our products or services, feel free to contact us via email at anytime:

- **neoliu2011@gmail.com**

### We-Media

Till now, we-media is our main operation method, you can also contact us via the following platforms:

- Facebook
- YouTube
- Reddit
- X
- Instagram

## FAQ

### Does ClangVMP support 32 bits architecture like x86 or arm?

In fact, we have finished the development of 32 bits architecture supporting. But besides some embedded system, mobile and desktop platform are nearly all x86_64 or arm64 architecture, so we haven't released it to current ClangVMP version. If you do need this kind of feature, please let us know.

### What's the price of ClangVMP license ? Could the license be purchased by quarter or month?

The price of ClangVMP is **9000$/year/os-arch/license**, os means **Andoid/iOS/macOS/Linux/Windows**, arch means **x86_64/arm64**.You can visit vpand.com to check the latest price policy, all of our products are sold at expressly marked price, and the license term is by year. So till now, quarterly or monthly purchasing is not supported.

### When the license is expired, can the code virtualized before run normally?

Yes, of course, the license is for ClangVMP compiler itself, it has no effect on the compiled code.

### Can I update the license to rebind a new computer?

In principle, this is not supported. Because all of our license are offline type, it'll never connect to our server to check the license status. So if a license is released, it can not be repealed. This is good for client, as many clients are worried about data leakage. In order to avoid data leakage, offline license is the one and only choice, because we'll never read 1 byte data for our server to check what we need.