

True Audio Next

Version 1.3.1.1

Build Instructions – March 2020

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Overview

This document contains the release notes for True Audio Next: what the package should contain and how to use it.

Requirements

Operating Systems:

Windows: 64-bit Windows 10

Linux: Ubuntu 1804 LTS

Apple: MacOS 10.13

Hardware:

AMD64 compatible CPU with AVX256 support.

Open CL 1.2 compatible graphics card. Some features require AMD GPU.

IDEs: Visual Studio 2017, Visual Studio Code, XCode.

Installation

Expected Files

There are several items within this package, please be sure it is complete by ensuring that it includes the following:

- **license:** TAN SDK license.txt
- **documentation:** tan/TrueAudioNextAPI.pdf
- **folders:** thirdParty, tan/tanlibrary, tan/samples, tan/tests, tan/common, tan/build

Third Party Libraries and Headers

- **OpenCL Headers**
OpenCL headers need to be downloaded from Khronos.org.
Download Zip from: <https://github.com/KhronosGroup/OpenCL-Headers>
Copy OpenCL headers to: thirdParty/OpenCL-Headers
Alternatively, if using git the command :
 git submodule update --init
will install the headers to the correct folder automatically.
- **OpenCL Library**
<https://github.com/GPUOpen-LibrariesAndSDKs/OCL-SDK/releases>
- **Qt**
The RoomAcousticsQT sample requires Qt v5.9.9 which can be downloaded from:
<http://download.qt.io/archive/qt/5.9/5.9.9/>
and placed in the thirdParty folder.

- **PortAudio**

The RoomAcousticsQT sample requires the cross-platform audio I/O library PortAudio which can be downloaded from:

http://portaudio.com/archives/pa_stable_v190600_20161030.tgz

or from command line:

curl http://portaudio.com/archives/pa_stable_v190600_20161030.tgz --output portaudio.tgz

unpack in thirdparty folder using:

tar -xvzf portaudio.tgz

- **clFFT**

For GPU mode convolution, TAN uses AMD's clFFT library:

<https://gpuopen.com/compute-product/clfft/>

clFFT is included with this TAN distribution in folder: tan/tanlibrary/clFFT-master

- **FFTW**

For CPU mode convolution, TAN can use the open source Fast Fourier Transform library FFTW version 3.3.5 <http://www.fftw.org/download.html>.

To download from the command line:

curl <ftp://ftp.fftw.org/pub/fftw/fftw-3.3.5-dll64.zip> --output fftw-3.3.5-dll64.zip

extract in folder tan/tanlibrary/src/fftw-3.3.5:

tar -xvzf fftw-3.3.5-dll64.zip

Note: for Linux and MacOS, you will need to download and compile FFTW sources.

- **IPP**

TAN also supports an alternative closed source CPU FFT library which is part of Intel Performance Primitives signal processing libraries:

<https://software.intel.com/en-us/ipp>

<https://software.seek.intel.com/performance-libraries>

After installing IPP, edit the appropriate generate-XXX script so that -DIPP_DIR= points to the folder where IPP is installed.

for example: -DIPP_DIR="C:\Program Files

(x86)\IntelSWTools\compilers_and_libraries_2020.0.166\windows\ipp"

If IPP_DIR exists, cmake will automatically configure TAN SDK to use IPPFFT instead of FFTW library.

- **Oculus SDK**

The OculusRoomTAN sample requires the Oculus SDK. Find instructions in the thirdparty\OculusSDK1.17 folder. Install Oculus SDK 1.17 in the ThirdParty folder according to the instruction text file.

Latest AMD drivers

(Skip if already installed and up to date)

- Retrieve the latest drivers for your graphics card from the official AMD website.
- Execute the file and install by following the on-screen GUI instructions.

Building the SDK

Build Tools

TAN SDK requires **Cmake** and **Git** as well as C++ build environments for the platform.

Windows 10

- Install Visual Studio 2017.
- Open command line in tan/build/cmake
- Run:
Generate-vs2017.bat
Build-vs2017-cmake-release.bat
Gatherbinaries.bat

Executables and dlls will be copied to bin folder.

Linux

- Open shell in tan/build/cmake
- Run:
./generate-linux.sh
./build-linux.sh

MacOS

- Open shell in tan/build/cmake
Run:
./generate-mac.sh
./generate-xcode.sh
./build-mac.sh

Issues

Known Current Issues, Limitations

The OculusRoomTAN sample is out of date and may not build with latest Oculus SDK.

How to Use

See [tan/TrueAudioNextAPI.pdf](#) for API documentation.

Several sample applications and functional tests are included to illustrate how to use TAN.

Applications

- RoomAcousticsQT64.exe – similar to RoomAcoustics64 but with a QT based UI.
- ReverbMixer64.exe – sample application using TAN to apply reverb and 10 band EQ to files.
- OculusRoomTAN.exe – sample application to demonstrate 3D audio and dynamic reverb in VR. Requires Oculus SDK and Oculus HMD.
- TALibTestConvolution - A very simple application to test correct functionality of TAN convolution in CPU and GPU modes.