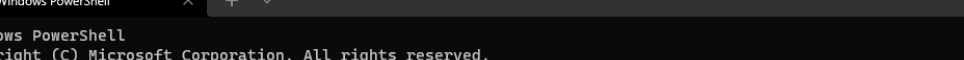


In this eg. we will find the sourceid of the incoming phone ringtone.

1. Grab "eventsmetadata.json" at path: base\sound\event\eventsmetadata.json which is a CR2W json file, so convert it to a normal json by using WolvenKit.CLI



The screenshot shows a Windows PowerShell terminal window. The title bar reads "Windows PowerShell". The prompt is "PS D:\github\WolvenKit\WolvenKit.CLI\bin\Debug\net5.0>". The command entered is `./WolvenKit.CLI.exe cr2w -s -p C:\Users\... \Desktop\eventsmetadata.json`. The output shows three lines of status messages: "[0: Information] - Found 1 files to process.", "[0: Success] - Saved C:\Users\... \Desktop\eventsmetadata.json to json.", and "[0: Information] - Elapsed time: 4450ms." The prompt is then shown again: "PS D:\github\WolvenKit\WolvenKit.CLI\bin\Debug\net5.0>".

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS D:\github\WolvenKit\WolvenKit.CLI\bin\Debug\net5.0> ./WolvenKit.CLI.exe cr2w -s -p C:\Users\... \Desktop\eventsmet
adata.json
[ 0: Information ] - Found 1 files to process.
[ 0: Success ] - Saved C:\Users\... \Desktop\eventsmetadata.json to json.
[ 0: Information ] - Elapsed time: 4450ms.
PS D:\github\WolvenKit\WolvenKit.CLI\bin\Debug\net5.0>
```

2. Open “eventsmetadata.json.json” in notepad++ and search for relevant event names, for this eg. i simply searched for “call” and found a relevant name/ red id “ui_phone_incoming_call”, now copy the wwwiseid (1529599084)

Desktop\eventsmetadata.json - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

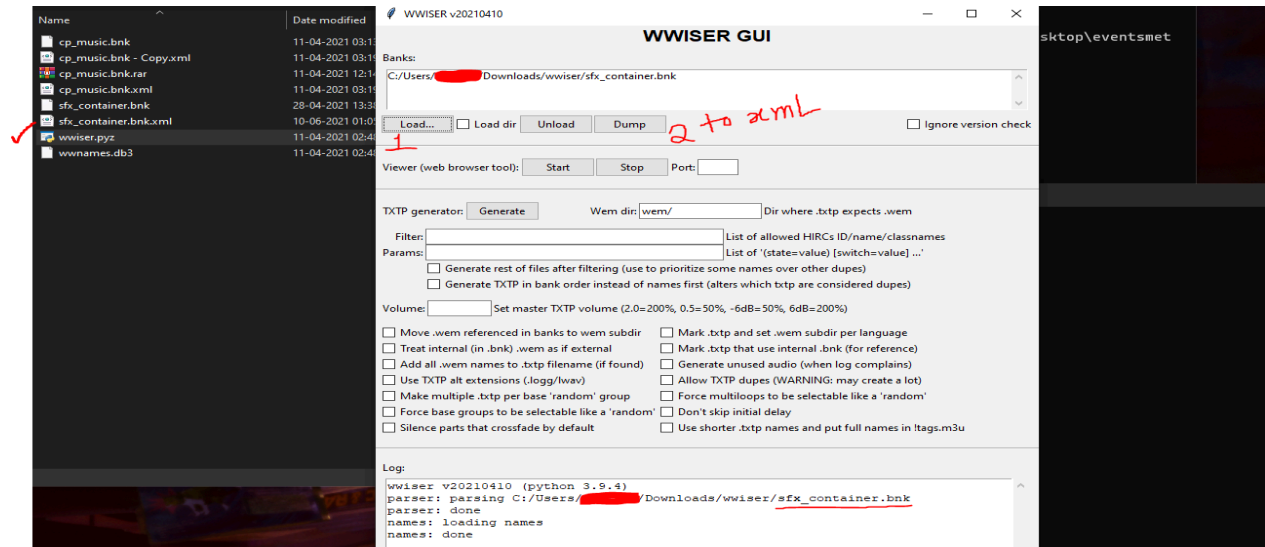
sfx_container.bnk.xml eventsmetadata.json

```
117149     "tags": [
117150         "cars",
117151         "quadra_turbo_r",
117152         "additional"
117153     ],
117154 },
117155 {
117156     "redId": "sq02l_sc_02_v_gets_out_car",
117157     "wwiseId": "3385439365",
117158     "minDuration": 2.5,
117159     "maxDuration": 2.5,
117160     "tags": [
117161         "SQ",
117162         "sq02l",
117163         "sq02l_sc_02_ride"
117164     ]
117165 },
117166 {
117167     "redId": "ui_phone_incoming_call",
117168     "wwiseId": "1529599084",
117169     "isLooping": true,
117170     "tags": [
117171         "ui_phone_01"
117172     ]
117173 },
117174 {
117175     "redId": "mus_q20l_the_end_going_on_ice_STOP",
117176     "wwiseId": "664830671",
117177     "stopActionEvents": [
117178         "mus_q20l_the_end_going_on_ice_START"
117179     ],
117180     "tags": [
117181         "quest_music_stop",
117182         "music_quests_events",
117183         "q20l_heir",
117184         "q20l_the_end_going_on_ice"
117185     ]
117186 },
117187 }
```

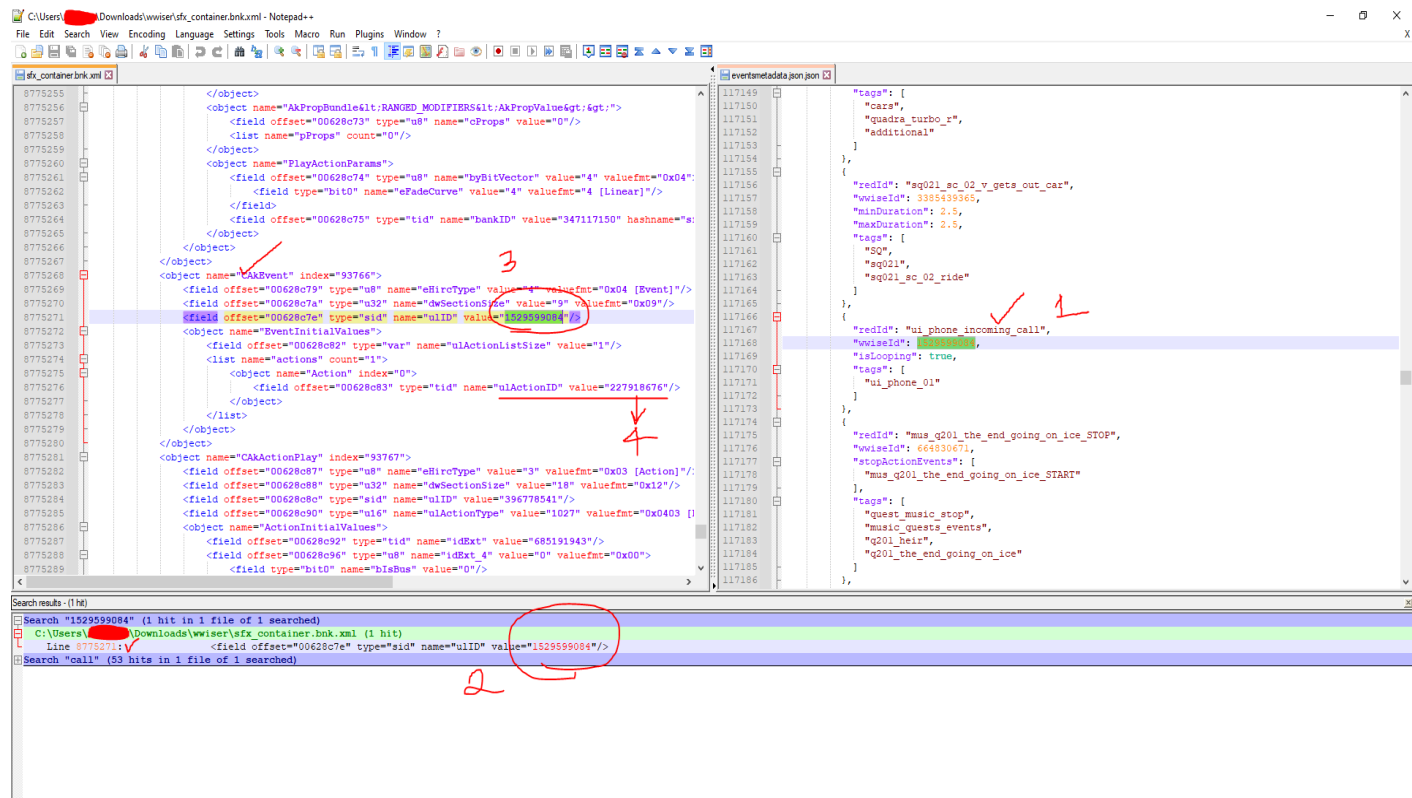
Search results - (53 hits)

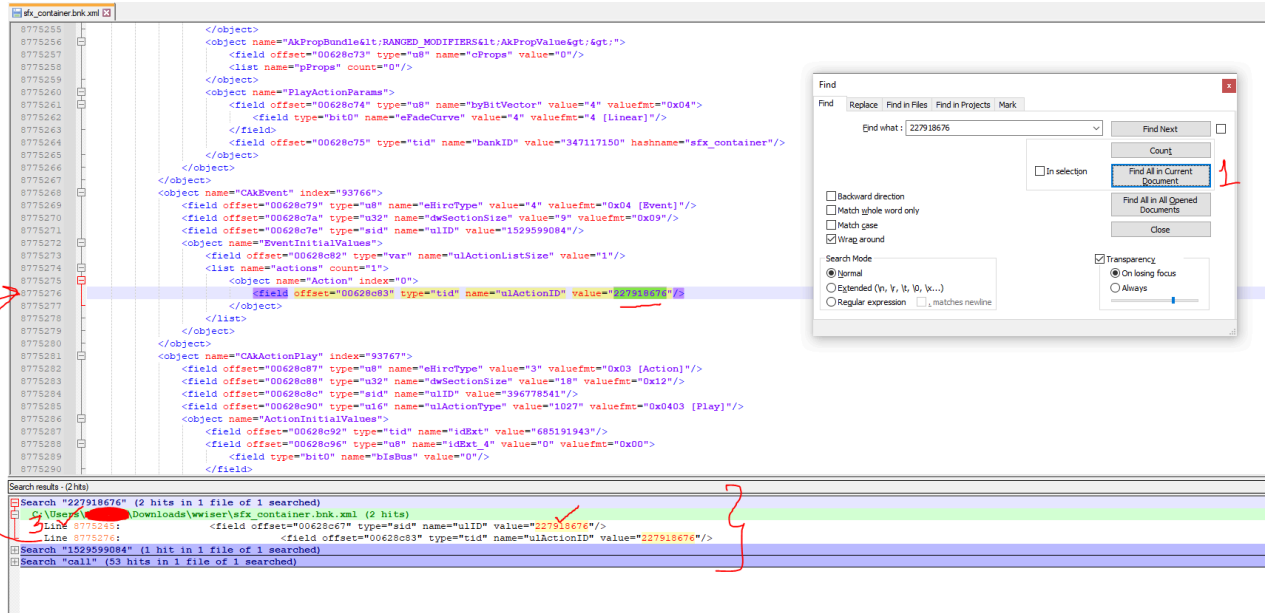
```
Line 75704: "redId": "q000_corpo_sc_03_jenkins_call_stop",
Line 87329: "redId": "q003_sc_07b_holocall_dex_jackie_puts_spiderbot",
Line 87336: "q003_sc_07b_holocall_dex"
Line 91971: "redId": "q000_corpo_sc_03_jenkins_call_start",
Line 91978: "q000_corpo_sc_03_jenkins_call_ringtone"
Line 92082: "sq029_sc_01a_phonecall"
Line 96416: "redId": "ui_elevator_calling",
Line 99102: "redId": "ui_phone_incoming_call_positive",
Line 99107: "ui_phone_incoming_call"
Line 106540: "redId": "ui_phone_initiation_call",
Line 117167: "redId": "ui_phone_incoming_call",
Line 120778: "redId": "ui_phone_incoming_call_stop",
Line 120781: "ui_phone_incoming_call"
Line 121748: "redId": "ui_phone_initiation_call_stop",
Line 121751: "ui_phone_initiation_call"
Line 125994: "sq02l_sc_06_call"
Line 126711: "redId": "q003_sc_01_holocall_scream_02",
```

- Open Wwiser python application and load “sfx_container.bnk” found at path “base\sound\soundbanks\sfx_container.bnk” wait for some time for the application to parse the file and then click on dump to dump the serialized data to a xml file(sfx_container.bnk.xml)

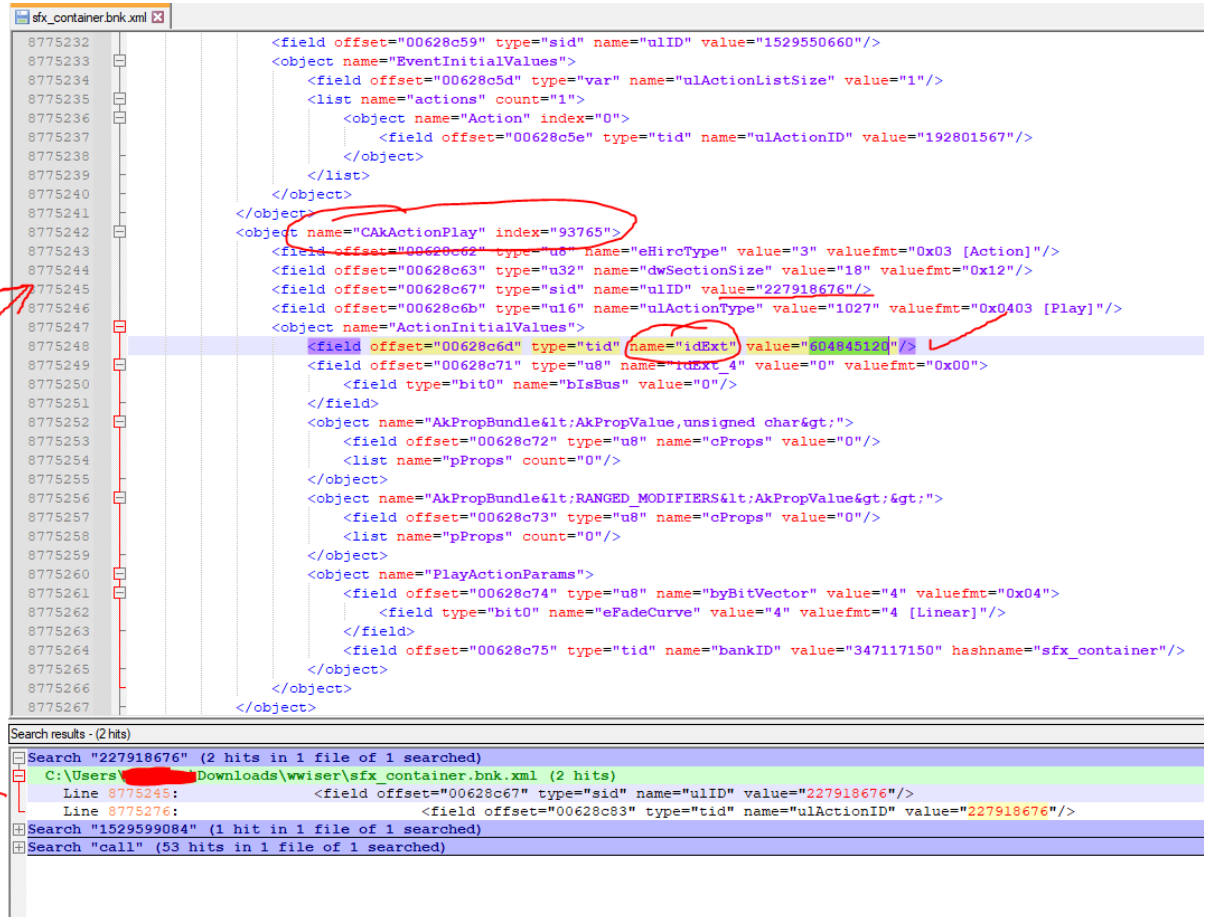


- Open “sfx_container.bnk.xml” in notepad++ and search for the wwiseid(1529599084) u found earlier, if the wwise id will be present in the bnk it will show up in a “CAKEvent” object entry. And it will have a ulActionID(227918676), copy that ulActionID and search for all the entries in the file.





5. The ulActionID(227918676) will be present in a CAkActionPlay object entry. Copy the "idExt"(604845120) from it and search in the file



6. Search for all the "idExt"(604845120) in the file and u will find a lot of entries, look for the entry in a "CAkRanSeqCntr" object and grab the "ulChildID" (719663313)

The screenshot shows an XML editor with a search window open. The search window has "Find what:" set to "604845120". The search results pane shows 7 hits in 1 file. The XML content shows a "CAkRanSeqCntr" object with a "ulChildID" value of "719663313".

```
<object name="CAkRanSeqCntr" index="16668">
  <field offset="00138024" type="u8" name="eHiroType" value="5" valuefmt="0x05 [Random/Sequence Container]"/>
  <field offset="0013802e" type="u32" name="dwSectionSize" value="82" valuefmt="0x52"/>
  <field offset="00138032" type="aid" name="ulID" value="604845120"/>
  <object name="RanSeqCntrInitialValues">
    <object name="NodeBaseParams">
      <field offset="0013805a" type="u16" name="sLoopCount" value="0"/>
      <field offset="0013805c" type="u16" name="sLoopModMin" value="0"/>
      <field offset="0013805e" type="u16" name="sLoopModMax" value="0"/>
      <field offset="00138060" type="f32" name="fTransitionTime" value="1500.0"/>
      <field offset="00138064" type="f32" name="fTransitionTimeModMin" value="0.0"/>
      <field offset="00138068" type="f32" name="fTransitionTimeModMax" value="0.0"/>
      <field offset="0013806c" type="u16" name="wAvoidRepeatCount" value="1"/>
      <field offset="0013806e" type="u8" name="eTransitionMode" value="3" valuefmt="0x03 [Delay]"/>
      <field offset="0013806f" type="u8" name="eRandomMode" value="0" valuefmt="0x00 [Normal]"/>
      <field offset="00138070" type="u8" name="eMode" value="0" valuefmt="0x00 [Random]"/>
      <field offset="00138071" type="u8" name="byBitVector" value="26" valuefmt="0x1A"/>
    </object>
    <object name="Children">
      <field offset="00138072" type="u32" name="ulNumChilds" value="1"/>
      <field offset="00138076" type="tid" name="ulChildID" value="719663313"/>
    </object>
    <object name="CAkPlaylist">
      <field offset="0013807a" type="u16" name="ulPlaylistItem" value="1"/>
      <list name="pItems" count="1">
        <object name="AkPlaylistItem" index="0">
          <field offset="0013807c" type="tid" name="ulPlayID" value="719663313"/>
          <field offset="00138080" type="s32" name="weight" value="50000"/>
        </object>
      </list>
    </object>
  </object>
```

7. Search for all the entries of "ulChildID" (719663313).

The screenshot shows the same XML editor with a search window open. The search window has "Find what:" set to "719663313". The search results pane shows 3 hits in 1 file. The XML content shows a "ulChildID" value of "719663313".

```
<field offset="00138076" type="tid" name="ulChildID" value="719663313"/>
```

8. Look for a “CAKSound” entry and goto “AkMediaInformation” and grab the “sourceID” (169896866) this is the actual sourceid/filename/32bit uint hash of the audio file, now it could be either a .wem a .wem inside .bnks or a .opus present in any of the .opuspak files, this 169896866 is a .opus to extract 169896866.opus from the opuspak files. Use C# opustools.cs or the console application.

```

1678525 <field offset="00137ff6" type="u16" name="ulNumRTPC" value="0"/>
1678526 </list name="pRTPCMgr" count="0"/>
1678527 </object>
1678528 </object>
1678529 </object>
1678530 <object name="CAKSound" index="1667">
1678531 <field offset="00137ff6" type="u8" name="eBrioType" value="2" valuefmt="0x02 [Sound]"/>
1678532 <field offset="00137ff9" type="u32" name="dwSectionSize" value="48" valuefmt="0x30"/>
1678533 <field offset="00137ff9" type="u16" name="ulID" value="169896866"/>
1678534 </object>
1678535 <object name="SoundInitialValues">
1678536 <object name="AkBankSourceData">
1678537 <field offset="00138001" type="u32" name="ulPluginID" value="65537" valuefmt="0x00010001 [PCM]"/>
1678538 <field type="u16" name="type" value="1" valuefmt="0x01 [Codec]"/>
1678539 <field type="u16" name="company" value="0" valuefmt="0x00 [Audiokinetic]"/>
1678540 </field>
1678541 <field offset="00138005" type="u8" name="StreamType" value="2" valuefmt="0x02 [Streaming]"/>
1678542 <object name="AkMediaInformation">
1678543 <field offset="00138006" type="u16" name="sourceID" value="169896866"/>
1678544 <field offset="0013800a" type="u32" name="ulMemoryMediaSize" value="19264" valuefmt="0x4000"/>
1678545 <field offset="0013800e" type="u8" name="uSourceBits" value="0" valuefmt="0x00"/>
1678546 <field type="bit0" name="bIsLanguageSpecific" value="0"/>
1678547 <field type="bit1" name="bIsPreferred" value="0"/>
1678548 <field type="bit3" name="bIsCachable" value="0"/>
1678549 <field type="bit7" name="bHasSource" value="0"/>
1678550 </field>
1678551 </object>
1678552 </object>
1678553 <object name="NodeBaseParams">
1678554 <object name="NodeInitialParams">
1678555 <field offset="0013800f" type="u8" name="bIsOverrideParentFX" value="0" valuefmt="0x00"/>
1678556 <field offset="00138010" type="u8" name="uNumFX" value="0"/>
1678557 </object>
1678558 </object>

```

Search results (3 hits)

- Search "719663313" (3 hits in 1 file of 1 searched)
 - C:\Users\Abhinav\Downloads\wiser\afx_container.bnk.xml (3 hits)
 - Line 1678531: <field offset="00137ff9" type="u16" name="ulID" value="719663313"/>
 - Line 1678731: <field offset="0013807e" type="u16" name="ulChildID" value="719663313"/>
 - Line 1678737: <field offset="0013807c" type="u16" name="ulPlayID" value="719663313"/>
- Search "804845120" (7 hits in 1 file of 1 searched)
- Search "527518676" (2 hits in 1 file of 1 searched)
- Search "1529599084" (1 hit in 1 file of 1 searched)
- Search "call" (53 hits in 1 file of 1 searched)

```

1  using System;
2  using System.IO;
3  using System.Collections.Generic;
4  using System.Linq;
5
6  namespace WolvenKit.Modkit.RED4.Opus
7  {
8      class OpusTools
9      {
10         public static void Parse(FileInfo opusinfofile, DirectoryInfo pakkdir, DirectoryInfo outdir)
11         {
12             FileStream fs = new FileStream(opusinfofile.FullName, FileMode.Open, FileAccess.Read);
13             OpusInfo info = new OpusInfo(fs);
14
15             string[] files = Directory.GetFiles(pakkdir.FullName, "*.opuspak").OrderBy(f => Convert.ToInt32(f.Replace(".opuspak", string.Empty).Substring(f.LastIndexOf('.') + 1))).ToArray();
16             Stream[] paks = new Stream[files.Length];
17             for(int i = 0; i < files.Length; i++)
18             {
19                 paks[i] = new FileStream(files[i], FileMode.Open, FileAccess.Read);
20             }
21             info.WriteAllOpusFromPaks(paks, outdir);
22         }
23     }
24
25     class OpusInfo
26     {
27         {
28             // S N D ?...
29             public byte[] Header { get; } = { 0x53, 0x4E, 0x44, 0x20, 0x02, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00 };
30             public UInt32 OpusCount { get; set; }
31             public UInt32 GroupingObjsSize4x { get; set; }
32             public UInt32[] OpusHashes { get; set; }
33             public UInt16[] PackIndices { get; set; }
34             public UInt32[] OpusOffsets { get; set; }
35             public UInt16[] RiffOpusOffsets { get; set; }
36             public UInt32[] OpusStreamLengths { get; set; }
37             public UInt32[] WavStreamLengths { get; set; }
38             public List<Group> GroupObjs { get; set; }
39             public class Group
40             {
41                 public OpusInfo(Stream ms)
42                 {
43                     public void WriteAllOpusFromPaks(Stream[] opuspaks, DirectoryInfo outdir)
44                     {
45                         public void WriteOpusFromPaks(Stream[] opuspaks, DirectoryInfo outdir, U16 hash)
46                     }
47                 }
48             }
49         }
50     }
51 }

```

URLS:

- <https://github.com/bnnm/wwiser/releases/tag/v20210526>
- [https://github.com/HitmanHimself/cp77research/blob/dev/WolvenKit/test/Function s/OpusTools.cs](https://github.com/HitmanHimself/cp77research/blob/dev/WolvenKit/test/Function%20OpusTools.cs)
- https://opus-codec.org/release/dev/2018/09/18/opus-tools-0_2.html

D. WolvenKitCLI:

<https://cdn.discordapp.com/attachments/789391457282031616/852307314509217792/wolvenkitcli.rar>

E. OpusCLI

<https://github.com/HitmanHimself/cp77research/releases/tag/0.0.0.2-alpha>

F.