

Building the Tomcat Native Connector binaries for Windows

This page describes the process for building the Windows Native Connector for Windows. This is the native part of the APR/Native connector.

These instructions assume that you have configured the [common build environment](#).

Building

While tcnative itself needs to be built *last*, we unpack it first because there are some patches in the tcnative source distribution that will need to be applied to both APR and OpenSSL. Obtain the tcnative source from one of:

- the win32-src.zip source bundle for the version you wish to build;
- <https://github.com/apache/tomcat-native>

E.g.: To build the latest 2.0.x development build from main

```
c:
cd \
git clone https://github.com/apache/tomcat-native tomcat-native-2.0.x
cd tomcat-native-2.0.x\native\srclib\apr
```

Unpack APR 1.7.4 source distribution in this directory (C:\tomcat-native-2.0.x\native\srclib\apr).

Note: If you build the 1.2.x branch you will need to some patches. The patches should apply but depending on exactly which revision you are working with you may need to skip parts of the patch and/or apply an offset.

```
git apply apr-enable-ipv6.patch
git apply win-ipv6.patch
```

Then build:

```
c:\cmisc\setenv.bat x86
nmake -f NMAKEmakefile BUILD_CPU=x86 APR_DECLARE_STATIC=1

c:\cmisc\setenv.bat x64
nmake -f NMAKEmakefile BUILD_CPU=x64 APR_DECLARE_STATIC=1

cd ..\openssl
```

OpenSSL 3.0.x and later

Unpack the OpenSSL 3.0.x source distribution in this directory (C:\tomcat-native-2.0.x\native\srclib\openssl).

Apply openssl-msvcrt-3.0.x.patch. The patch should apply cleanly to the current recommended OpenSSL version. If you use a different version you may need to skip and/or use an offset to get the patch to apply.

```
c:\cmisc\setenv.bat x86
perl Configure no-shared VC-WIN32
nmake
mkdir out32-x86
copy libssl.lib out32-x86\
copy libcrypto.lib out32-x86\
copy apps\openssl.exe out32-x86\

nmake clean

c:\cmisc\setenv.bat x64
perl Configure no-shared VC-WIN64A
nmake
mkdir out32-x64
copy libssl.lib out32-x64\
copy libcrypto.lib out32-x64\
copy apps\openssl.exe out32-x64\
```

Tomcat Native

Keeping the various libraries in versioned directories saves having to rebuild them next time if the version remains unchanged.

```
cd ..
set OPENSSL_VER=3.0.11
set APR_VER=1.7.4
```

```

mkdir \deps-x86\apr-%APR_VER%\include
mkdir \deps-x86\apr-%APR_VER%\lib
mkdir \deps-x86\openssl-%OPENSSL_VER%\include
mkdir \deps-x86\openssl-%OPENSSL_VER%\lib
xcopy /E \deps-x86\apr-%APR_VER% \deps-x64\apr-%APR_VER%\
xcopy /E \deps-x86\openssl-%OPENSSL_VER% \deps-x64\openssl-%OPENSSL_VER%\

xcopy /E apr\include \deps-x86\apr-%APR_VER%\include\
xcopy /E apr\include \deps-x64\apr-%APR_VER%\include\

copy apr\WIN7_X86_LIB_RELEASE\apr-1.lib \deps-x86\apr-%APR_VER%\lib
copy apr\WIN7_X64_LIB_RELEASE\apr-1.lib \deps-x64\apr-%APR_VER%\lib

xcopy /E openssl\include\openssl \deps-x86\openssl-%OPENSSL_VER%\include\openssl\
xcopy /E openssl\include\openssl \deps-x64\openssl-%OPENSSL_VER%\include\openssl\

copy openssl\out32-x86\*.lib \deps-x86\openssl-%OPENSSL_VER%\lib\
copy openssl\out32-x64\*.lib \deps-x64\openssl-%OPENSSL_VER%\lib\

copy openssl\out32-x86\openssl.exe \deps-x86\openssl-%OPENSSL_VER%\
copy openssl\out32-x64\openssl.exe \deps-x64\openssl-%OPENSSL_VER%\

cd ..
set JAVA_HOME=C:\java\adopt-8.0.242.09-x64

c:\cmssc\setenv.bat x86
set WINVER=WIN7
nmake -f NMAKEMakefile WITH_APR=C:\deps-x86\apr-%APR_VER% WITH_OPENSSL=C:\deps-x86\openssl-%OPENSSL_VER%
APR_DECLARE_STATIC=1 OPENSSL_NEW_LIBS=1 ENABLE_OCSP=1
move WIN7_X86_DLL_RELEASE WIN7_X86_OCSP_DLL_RELEASE
nmake -f NMAKEMakefile WITH_APR=C:\deps-x86\apr-%APR_VER% WITH_OPENSSL=C:\deps-x86\openssl-%OPENSSL_VER%
APR_DECLARE_STATIC=1 OPENSSL_NEW_LIBS=1

c:\cmssc\setenv.bat x64
set WINVER=WIN7
nmake -f NMAKEMakefile WITH_APR=C:\deps-x64\apr-%APR_VER% WITH_OPENSSL=C:\deps-x64\openssl-%OPENSSL_VER%
APR_DECLARE_STATIC=1 OPENSSL_NEW_LIBS=1 ENABLE_OCSP=1
move WIN7_X64_DLL_RELEASE WIN7_X64_OCSP_DLL_RELEASE
nmake -f NMAKEMakefile WITH_APR=C:\deps-x64\apr-%APR_VER% WITH_OPENSSL=C:\deps-x64\openssl-%OPENSSL_VER%
APR_DECLARE_STATIC=1 OPENSSL_NEW_LIBS=1

```

Tomcat Native Connector DLLs may then be found in C:\tomcat-native-2.0.x\native\WIN7_*_[OCSP_]DLL_RELEASE

Construct the binary distributions

```

set VER=2.0.6

mkdir tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin
copy LICENSE.bin.win tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\LICENSE
copy NOTICE.bin.win tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\NOTICE
copy ..\README.txt tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\
copy src\lib\VERSIONS tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\

mkdir tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\bin
mkdir tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\bin\x64
copy C:\deps-x86\openssl-%OPENSSL_VER%\openssl.exe tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\bin
xcopy /E tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin tomcat-native-%VER%-openssl-%OPENSSL_VER%-ocsp-
win32-bin\
copy WIN7_X86_DLL_RELEASE\tcnative-1.dll tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\bin
copy WIN7_X86_OCSP_DLL_RELEASE\tcnative-1.dll tomcat-native-%VER%-openssl-%OPENSSL_VER%-ocsp-win32-bin\bin
copy WIN7_X86_DLL_RELEASE\tcnative-1.pdb tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\bin
copy WIN7_X86_OCSP_DLL_RELEASE\tcnative-1.pdb tomcat-native-%VER%-openssl-%OPENSSL_VER%-ocsp-win32-bin\bin
copy WIN7_X64_DLL_RELEASE\tcnative-1.dll tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\bin\x64
copy WIN7_X64_OCSP_DLL_RELEASE\tcnative-1.dll tomcat-native-%VER%-openssl-%OPENSSL_VER%-ocsp-win32-bin\bin\x64
copy WIN7_X64_DLL_RELEASE\tcnative-1.pdb tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin\bin\x64
copy WIN7_X64_OCSP_DLL_RELEASE\tcnative-1.pdb tomcat-native-%VER%-openssl-%OPENSSL_VER%-ocsp-win32-bin\bin\x64

set PATH=%PATH%;%JAVA_HOME%\bin
cd tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin
jar -cmf ..\tomcat-native-%VER%-openssl-%OPENSSL_VER%-win32-bin.zip *
cd ..\tomcat-native-%VER%-openssl-%OPENSSL_VER%-ocsp-win32-bin
jar -cmf ..\tomcat-native-%VER%-openssl-%OPENSSL_VER%-ocsp-win32-bin.zip *

```

The Windows binary distributions may then be found in C:\tomcat-native-2.0.x\native\

These need to be signed and hashed before uploading for the release vote.

Beware of typos in the name and contents of hash files for OSCP binaries ("ocsp" vs "oscp"). Such typos happened.

A correct example:

tomcat-native-2.0.5-openssl-3.0.10-ocsp-win32-bin.zip.sha512

```
8b82033602be8f47905804349093045b99ba9cc3f2dbf95d52be2a430bae84bbefd0b938f6b0fa9d5c54af20fcb4a00b4dd2325d7482d3cf59
a2463c0935d86f *tomcat-native-2.0.5-openssl-3.0.10-ocsp-win32-bin.zip
```

tomcat-native-2.0.5-openssl-3.0.10-win32-bin.zip.sha512

```
3c599d4da5c26b3dd1ddce7add5b8126e98f0068515f8bb942cc349716ea5f88519b9a1f76b3ba9badda79955f88eaf7940a78713064ccc547
a232b921c0f05b *tomcat-native-2.0.5-openssl-3.0.10-win32-bin.zip
```