Creative Voice

- Extension: voc
- Company: Creative

The VOC file format was created by Creative and is generally associated with their 8-bit line of cards (Sound Blaster, Sound Blaster Pro). While initially limited to unsigned 8-bit PCM and ADPCM data, the VOC format was eventually expanded to handle 16-bit formats with the introduction of Creative's 16-bit cards, as well as a-law and u-law companded formats.

This file format is composed of a file header followed by one or more data block. All integers are Little Endian.

Contents

Main header

```
bytes 0-18   Identifier string containing: Creative Voice File
byte  19     0x1A (EOF). This is belived to be used to abort printing of file
bytes 20-21  Total size of this main header (usually 0x001A)
bytes 22-23  Version number, calculated as (major<<8)|minor
               major is usually 0x01
               minor is usually 0x0A or 0x14
bytes 24-25  Validity check. This must be equal to ~version + 0x1234
```

Data blocks

All the different data blocks begin with a common header:

```
byte  0      block type
bytes 1-3    block size (NOT including this common header)
```

The data following this common block header depends on the block type.

Block type 0x00: Terminator

This is a special block type as it's common header don't contain any size field. It indicate the end of the file. It is not mandatory (you can reach EOF without encountering this block type).

Block type 0x01: Sound data

```
byte  0      frequency divisor
byte  1      codec id
bytes 2..n   the audio data
```

The sample rate is defined as

```
1000000/(256 - frequency_divisor)
```

Block type 0x02: Sound data continuation

```
bytes 2..n    the audio data
```

This block uses the same codec parameters as the previous "Sound data" block.

Block type 0x03: Silence

```
bytes 0-1    length of the silence - 1 (unit is sample)
byte  2      frequency divisor
```

The sample rate is defined as

```
1000000/(256 - frequency_divisor)
```

Block type 0x04: Marker

```
bytes 0-1    the mark value
```

This can be used by the software to synchronize the sound with an animation.

Block type 0x05: Text

```
bytes 0..n   zero terminated string
```

Block type 0x06: Repeat start

```
bytes 0-1    repeat count - 1
```

The sound data following this block and up to the next Repeat end block is repeated count+1 times. When count == 0xFFFF this means endless repetitions.

Block type 0x07: Repeat end

Empty block which terminate a repeat section.

Block type 0x08: Extra info

```
bytes 0-1    frequency divisor
byte  2      codec id
byte  3      channels number - 1
```

The sample rate is defined as

```
256000000/(nb_channels * (65536 - frequency_divisor))
```

This block must be followed by a "Sound data" block, and it supercedes its codec parameters.

Block type 0x09: Sound data (New format)

This block type is probably only valid in version 1.20 (0x0114) or greater files.

```
bytes 0-3    sample rate
byte  4      bits per sample
byte  5      channels number
bytes 6-7    codec_id
bytes 8-11   reserved
bytes 12..n  the audio data
```

Supported codec ids

```
   0x00  8 bits unsigned PCM
   0x01  4 bits to 8 bits Creative ADPCM
   0x02  3 bits to 8 bits Creative ADPCM (AKA 2.6 bits)
   0x03  2 bits to 8 bits Creative ADPCM
   0x04  16 bits signed PCM
   0x06  alaw
   0x07  ulaw
 0x0200  4 bits to 16 bits Creative ADPCM (only valid in block type 0x09)
```