DTMediaWrite Programmer's Interface

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Introduction

The DTMediaWrite interface is designed to give programmers a simple yet powerful access to Drastic's main write formats. This document describes the various methods and properties exported by DTMediaWrite.

The DTMediaWrite API is available as a direct link library under Windows 32, Windows 64, macOS and Linux 64. With the properties and functions under direct link, all the names are preceded by 'dtmw' to avoid namespace collisions.

Direct Link Usage

All the functions in the direct link model have 'dtmw' prepended to the function name. This means the 'PutVideoFrame' becomes 'dtmwPutVideoFrame' to avoid naming conflicts. The direct link setup depends on the platform being used:

Windows 32
"C:\Program Files\MediaReactor"
Windows 64 – using 32 bit
"C:\Program Files(x86)\MediaReactor"
Windows 64 – using 64 bit
"C:\Program Files\MediaReactor"

macOS
/Libraries/Frameworks/DrasticDDR.framework

Linux 64
/usr/bin
/usr/lib

To use the direct link, you will need to include "dtmediawrite.h" in your source file, and link to "libdtmediawrite.lib/.a/framework", depending on your platform.

Soft link is also an option for the direct link API. Each function prototype includes a function pointer typedef. It is the same as the prototype with a 'p_' added to the front. The SDK also ships with a C file dtmw_loader.cpp that has all the functions as point, and a load/unloader function for your convenience.

Methods and Properties

dtmwOpen

*DTMRHANDLE DTMRCALLTYPE dtmwOpen(char * szFileName, unsigned long dwFlags, unsigned long dwFileType, unsigned long dwFourCC, unsigned long dwWidth, unsigned long dwHeight, unsigned long dwRate, unsigned long dwScale, unsigned long dwAudioChannels, unsigned long dwAudioRate, unsigned long dwAudioBits);*

Open a new file, stream or network source for preview. The szFileName is a UTF-8 string (converted by DTMediaWrite to Unicode for Windows). All of the basic requirements for the file to be created are sent at this point

- **szFileName** – UTF-8 file path and name
- **dwFlags** – Read/Write flags
- **dwFileType** – Exact writer requested
- **dwFourCC** – Video compression four character code
- **dwWidth** – Width for new file
- **dwHeight** – Height for new file
- **dwRate** – Rate part of frames per second (24, 25, 30000, etc.)
- **dwScale** – Scale part of the frames per second (1, 1, 1001, etc.)
- **dwAudioChannels** – Number of audio channels to write as a bitwise array
- **dwAudioRate** – Audio sample rate
- **dwAudioBits** – Audio bits per sample size
- **@return** – an opaque handle to use with the rest of the API functions

NOTE: It is best to use standard Rate/Scale descriptors when setting up files. Here are the most common: 24/1, 24000/1001, 25/1, 30000/1001, 30/1, 50/1, 60000/1001, 60/1
NOTE: For audio, 16 and 24 bits are the most common. When writing, there are only two container sizes: 16 bits for 16, and 32 bits for 20, 24 and 32 bits. The samples are always shifted to the most significant bits.

dtmwClose

long DTMRCALLTYPE dtmwClose(DTMRHANDLE dtmw);

Close the currently open stream or file

dtmwGetWriteTypes

*long DTMRCALLTYPE dtmwGetWriteTypes(DTMRHANDLE dtmw, unsigned long dwIndex, unsigned long * pdwTypes);*

Returns recommended and supported write types.

dtmwTargetFileName

*long DTMRCALLTYPE dtmwTargetFileName(DTMRHANDLE dtmw, char * tszString);*

The final file name used for the target file.

dtmwTargetHeight

*long DTMRCALLTYPE dtmwTargetHeight(DTMRHANDLE dtmw, long *pVal);*

Target video media's height.

dtmwTargetWidth

*long DTMRCALLTYPE dtmwTargetWidth(DTMRHANDLE dtmw, long *pVal);*

Target video media's width.

dtmwTargetPitch

*long DTMRCALLTYPE dtmwTargetPitch(DTMRHANDLE dtmwPV, long lType, long *pVal);*

Target pitch depending on frame type

dtmwTargetBitDepth

*long DTMRCALLTYPE dtmwTargetBitDepth(DTMRHANDLE dtmw, long *pVal);*

Target video media's bit depth

dtmwTargetFourCC

*long DTMRCALLTYPE dtmwTargetFourCC(DTMRHANDLE dtmw, long *pVal);*

Target video media's fourcc compression code

dtmwTargetBitRate

*long DTMRCALLTYPE dtmwTargetBitRate(DTMRHANDLE dtmw, long *pVal);*

Target video media's bit rate in kilobits per seconds (e.g. 4000 = 4 megabits). Setting this will disable any quality settings. This call must be made before the **dtmwSetWriteType()** function is called.

dtmwTargetQuality

*long DTMRCALLTYPE dtmwTargetQuality(DTMRHANDLE dtmw, long *pVal);*

Target video media's quality. This is a value between 0 and 10,000, with 0 being the lowest possible quality. Setting this will disable any data rate settings. This call must be made before the **dtmwSetWriteType()** function is called.

dtmwTargetFrameSize
*long DTMRCALLTYPE dtmwTargetFrameSize(DTMRHANDLE dtmw, long dwFrameType, long *pVal);*

Target video media's frame size for the requested or current frame.

dtmwTargetVideoChannels
*long DTMRCALLTYPE dtmwTargetVideoChannels(DTMRHANDLE dtmw, long *pVal);*

Target video total channels.

dtmwTargetAudioChannels
*long DTMRCALLTYPE dtmwTargetAudioChannels(DTMRHANDLE dtmw, long *pVal);*

Target audio total channels.

dtmwTargetAudioFrequency
*long DTMRCALLTYPE dtmwTargetAudioFrequency(DTMRHANDLE dtmw, long *pVal);*

Target audio media frequency.

dtmwTargetAudioBitsPerSample
*long DTMRCALLTYPE dtmwTargetAudioBitsPerSample(DTMRHANDLE dtmw, long *pVal);*

Target audio media bits per sample.

dtmwTargetAudioFourCC
*long DTMRCALLTYPE dtmwTargetAudioFourCC(DTMRHANDLE dtmw, long *pVal);*

Target audio media's fourcc compression code.

dtmwTargetRate
*long DTMRCALLTYPE dtmwTargetRate(DTMRHANDLE dtmw, long *pVal);*

Target video rate value (FPS = TargetRate / TargetScale).

dtmwTargetScale
*long DTMRCALLTYPE dtmwTargetScale(DTMRHANDLE dtmw, long *pVal);*

Target video scale value (FPS = TargetRate / TargetScale).

NOTE: It is best to use standard Rate/Scale descriptors when setting up files. Here are the most common: 24/1, 24000/1001, 25/1, 30000/1001, 30/1, 50/1, 60000/1001, 60/1

dtmwTargetMetaDataDWORD
long DTMRCALLTYPE dtmwTargetMetaDataDWORD(DTMRHANDLE dtmw, long dwMetaDataElement, long dwVal);

Return Target metadata information that are numeric (DWORDs or longs). Works for vvwiTimeCode to vvwiWhiteBalance inclusive, and vvwiVideoWidth to vvwiAudioBits inclusive.

dtmwTargetMetaDataSTR
*long DTMRCALLTYPE dtmwTargetMetaDataSTR(DTMRHANDLE dtmw, long dwMetaDataElement, char * szMAX_PATHString);*

Return Target metadata information that are string data. Works for vvwiFileName to vvwiUMID inclusive.

dtmwSetWriteType
long DTMRCALLTYPE dtmwSetWriteType(DTMRHANDLE dtmw, long lWriteType);

Set the write type for the video frames.

dtmwSetVideoChannel
long DTMRCALLTYPE dtmwSetVideoChannel(DTMRHANDLE dtmw, long lVideoChannel);

Set the channel for the video frames (0, 1, 2, 3, 4 etc.) (0 = 0x03, 1 = 0x0C, 2 = 0x30, 3 = 0xC0 etc.).

dtmwSetAudioChannelPair
long DTMRCALLTYPE dtmwSetAudioChannelPair(DTMRHANDLE dtmw, long lAudioChannelPair);

Set the audio channel pair to monitor (0 = 1+2, 1 = 3+4, 2 = 5+6, 3 = 7+8 etc.).

dtmwSetVitcType
long DTMRCALLTYPE dtmwSetVitcType(DTMRHANDLE dtmw, long dwVal);

Set the VITC (vertical blank) time code's type. The types are: TC2_TCTYPE_FILM, TC2_TCTYPE_NDF, TC2_TCTYPE_PAL, TC2_TCTYPE_50, TC2_TCTYPE_5994, TC2_TCTYPE_60, TC2_TCTYPE_NTSCFILM, and TC2_TCTYPE_IRIG.

dtmwNextVitcFrame
long DTMRCALLTYPE dtmwNextVitcFrame(DTMRHANDLE dtmw, long dwVal);

Sets the next frame's VITC (vertical blank) time code.

dtmwNextVitcUb
long DTMRCALLTYPE dtmwNextVitcUb(DTMRHANDLE dtmw, long dwVal);

Sets the next VITC (vertical blank time code) user bits.

dtmwSetLtcType
long DTMRCALLTYPE dtmwSetLtcType(DTMRHANDLE dtmw, long dwVal);

Set the VITC (vertical blank) time code's type. The types are: TC2_TCTYPE_FILM, TC2_TCTYPE_NDF, TC2_TCTYPE_PAL, TC2_TCTYPE_50, TC2_TCTYPE_5994, TC2_TCTYPE_60, TC2_TCTYPE_NTSCFILM, and TC2_TCTYPE_IRIG.

dtmwNextLtcFrame
long DTMRCALLTYPE dtmwNextLtcFrame(DTMRHANDLE dtmw, long dwVal);

Sets the next LTC (SMPTE) time code.

dtmwNextLtcUb
long DTMRCALLTYPE dtmwNextLtcUb(DTMRHANDLE dtmw, long dwVal);

Sets the next LTC (SMPTE time code) user bits.

dtmwPutNextExtendedData
*long DTMRCALLTYPE dtmwPutNextExtendedData(DTMRHANDLE dtmw, unsigned char *pvData, long lSize, long lFlags);*

Set the next extended data. Normally both of these calls set some combination of closed captions. The first two bytes are always CC1/CC3. If the FRAMEINFO_DATA_F1_EIA608 flag is not set, their value is undefined, but will likely be 0x80 0x80. The second two bytes are always CC2/CC4 if the FRAMEINFO_DATA_F2_EIA608 flag is set, otherwise they are undefined but will likely be 0x80 0x80. Everything from byte 4 on are 708 or OP-47 SMPTE 436 packets of closed captions, active format description and V-Chip IDs. Each ANC packet will start with its DID SDID and size (for example for 708 captions 0x61 0x01 0x49). That size can be used to run through multiple ANC packets for a given frame. The CC, if it exists, will always be first, followed by any AFD, V-Chip or other custom packets.

```
//! Data is EIA-608B SD closed caption data field one (uses 2 bytes)
#define FRAMEINFO_DATA_F1_EIA608                0x00000001
```

//! Data is EIA-608B SD closed caption data field two (uses 2 bytes)
#define FRAMEINFO_DATA_F2_EIA608 0x00000002
//! Data is EIA-708 HD closed caption data (uses remaining bytes = minus the above)
#define FRAMEINFO_DATA_EIA708 0x00001000
//! Data is OP-47 closed caption data
#define FRAMEINFO_DATA_OP47 0x00002000

dtmwPutVideoFrame
*long DTMRCALLTYPE dtmwPutVideoFrame(DTMRHANDLE dtmw, unsigned char * psvFrame, long dwSize);*

Sends one video frame. The format must match the format set by the write type. Please note, the video buffer is not guaranteed to be the same on function return. It is used directly by the writer, and will likely be changed during the write, so it must be a new redrawn/captured video frame on each call.

dtmwPutAudioFrame
*long DTMRCALLTYPE dtmwPutAudioFrame(DTMRHANDLE dtmw, unsigned char * psaFrame, long dwSize);*

Returns a safe array containing one video frame worth of audio data (if in video size mode) or an arbitrary amount of audio samples of size bytes (if in audio mode).

dtmwSetMode

long DTMWCALLTYPE dtmwSetMode(DTMWHANDLE dtmwPV, void * pMediaCmd);

Send custom MEDIACMD commands to the file writer.

dtmwVersion

long DTMWCALLTYPE dtmwVersion(long *pVerMajor, long *pVerMinor, long *pVerMod, long *pVerBuild);

Returns the version information for the writer build.

dtmwAddVideoChannel

long DTMWCALLTYPE dtmwAddVideoChannel(DTMWHANDLE dtmwPV, char * szVideoFile, unsigned long dwFileType, unsigned long dwFourCC, unsigned long dwWidth, unsigned long dwHeight, unsigned long dwRate, unsigned long dwScale, unsigned long * pdwVideoChannelHandle);

Add a video channel to the RTIN file.

dtmwCodecData

long DTMWCALLTYPE dtmwCodecData(DTMWHANDLE dtmw, unsigned char * pData, unsigned long dwSize);

Set extended codec data for a video channel. Should be called before dtmwAddVideoChannel

dtmwAddAudioChannel

long DTMWCALLTYPE dtmwAddAudioChannel(DTMWHANDLE dtmwPV, char * szAudioFile, unsigned long dwFileType, unsigned long dwAudioChannels, unsigned long dwAudioRate, unsigned long dwAudioBits, unsigned long * pdwAudioChannelHandle);

Add an audio channel to the RTIN file.

dtmwAudioCodecData

long DTMWCALLTYPE dtmwAudioCodecData(DTMWHANDLE dtmw, unsigned char * pData, unsigned long dwSize);

Set extended codec data for an audio channel. Should be called before dtmwAddAudioChannel

dtmwSetFileFrameInfo

long DTMWCALLTYPE dtmwPutFileFrameInfo(DTMWHANDLE dtmwPV, unsigned long dwRTChannel, unsigned long dwFrame, unsigned long dwFlags, size_t nPosition, size_t nSize, unsigned long dwFrameFlags, unsigned long dwRepsSamples);

This call returns information about a frame (or group of samples) of audio or video. It will return the position, size, frame flags and file name for a video sample or audio sample groups.

//! Send this in if you just need the filename (faster than getting all the info)
#define DPOSSIZENAME_FILENAME_ONLY 0x40000000 // Same as DFRAME_SKIP_FRAME
//! Flag for mediafile/avhal to get audio dframe
#define GetAudio0x00000000

```
        //! Flag for mediafile/avhal to get video dframe
#define GetVideo0x00000001

// dwFrameFlags
#define DPOSSIZENAME_VIDEO_FRAME        0x00000001
        //! Is this file type currently recording
#define DPOSSIZENAME_RECORDING                  0x00000004
        //! This frame needs to be made black (default frame) in MediaFile
#define DPOSSIZENAME_PLEASE_BLACK
        _PDFRAMEFLAGS_PLEASE_BLACK  //      0x00000080
        //! This is a mono audio chunk
#define DPOSSIZENAME_MONO_AUDIO_FRAME       0x00000100
        //! This is a stereo audio chunk
#define DPOSSIZENAME_STEREO_AUDIO_FRAME     0x00000200
#define DPOSSIZENAME_QUAD_AUDIO_FRAME       0x00000400
#define DPOSSIZENAME_4_1_AUDIO_FRAME  0x00000800
#define DPOSSIZENAME_5_1_AUDIO_FRAME  0x00001000
#define DPOSSIZENAME_7_1_AUDIO_FRAME  0x00002000
#define DPOSSIZENAME_9_1_AUDIO_FRAME  0x00004000
#define DPOSSIZENAME_AUDIO_MASK
        (DPOSSIZENAME_MONO_AUDIO_FRAME|
DPOSSIZENAME_STEREO_AUDIO_FRAME|
DPOSSIZENAME_STEREO_AUDIO_FRAME|
DPOSSIZENAME_QUAD_AUDIO_FRAME|DPOSSIZENAME_4_1_AUDIO_FRAME|
DPOSSIZENAME_5_1_AUDIO_FRAME| DPOSSIZENAME_7_1_AUDIO_FRAME|
DPOSSIZENAME_9_1_AUDIO_FRAME)
#define DPOSSIZENAME_FRAME_MASK                 0x0000FFFF
        //! This frame contains audio data see DFRAME::dwType
#define DFRAME_TYPE_AUDIO               0x00010000
        //! 16 bit audio
#define DPOSSIZENAME_AUD_16_16_BIT              0x00100000
        //! 20 bit audio in 24
#define DPOSSIZENAME_AUD_20_24_BIT              0x00200000
        //! 24 bit audio in 24
#define DPOSSIZENAME_AUD_24_24_BIT              0x00400000
        //! 24/32 bit audio in 32
#define DPOSSIZENAME_AUD_24_32_BIT              0x00800000
        //! 32/32 bit audio in 32
#define DPOSSIZENAME_AUD_32_32_BIT              0x01000000
        //! Audio is compressed
#define DPOSSIZENAME_AUD_COMPRESSED         0x02000000
        //! Audio is big endian, else little endian
#define DPOSSIZENAME_AUD_BIGENDIAN_BIT      0x00080000
        //! Just for completeness
#define DPOSSIZENAME_AUD_LITTLEENDIAN_BIT   0x00000000
```

```
        //! This frame is independent of other frames for decode see
DFRAME::dwType
#define DFRAME_TYPE_KEYFRAME 0x10000000
        //! This frame is independent of other frames for decode (an MPEG I Frame)
see DFRAME::dwType
#define DFRAME_TYPE_KEYFRAME_I      0x10000000
        //! This frame requires previous keyframe(s) (for MPEG a P Frame) see
DFRAME::dwType
#define DFRAME_TYPE_KEYFRAME_P      0x80000000
        //! This frame requires more than one frame to decode (for MPEG a B
Frame) see DFRAME::dwType
#define DFRAME_TYPE_KEYFRAME_B      0x20000000
        //! This frame should be skipped (decoded, but not displayed) - Used to
reach seek frame on a non key frame from key frame see DFRAME::dwType
#define DFRAME_SKIP_FRAME           0x40000000
```

Defines And Constants

These formats are used by dtmwGetWriteTypes() and dtmwSetWriteType() to set up the frame return type for dtmwPutVideoFrame(). See the **Video Output Formats** section for more information on these frame layouts.

/** The write video frame types
 */
//! Windows RGBA (like bitmap, tga, etc)
const long **DTMR_WRITETYPE_ARGB** = 0;
//! 8 Bit YCbCr (yuv2, D1/HDSDI raw 4:2:2 video
const long **DTMR_WRITETYPE_UYVY** = 1;
//! 10 Bit v210 (quicktime packing) 4:2:2 video
const long **DTMR_WRITETYPE_V210** = 2;
//! 10 Bit RGB 4:4;4 (dpx packing)
const long **DTMR_WRITETYPE_RGB10Bit** = 3;
//! 16 bit per component (64 bit) RGBA 4:4:4:4
const long **DTMR_WRITETYPE_RGBA64** = 4;
//! 16 bit half float per component RGBA (GPU)
const long **DTMR_WRITETYPE_RGBAHALFFLOAT** = 5;
//! Returned if there are no more suggested types
const long **DTMR_WRITETYPE_INVALID** = -1;

//! Set readtype AUDIO to 16 bits LE
const unsigned long **DTMR_WRITETYPE_FRAME_AUDIO_16LE** = (0x00010000 | 16);
//! Set readtype AUDIO to 32 bits (note, 16, 20, 24 will be shifted to most significant, LE)
const unsigned long **DTMR_WRITETYPE_FRAME_AUDIO_32LE** = (0x00010000 | 32);
//! Invalid file
const long **DTMR_WRITETYPE_INVALID** = -1;

Output File Formats

RtIndex (RTIN) – Special

dtmftrtIndex = 172 // Special case, write an RTIN directly

Windows Wave (audio only)

dtmwWave = 1, // Windows WAV audio files (audio)

QuickTime Movie

dtmwMov = 2, // QuickTime movie files (audio video info)

Windows AVI

dtmwAvi = 3, // Video for windows, Audio Video Interleave (audio video info)

Targa Files

dtmwLiveTga = 99, // 32 Bit Uncompressed only

TIFF Files

dtmwLiveTiff = 101, // 32 Bit Uncompressed only

YUV Files

dtmwLiveYuv = 104, // 8/10 Bit Uncompressed YCbCr only

HDR YUV Raw Stream

DtmwHdrYuv = 106, //

WAV Extensible (audio only)

dtmwAdvWave = 107, // Windows WAVE format extension (multi channel) audio plugin (no dual mono)

AIFF (audio only)

dtmwAdvAiff = 108, // Apple/SGI format multi channel audio plugin

MXF Sony SD IMX

dtmwMXFSonySD = 110, // Sony IMX MPEG SD

DPX Files

dtmwLiveDpx = 111, // RGB10 or YCBCR10

WAV Broadcast Wave Format (audio only)

dtmwBWaveF = 117, // Broadcast wave format

Sony XDCam 4:2:0 (Old XDCam)

dtmwMXFSonyHD = 127, // Sony 25/35mbit 4:2:0 XDCam (old XDCam)

Panasonic P2 DV MXF

dtmwMXFP2DV = 134, // Panasonic P2 DV25/50/HD

Avid OP-Atom MXF

dtmwMXFAvid = 135, // Avid OPAtom direct to mediafiles

Panasonic P2 AVCi MXF

dtmwMXFP2AVCi = 163, // Panasonic AVCi 100/50 writer

DCP/DCI MXF

dtmwMXFDCP = 167, // Unencrypted DCP

OP1a MXF

dtmwMXFOP1a = 172, // Op1a - yuv, j2k, avci, dvhd

Sony HDCam MXF

dtmwMXFSMDK = 186, // Sony HDCam MXF

Sony XDCam 4:2:2 50 Mbs

dtmwMXFSony422 = 192, // Sony XDCam 4:2:2 50 Mbit

EasyDCP/DCI MXF

dtmwMFXEasyDCP = 196, // Encrypted DCP (requires EasyDCP license)

MPEG-4 h.264

dtmwMP4 = 197, // MP4 with 264 compression

AS-02 MXF

dtmwMXFAS02 = 201, // MXF AS-02

Compression Types

DTWAVE_FORMAT_PCM (Up to stereo little endian)

DTWAVE_FORMAT_EXTENSIBLE (Multi channel audio little endian)

dtmwfcck16BitBigEndianFormat (Mov/Aiff big endian audio)
Sent as PCM little endian 16 or 32 bits per channel, stereo pairs

dtmwfccdv25
DV-25 4:2:0

dtmwfccdv50
DV-50 4:2:2

dtmwfccdvhd
DV-100/DVHD

dtmwfcckYCbCr8Bit
yuv2/uyvy 8 bit YCbCr

dtmwfcckYCbCr10Bit
V210 10 bit YCbCr

dtmwfccCineForm
CineForm lossless/lossy codec

dtmwBI_RGB
ABGR 32 bit (8 bits per component)

dtmwfcckIMXD10_NTSC_50
50 Mbit NTSC IMX MPEG

dtmwfcckIMXD10_NTSC_40
40 Mbit NTSC IMX MPEG

dtmwfcckIMXD10_NTSC_30
30 Mbit NTSC IMX MPEG

dtmwfcckIMXD10_PAL_50
50 Mbit PAL IMX MPEG

dtmwfcckIMXD10_PAL_40
40 Mbit PAL IMX MPEG

dtmwfcckIMXD10_PAL_30
30 Mbit PAL IMX MPEG

dtmwfcc10LinDPX
Big endian

dtmwfcc10LogDPX
Big endian

dtmwfccDT_MPEGHD_VBR_I
4:2:0 XDCAM HD VBR Interlace

dtmwfccDT_MPEGHD_VBR_P
4:2:0 XDCAM HD VBR Progressive

dtmwfccDT_MPEGHD_VBR_I_17
4:2:0 XDCAM HD VBR Interlaced 17.5 Mbps

dtmwfccDT_MPEGHD_VBR_P_17
4:2:0 XDCAM HD VBR Progressive 17.5 Mbps

dtmwfccDT_MPEGHD_VBR_I_25
4:2:0 XDCAM HD VBR Interlaced 25 Mbps

dtmwfccDT_MPEGHD_VBR_P_25
4:2:0 XDCAM HD VBR Progressive 25 Mbps

dtmwfccDT_MPEGHD_VBR_I_35
4:2:0 XDCAM HD VBR Interlaced 35 Mbps

dtmwfccDT_MPEGHD_VBR_P_35
4:2:0 XDCAM HD VBR Progressive 35 Mbps

dtmwfccDT_MPEGHD_CBR_I
4:2:0 XDCAM HD CBR Interlaced 25 Mbps

dtmwfccDT_MPEGHD_CBR_P
4:2:0 XDCAM HD CBR Progressive 25 Mbps

drmwfcckH264CodecType
AVC1 H.264 bitstream without start codes.

dtmwfcckDNxHD_220x_10
1920x1080 10 Bit P (220x/185x/175x)

dtmwfcckDNxHD_145x
1920x1080 8 Bit P (145/120/115) ~equiv hdcam/dvcpro100

dtmwfcckDNxHD_220x
1920x1080 8 Bit P (220/185/175)

dtmwfcckDNxHD_220_10
1920x1080 10 Bit i (220/185/175)

dtmwfcckDNxHD_145
1920x1080 8 Bit i (145/120/115)

dtmwfcckDNxHD_220
1920x1080 8 Bit i (220/185/175)

dtmwfcckDNxHD_720_220x
1280x720 10 Bit P (220x/175x/90x)

dtmwfcckDNxHD_720_220
1280x720 8 Bit P (220x/175x/90x)

dtmwfcckDNxHD_720_145
1280x720 8 Bit P (145x/120x/115x)

dtmwfcckDNxHD_36
1920x1080 8 Bit P (36)

dtmwfccAVCi100
Panasonic AVCi-100

dtmwfccJ2_Cinema2K
Digital cinema 2K (alias)

dtmwfccJ2_Cinema4K
Digital cinema 4K (alias)

fccJPEG2000_YCbCr
SAMA/YCbCrJ2K/Grass Valley Infinity

dtmwfccHDCamSR
HDCam SR 4:2:2 10 bit

dtmwfccHDCamSR_444
HDCam SR 4:4:4

dtmwfccDT_MPEG422
4:2:2 MPEG-2 50 Mbit

dtmwfcckXAVC
Sony XAVC 100 HD

dtmwfcckXAVC4K
Sony XAVC 100 4K

Output Video Formats

These are the formats supported by dtmwSetVideoFrame(). Each of these formats only appears as specified here for this return. The dtmwSourceXXX series of methods (including dtmwSourceBitDepth and SourceFourCC) refer to the video media as it is saved on disk. The DTMediaRead library will decompress, and where necessary convert, from the file's native format to the requested format set by dtmeSetReadType(). For each file opened, the dtmwGetReadTypes() should be called to determine the available read types.

ARGB 32 (8 bits per component, vertical invert)
DTMR_READTYPE_RGBA

ARGB Decreasing Address Order																															
Byte 3								Byte 2								Byte 1								Byte 0							
Alpha								Red								Green								Blue							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0

RGB 30 (10 bits per component)
DTMR_READTYPE_RGB10Bit

RGB 10 Bit Decreasing Address Order																															
Byte 3								Byte 2								Byte 1								Byte 0							
Blue								Green				Blue				Red		Green						Red							
5	4	3	2	1	0			3	2	1	0	9	8	7	6	1	0	9	8	7	6	5	4	9	8	7	6	5	4	3	2

Please note: This is the standard DPX file layout, which was originally big endian, but is viewed here as little endian.

YCrCb 8 (8 bits per component 4:2:2)
DTMR_READTYPE_UVYV

YCbCr8 2 Pixels, Decreasing Address Order																															
Byte 3								Byte 2								Byte 1								Byte 0							
Cr								Y1								Cb								Y0							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0

YCrCb 10 (10 bits per component 4:2:2)
DTMR_READTYPE_V210

YCbCr10 Pixels, Decreasing Address Order																															
Byte 3								Byte 2								Byte 1								Byte 0							
		Cr 0								Y 0									Cb 0												
		9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0
Byte 7								Byte 6								Byte 5								Byte 4							
		Y 2								Cb 1									Y 1												
		9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0
Byte 11								Byte 10								Byte 9								Byte 8							
		Cb 2								Y 3									Cr 1												
		9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0

Byte 15								Byte 14								Byte 13								Byte 12							
		Y 5										Cr 2										Y 4									
		9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0

Supported Video IP Types

UDP and RTP

UDP [User Datagram Protocol] and RTP [Real-time Transport Protocol] streams can be elementary video or audio streams, or more commonly a transport stream with PMT/PAT (Program Association Table/Program Mapping Table) and a number of streams within it. For UDP and RTP, you can specify a TCP (direct) address, but normally it will be a multicast group address, and also a port is normally specified. Here are a few examples:

udp://239.254.40.40:5004
rtp://239.100.20.20:50004
rtp://239.100.30:31:1234

This is a server protocol on the receiver, and requires the selected port to be open to receive. On the send side, it should work without firewall adjustment.

SRT

SRT [Secure Reliable Transport] streams contain a transport stream with PMT/PAT and a number of streams within it. For SRT you can specify an address and a port. There are three modes for SRT: listener, caller and rendezvous. If you are a listener, you can only connect with a caller and vice versa. For Rendezvous, both the sender and receiver must be in rendezvous mode. A password for encrypted service can also be set. Here is some information on the modes:

listener - this has to be one of your local IP addresses, and acts as a server waiting for a connection, so it must be directly visible to the caller (not behind a firewall)
caller - this calls out to a remote IP that is running as a listener. You must be able to reach the IP directly (e.g. no firewall)
rendezvous - this connects bi directionally, allowing it to connect through firewalls without extra configuration. Each side of the rendezvous uses the external (internet facing) IP address of their internet connection. This allows the signals to connect and pass through the firewall

Here are a few examples:

srt://239.254.40.40:5004?mode=listener
srt://172.12.25.20:5006?mode=caller
srt://239.100.30:31:1234?mode=caller&password=thisisapassword&user=thisisauser

Possible parameters include

mode=
    caller
    listener
    rendezvous
password=<string>
keylen=16|24|32
username=<string>
streamid=#
latency=#
buffering=#
maxbw=#

When using the 'listener' mode, the port it is listening on must be open in the firewall. For Caller and Rendezvous, it should work without firewall adjustment.

RIST

RIST [Reliable Internet Stream Transport] streams are UDP based self correcting connections. Drastic currently supports the following RIST profiles: Simple, and Main. Simple Profile provides ARQ (automatic repeat request) for packet loss recovery, jitter removal, optional FEC (forward error correction). The Main Profile adds encryption for secure content.

Both the sender and the receiver must be in the same mode. The receiver will be the server and listen for a connection. The sender will be the client and connect to the receiver to send the data. The protocol will use two ports, the lower of which is specified in the URL and the higher which is the lower plus one. The lower port must be even.

Here are a few examples:

rist://10.0.0.123:5000?mode=listener&profile=main
rist://192.168.1.22?mode=caller&profile=simple

Possible parameters include:

mode: listener (for server/receiver), caller (for client/sender) - Required
profile: simple. main or advanced
password: encryption key
buffering: amount of buffer in milliseconds

When using the 'listener' mode, the port it is listening on must be open in the firewall. For Caller, it should work without firewall adjustment.

RTSP

RTSP [Real Time Streaming Protocol] streams require not only the device address, but also the description of the source of the stream you are accessing on that device. RTSP are also often user/password protected, so you may have to send a user/password in the form "<user>:<pass>@" just before the device identifier. Here are a few examples, and their sources:

rtsp://192.168.100.10/axis-media/media.amp (an Axis camera)
rtsp://192.168.199.11/user:pass@/video1+audio1 (a Marshall camera, with password)
rtsp://192.168.160.20:/onvif/media.amp (an OnVIF source)
rtps://192.168.150:11/video1?videocodec=h264 (a Marshall camera, video only, force h.264)

For sending, RTSP should work without firewall adjustment. RTSP uses port 554

RTMP

RTMP [Real-Time Messaging Protocol] is normally used to stream one video and one stereo audio channel to a website for distribution to multiple watchers. In modern sites, the RTMP is actually re-wrapped into HLS, which is then viewed by the end user. To connect to an RTMP site, like flowcaster.live, youtube.com, and twitch.com, you will need the URL/Link and the key/secret. For youtube, they are available after you 'go live' as the Stream URL and the Stream Key. Once you have them, you simply add a slash and the Stream Key to the Stream URL. For example:

Stream URL: rtmp://a.rtmp.youtube.com/live2

Stream Key: j2bg-a6ck-8t48-w2y2-aaaa

Final URL: rtmp://a.rtmp.youtube.com/live2/j2bg-a6ck-8t48-w2y2-aaaa

For sending, RTMP should work without firewall adjustment. RTMP uses port 1935

WebRTC

WebRTC [Web Real-Time Communication] is a browser native method of sharing video, audio and data. It is primarily used in chat programs, like Google Meet. When sending via WebRTC, FlowCaster appears as a person in the chat, with whatever video and audio it is receiving being sent to the chat.

Here is an example:

webrtc://flowcaster.live?meetingid=asre-dsec-asds-seff&name=flowcaster

WebRTC uses a bunch of standard ports:

Access to ports TCP + UDP 4443, 3478, 443 for www.flowcaster.live
Access to video streaming services in VPN and Firewall settings
Ports used: 80, 443, 4443, 3478 (TCP and UDP), 5349 TCP, 40000:65535 UDP

WHIP (WebRTC - Millicast)

WHIP [WebRTC-HTTP ingestion protocol] is a simpler negotiation system for WebRTC. Currently in use by Millicast to receive streams for worldwide, low latency transmission, FlowCaster and Net-X-Code Server support sending video signals via WHIP. WHIP requires an auth code (available from the Millicast config pages) and a stream name. The stream name is added to the end of whip://director.millicast.com/api/whip/ and the auth token is a parameter that starts with auth=.

Here is an example
whip://director.millicast.com/api/whip/kwky3g6g?
auth=48ce3daa09cd8355f80fc0d37005f9422a62bebf9b6411b61cfb1cfb2fa

WHIP uses a bunch of standard ports:

Access to ports TCP + UDP 4443, 3478, 443 for www.flowcaster.live
Access to video streaming services in VPN and Firewall settings
Ports used: 80, 443, 4443, 3478 (TCP and UDP), 5349 TCP, 40000:65535 UDP

BLS (Bliss Protocol)

BLS [Browser Live Stream] is a protocol developed by Drastic to send live video via an encrypted channel directly to a user's browser. It allows for much higher quality video than WebRTC, while still not requiring any plugins or special setup to present audio and video directly in a modern, HTML5 browser.

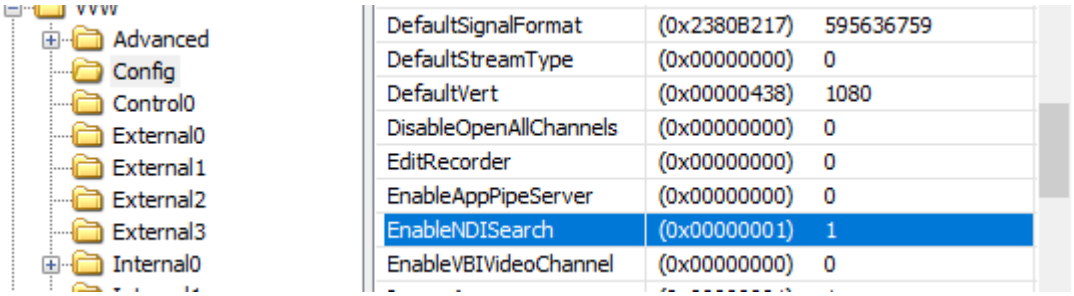
Here are a couple examples:

bls://10.0.0.234:5000
blss://192.168.202.200:3000?password=kfiwgt84jsd&remoteip=120.32.54.6

BLS uses the port explicitly set. If there is no port set, it will use 80 for unencrypted and 443 for encrypted traffic.

NDI

NDI [Network Device Interface] is a video over IP protocol from NewTek®. It requires a device name and a source name to access NDI sources. NDI sources may also be searched on the local network. To enable the search, run DDRConfig and select the Advanced tab. Go to /VVW/Config and change EnableNDISearch = 1. If it does not exist, then create a new Numeric value for it.



To specify an NDI stream, use the device name, followed by a space, and then the source name within brackets.

ndi://USER-PC (Desktop [2])
ndi://TestCameraSource (ISO_1)
ndi://PC2 (Google Chrome [1])

If you are creating an NDI stream, with FlowCaster or Net-X-Code Server, for instance, only the stream name is specified. The Computer name is added automatically by NDI, and you cannot use brackets in the name

ndi://FlowCasterOut
ndi://SDI1Out
ndi://SMPTE2110_Group1

NDI uses a range of TCP ports: NDI ports 49152 to 65535

CDI

CDI [Cloud Digital Interface] is an advanced, fully uncompressed, protocol for use within Amazon VMs. It transports video in a number of formats, as well as audio, time code and other metadata. While it is possible to use CDI with Amazon's enhanced network backbone, it is safest and most efficient, within

their network stacks. The URL will include a local IP and port, with an optional remote IP, adapter and ID.

Here are some examples:

cdi://10.0.0.2:6000
cdi://10.0.0.1:6000?remoteip=10.0.0.200&adapter=EFA&id=2

Possible parameters include:

remoteip: a remote computer to connect to exclusively
adapter: the transport, EFA (Elastic Fabric Adapter) or socket. EFA is the default.
id: a numeric value to specify the stream

The implementation for this transit occurs over the Scalable Reliable Datagram (SRD) protocol. To achieve the highest performance and lowest latency, the AWS CDI SDK relies on EC2 instances that support the Elastic Fabric Adapter (EFA) and are placed within a single Placement Group.

The AWS CDI SDK opens one specified User Datagram Protocol (UDP) port per connection to control communication between Amazon EC2 instances running AWS CDI SDK. The receiving side listens on the specified port number. The transmitting side uses a random port number from the ephemeral port range, as determined by the operating system.

For network security best practices concerning how to block UDP packets from the public Internet, see Security best practices for your VPC.

The AWS CDI SDK also relies on EC2 instances using a Security Group that allows all inbound and outbound traffic to and from the Security Group itself. For more information, see Prepare an EFA-Enabled Security Group.

S2022 and S2110

The SMPTE 2022-6 and SMPTE 2110 protocols can be accessed via SDP (Session Description Protocol) or manual setup. To access an SDP source:

s2202://192.168.101.200/channel1.sdp
s2110://mainsources.drastic.ca/crosspoint10.sdp

For some Drastic software, the source can be set up manually. For S2022, this is a single set of Source IP, Source Port, Destination IP, Destination Port and Interface address. One or any combination of these can be used to describe the source of the SMPTE 2022-6 stream, which

contains all the video, audio and HANC/VANC channels. For SMPTE 2110, up to three sets of the same information are required to describe the video, audio and anc streams, which are all separate. A PTP (Precision Time Protocol) grandmaster may also be specified.

Output Audio Formats

This is the format supported by GetAudioFrame().

Audio is always output as two channels of either 32 bit or 16 bit per sample PCM audio. This is written in the same format as Windows wave files.

Left Channel (2 or 4 bytes little endian)
Right Channel (2 or 5 bytes little endian)
[repeats with no padding]

The frequency is dependent on the dtmwSourceAudioFrequency return. The bit size is dependent on dtmwSourceAudioBitsPerSample. If the dtmwSourceAudioBitsPerSample is 16 or less, then it will return 16 bit samples. If it is greater than 16 bits (normally 20, 24 or 32), then it will return 32 bits, where the 20 or 24 have been shifted up to become 32 bits. Alternately, the incoming bit size may be forced by setting dtmrSetWriteType to either DTMR_WRITETYPE_FRAME_AUDIO_16LE or DTMR_WRITETYPE_FRAME_AUDIO_32LE.

The size of the return is dependent on the frame rate of the file. This can vary from 23.98 fps, or 2000/2001 samples per frame, down to 60 fps, or 800 samples per frame. The size will also vary, depending on how the frame rate divides into the sample rate. For example:

48,000 Hz audio at 29.97 video = 1601.6 samples
Because we can only return an even number of samples, the audio is returned in a 5 frame cadence of 1601 or 1602 samples. Because these are stereo, this means the application will receive 6404/6408 bytes in 16 bit, and 12808/12816 bytes in 20/24/32 bit.

Examples

Please see the sample code in
samples/simpledtmediawrite
samples/simpledtmediawritemulti

And for RTIN generation, please see
samples/raw2rtin

To obtain the sample media required for raw2rtin, please Contact Drastic.

Metadata Elements

The functions SourceMetaDataDWORD() and SourceMetaDataSTR() use the defines below to return specific metadata from the file. The first enums are string values for SourceMetaDataSTR() (from vvwiFileName to vvwiUMID). The second set of enums are the DWORD values (from vvwiTimeCode to vvwiAudioBits).

```
/** Numeric values for all the metadata information types available in MR and VVW
*/
enum vvwInfoMetaTypes {
        //! see VVWINFO::szFileName
        vvwiFileName,
        //! see VVWINFO::szNativeLocator
        vvwiNativeLocator,
        //! see VVWINFO::szUniversalName
        vvwiUniversalName,
        //! see VVWINFO::szIP
        vvwiIP,
        //! see VVWINFO::szSourceLocator
        vvwiSourceLocator,

        //! see VVWINFO::szChannel
        vvwiChannel,
        //! see VVWINFO::szChannelName
        vvwiChannelName,
        //! see VVWINFO::szChannelDescription
        vvwiChannelDescription,
        //! see VVWINFO::szTitle
        vvwiTitle,
        //! see VVWINFO::szSubject
        vvwiSubject,
        //! see VVWINFO::szCategory
        vvwiCategory,                   // <-- 10
        //! see VVWINFO::szKeywords
        vvwiKeywords,
        //! see VVWINFO::szRatings
        vvwiRatings,
        //! see VVWINFO::szComments
        vvwiComments,
        //! see VVWINFO::szOwner
        vvwiOwner,
        //! see VVWINFO::szEditor
        vvwiEditor,
        //! see VVWINFO::szSupplier
        vvwiSupplier,
        //! see VVWINFO::szSource
        vvwiSource,
        //! see VVWINFO::szProject
        vvwiProject,
        //! see VVWINFO::szStatus
        vvwiStatus,
        //! see VVWINFO::szAuthor
        vvwiAuthor,                             // <-- 20
        //! see VVWINFO::szRevisionNumber
        vvwiRevisionNumber,
        //! see VVWINFO::szProduced
```

```
vvwiProduced,
//! see VVWINFO::szAlbum
vvwiAlbum,
//! see VVWINFO::szArtist
vvwiArtist,
//! see VVWINFO::szComposer
vvwiComposer,
//! see VVWINFO::szCopyright
vvwiCopyright,
//! see VVWINFO::szCreationData
vvwiCreationData,
//! see VVWINFO::szDescription
vvwiDescription,
//! see VVWINFO::szDirector
vvwiDirector,
//! see VVWINFO::szDisclaimer
vvwiDisclaimer,                 // <-- 30
//! see VVWINFO::szEncodedBy
vvwiEncodedBy,
//! see VVWINFO::szFullName
vvwiFullName,
//! see VVWINFO::szGenre
vvwiGenre,
//! see VVWINFO::szHostComputer
vvwiHostComputer,
//! see VVWINFO::szInformation
vvwiInformation,
//! see VVWINFO::szMake
vvwiMake,
//! see VVWINFO::szModel
vvwiModel,
//! see VVWINFO::szOriginalArtist
vvwiOriginalArtist,
//! see VVWINFO::szOriginalFormat
vvwiOriginalFormat,
//! see VVWINFO::szPerformers
vvwiPerformers,                 // <-- 40
//! see VVWINFO::szProducer
vvwiProducer,
//! see VVWINFO::szProduct
vvwiProduct,
//! see VVWINFO::szSoftware
vvwiSoftware,
//! see VVWINFO::szSpecialPlaybackRequirements
vvwiSpecialPlaybackRequirements,
//! see VVWINFO::szTrack
vvwiTrack,
//! see VVWINFO::szWarning
vvwiWarning,
//! see VVWINFO::szURLLink
vvwiURLLink,
//! see VVWINFO::szEditData1
vvwiEditData1,
//! see VVWINFO::szEditData2
vvwiEditData2,
//! see VVWINFO::szEditData3
vvwiEditData3,                  // <-- 50
//! see VVWINFO::szEditData4
```

```
vvwiEditData4,
//! see VVWINFO::szEditData5
vvwiEditData5,
//! see VVWINFO::szEditData6
vvwiEditData6,
//! see VVWINFO::szEditData7
vvwiEditData7,
//! see VVWINFO::szEditData8
vvwiEditData8,
//! see VVWINFO::szEditData9
vvwiEditData9,
//! see VVWINFO::szVersionString
vvwiVersionString,
//! see VVWINFO::szManufacturer
vvwiManufacturer,
//! see VVWINFO::szLanguage
vvwiLanguage,
//! see VVWINFO::szFormat
vvwiFormat,                                     // <-- 60
//! see VVWINFO::szInputDevice
vvwiInputDevice,
//! see VVWINFO::szDeviceModelNum
vvwiDeviceModelNum,
//! see VVWINFO::szDeviceSerialNum
vvwiDeviceSerialNum,
//! see VVWINFO::szReel
vvwiReel,
//! see VVWINFO::szShot
vvwiShot,
//! see VVWINFO::szTake
vvwiTake,
//! see VVWINFO::szSlateInfo
vvwiSlateInfo,
//! see VVWINFO::szFrameAttribute
vvwiFrameAttribute,
//! see VVWINFO::szEpisode
vvwiEpisode,
//! see VVWINFO::szScene
vvwiScene,                                      // <-- 70
//! see VVWINFO::szDailyRoll
vvwiDailyRoll,
//! see VVWINFO::szCamRoll
vvwiCamRoll,
//! see VVWINFO::szSoundRoll
vvwiSoundRoll,
//! see VVWINFO::szLabRoll
vvwiLabRoll,
//! see VVWINFO::szKeyNumberPrefix
vvwiKeyNumberPrefix,
//! see VVWINFO::szInkNumberPrefix
vvwiInkNumberPrefix,
//! see VVWINFO::szPictureIcon
vvwiPictureIcon,
//! see VVWINFO::szProxyFile
vvwiProxyFile,
//!
vvwiCustomMetadataBlockPointer,
//!
```

```
vvwiImageInfo,
//!
vvwiUMID,
//
vvwiEND_OF_STRINGS,

vvwiNumericStart = 0x1000,
//! see VVWINFO::dwTimeCode
vvwiTimeCode,
//! see VVWINFO::dwUserBits
vvwiUserBits,
//! see VVWINFO::dwVITCTimeCode
vvwiVITCTimeCode,
//! see VVWINFO::dwVITCUserBits
vvwiVITCUserBits,
//! see VVWINFO::dwVITCLine3
vvwiVITCLine3,
//! see VVWINFO::dwPosterFrame
vvwiPosterFrame,
//! see VVWINFO::dwAFrame
vvwiAFrame,
//! see VVWINFO::dwAspectRatio
vvwiAspectRatio,
//! see VVWINFO::dwOriginalRate
vvwiOriginalRate,
//! see VVWINFO::dwOriginalScale
vvwiOriginalScale,
//! see VVWINFO::dwConversions
vvwiConversions,
//! see VVWINFO::dwVersionNumber
vvwiVersionNumber,
//! see VVWINFO::dwFileSize
vvwiFileSize,
//! see VVWINFO::dwFileDate
vvwiFileDate,
//! see VVWINFO::dwFileTime
vvwiFileTime,
//! see VVWINFO::dwSequenceNumber
vvwiSequenceNumber,
//! see VVWINFO::dwTotalStreams
vvwiTotalStreams,
//! see VVWINFO::dwTotalLength
vvwiTotalLength,
//! see VVWINFO::dwFilmManufacturerCode
vvwiFilmManufacturerCode,
//! see VVWINFO::dwFilmTypeCode
vvwiFilmTypeCode,
//! see VVWINFO::dwWhitePoint
vvwiWhitePoint,
//! see VVWINFO::dwBlackPoint
vvwiBlackPoint,
//! see VVWINFO::dwBlackGain
vvwiBlackGain,
//! see VVWINFO::dwBreakPoint
vvwiBreakPoint,
//! see VVWINFO::dwGamma1000
vvwiGamma1000,
//! see VVWINFO::dwTagNumber
```

```
        vvwiTagNumber,
        //! see VVWINFO::dwFlags
        vvwiFlags,
        //! see VVWINFO::dwTimeCodeType
        vvwiTimeCodeType,
        //! see VVWINFO::dwLTCTimeCodeType
        vvwiLTCTimeCodeType,
        //! see VVWINFO::dwVITCTimeCodeType
        vvwiVITCTimeCodeType,
        //! see VVWINFO::dwProdDate
        vvwiProdDate,
        //End: v3.0
        //! see VVWINFO::dwUniqueID
        vvwiUniqueID,
        //!
        vvwiCustomMetadataBlockType,
        vvwiCustomMetadataBlockSize,
        vvwiNorthSouthEastWest,
        vvwiLatitude,
        vvwiLongitude,
        vvwiExposure,
        vvwiRedGain,
        vvwiBlueGain,
        vvwiWhiteBalance,

        vvwiEND_OF_DWORD_V2,
        // Add elements here
        //VVVID STRUCT
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoWidth = 0x10000,
        //! XML tag name for width
#define VVWINFOTAG_woVideoWidth                 "Width"
#define VVWINFODESC_woVideoWidth                "Width"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoHeight,
        //! XML tag name for height
#define VVWINFOTAG_woVideoHeight                "Height"
#define VVWINFODESC_woVideoHeight               "Height"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoPlanes,
        //! XML tag name for planes
#define VVWINFOTAG_woVideoPlanes                "Planes"
#define VVWINFODESC_woVideoPlanes               "Planes"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoBitCount,
        //! XML tag name for bit count
#define VVWINFOTAG_woVideoBitCount              "BitCount"
#define VVWINFODESC_woVideoBitCount             "BitCount"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoCompression,
        //! XML tag name for compression (fourcc)
#define VVWINFOTAG_woVideoCompression           "Compression"
#define VVWINFODESC_woVideoCompression          "Compression"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoSizeImage,
        //! XML tag name for size of the image in unsigned chars
#define VVWINFOTAG_woVideoSizeImage             "SizeImage"
#define VVWINFODESC_woVideoSizeImage            "SizeImage"
```

```
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoXPelsPerMeter,
        //! XML tag name for X pels per meter
#define VVWINFOTAG_woVideoXPelsPerMeter             "XPelsPerMeter"
#define VVWINFODESC_woVideoXPelsPerMeter  "XPelsPerMeter"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoYPelsPerMeter,
        //! XML tag name for Y pels per meter
#define VVWINFOTAG_woVideoYPelsPerMeter             "YPelsPerMeter"
#define VVWINFODESC_woVideoYPelsPerMeter  "YPelsPerMeter"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoClrUsed,
        //! XML tag name for color elements used
#define VVWINFOTAG_woVideoClrUsed                   "ClrUsed"
#define VVWINFODESC_woVideoClrUsed                        "ClrUsed"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoClrImportant,
        //! XML tag name for
#define VVWINFOTAG_woVideoClrImportant              "ClrImportant"
#define VVWINFODESC_woVideoClrImportant             "ClrImportant"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoReserved,
        //! XML tag name for reserved array
#define VVWINFOTAG_woVideoReserved                        "Reserved"
#define VVWINFODESC_woVideoReserved                       "Reserved"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoFccType,
        //! XML tag name for four cc type (video/audio)
#define VVWINFOTAG_woVideoFccType                   "FccType"
#define VVWINFODESC_woVideoFccType                        "FccType"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoFccHandler,
        //! XML tag name for four cc handler
#define VVWINFOTAG_woVideoFccHandler                "FccHandler"
#define VVWINFODESC_woVideoFccHandler               "FccHandler"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoFlags,
        //! XML tag name for flags
#define VVWINFOTAG_woVideoFlags                           "Flags"
#define VVWINFODESC_woVideoFlags                    "Flags"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoCaps,
        //! XML tag name for capabilities
#define VVWINFOTAG_woVideoCaps                            "Caps"
#define VVWINFODESC_woVideoCaps                           "Caps"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoPriority,
        //! XML tag name for priority
#define VVWINFOTAG_woVideoPriority                  "Priority"
#define VVWINFODESC_woVideoPriority                 "Priority"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoLanguage,
        //! XML tag name for language
#define VVWINFOTAG_woVideoLanguage                        "Language"
#define VVWINFODESC_woVideoLanguage                       "Language"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoScale,
        //! XML tag name for scale (fps = rate / scale)
```

```
#define VVWINFOTAG_woVideoScale                         "Scale"
#define VVWINFODESC_woVideoScale                "Scale"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoRate,
        //! XML tag name for rate (fps = rate / scale)
#define VVWINFOTAG_woVideoRate                          "Rate"
#define VVWINFODESC_woVideoRate                         "Rate"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
    vvwiVideoStart,
        //! XML tag name for start frame
#define VVWINFOTAG_woVideoStart                         "Start"
#define VVWINFODESC_woVideoStart                "Start"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoLength,
        //! XML tag name for the length in frames
#define VVWINFOTAG_woVideoLength                "Length"
#define VVWINFODESC_woVideoLength               "Length"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoInitialFrames,
        //! XML tag name for number of initial frames to load
#define VVWINFOTAG_woVideoInitialFrames         "InitialFrames"
#define VVWINFODESC_woVideoInitialFrames    "InitialFrames"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
    vvwiVideoSuggestedBufferSize,
        //! XML tag name for suggested maximum buffer size
#define VVWINFOTAG_woVideoSuggestedBufferSize       "SuggestedBufferSize"
#define VVWINFODESC_woVideoSuggestedBufferSize      "SuggestedBufferSize"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoQuality,
        //! XML tag name for quality
#define VVWINFOTAG_woVideoQuality               "Quality"
#define VVWINFODESC_woVideoQuality              "Quality"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoSampleSize,
        //! XML tag name for recommended sample size
#define VVWINFOTAG_woVideoSampleSize            "SampleSize"
#define VVWINFODESC_woVideoSampleSize           "SampleSize"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoEditCount,
        //! XML tag name for number of edits done on this file
#define VVWINFOTAG_woVideoEditCount                     "EditCount"
#define VVWINFODESC_woVideoEditCount            "EditCount"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoFormatChangeCount,
        //! XML tag name for number of format changes
#define VVWINFOTAG_woVideoFormatChangeCount             "FormatChangeCount"
#define VVWINFODESC_woVideoFormatChangeCount    "FormatChangeCount"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoPitch,
        //! XML tag name for video line pitch
#define VVWINFOTAG_woVideoPitch                         "Pitch"
#define VVWINFODESC_woVideoPitch                "Pitch"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoDrFlags,
        //! XML tag name for internal drastic flags
#define VVWINFOTAG_woVideoDrFlags               "DrFlags"
#define VVWINFODESC_woVideoDrFlags                      "DrFlags"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
```

```
        vvwiVideoFileType,
        //! XML tag name for drastic 'mft' file type
#define VVWINFOTAG_woVideoFileType              "FileType"
#define VVWINFODESC_woVideoFileType                     "FileType"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiVideoResDrastic,
        //! XML tag name for reserved drastic array of DWORDs
#define VVWINFOTAG_woVideoResDrastic            "ResDrastic"
#define VVWINFODESC_woVideoResDrastic           "ResDrastic"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiAudioType,
        //! XML tag
#define VVWINFOTAG_woAudioType                          "AudioType"
#define VVWINFODESC_woAudioType                         "AudioType"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiAudioChannels,
        //! XML tag
#define VVWINFOTAG_woAudioChannels                      "AudioChannels"
#define VVWINFODESC_woAudioChannels                     "AudioChannels"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiAudioFrequency,
        //! XML tag
#define VVWINFOTAG_woAudioFrequency                     "AudioFrequency"
#define VVWINFODESC_woAudioFrequency            "AudioFrequency"
        //! INTERNAL: Auto generated for XML output from #VVWVIDEO/#VVWAUDIO
        vvwiAudioBits,
        //! XML tag
#define VVWINFOTAG_woAudioBits                          "AudioBits"
#define VVWINFODESC_woAudioBits                         "AudioBits"
        //char  szName[_VVWXXX_NAME_SIZE];      // Stream identifier
        //RECT/*16*/  rcFrame;                           // Frame dimensions
        vvwiLastElementPlus1
        // DO NOT ADD ANYTHING BELOW vvwiLastElementPlus1
};
```

Direct Link Header

dtmediawrite.h

```
/*****************************************************************************
 *
 *
 * Copyright (c) 1998-2023 Drastic Technologies Ltd.  All Rights Reserved.
 * 523 The Queensway, Suite 201 Toronto ON M8V 1Y7
 * phone (416) 255 5636  fax (416) 255 8780
 * engineering@drastictech.com      http://www.drastic.tv
 *****************************************************************************/
// drmediawrite.h : Declaration of the dtmediawrite api

// Hacking class from activex control

#ifndef __DTMEDIAWRITE_DRASTIC_API_9204jrewf348j4_H_
#define __DTMEDIAWRITE_DRASTIC_API_9204jrewf348j4_H_

//////////////////////////////////////////////////////////////////////////////

#define DTMWHANDLE void*

#ifdef _WIN32
#define DTMWCALLTYPE __stdcall
#include <windows.h>
#else
#define DTMWCALLTYPE
#endif

#ifdef __cplusplus
extern "C" {          // PREVENT C++ NAME-MANGLING
#endif

/** The write types
 */
//! Windows RGBA (like bitmap, tga, etc.)
const unsigned long DTMW_WRITETYPE_ARGB = 0;
//! 8 Bit YCbCr (yuv2, D1/HDSDI raw 4:2:2 video
const unsigned long DTMW_WRITETYPE_UYVY = 1;
//! 10 Bit v210 (quicktime packing) 4:2:2 video
const unsigned long DTMW_WRITETYPE_V210 = 2;
//! 10 Bit RGB 4:4;4 (dpx packing)
const unsigned long DTMW_WRITETYPE_RGB10Bit = 3;
//! 16 bit per component (64 bit) RGBA 4:4:4:4
const unsigned long DTMW_WRITETYPE_RGBA64 = 4;
//! 16 bit half float per component RGBA (GPU)
const unsigned long DTMW_WRITETYPE_RGBAHALFFLOAT = 5;
//! Set readtype AUDIO to 16 bits LE
const unsigned long DTMW_WRITETYPE_FRAME_AUDIO_16LE = (0x00010000 | 16);
//! Set readtype AUDIO to 32 bits (note, 16, 20, 24 will be shifted to most significant, LE)
const unsigned long DTMW_WRITETYPE_FRAME_AUDIO_32LE = (0x00010000 | 32);
//! Invalid file
const long DTMW_WRITETYPE_INVALID = -1;
```

```
enum {
	dtmwWave = 1,			// Windows WAV audio files (audio)
	//dtmwMov2 = 183,
	//dtmwMovh264 = 190,
	dtmwMov = 164,				// QuickTime movie files (audio video info)
	dtmwAvi = 3,			// Video for windows, Audio Video Interleave (audio video info)
	dtmwLiveTga = 99,  // 32 Bit Uncompressed only
	dtmwLiveTiff = 101, // 32 Bit Uncompressed only
	dtmwLiveYuv = 104, // 8/10 Bit Uncompressed YCbCr only
	dtmwHdrYuv = 106, //
	dtmwAdvWave = 107,	// Windows WAVE format extension (multi channel) audio
plugin (no dual mono)
	dtmwAdvAiff = 108, // Apple/SGI format multi channel audio plugin
	dtmwMXFSonySD = 110,	// Sony IMX MPEG SD
	dtmwLiveDpx = 111,// RGB10 or YCBCR10
	dtmwBWaveF = 117,// Broadcast wave format
	dtmwMXFSonyHD = 127,	// Sony 25/35mbit 4:2:2 XDCam (old XDCam)
	//dtmwMPEG4 ,			// MPEG-2 h264 essence
	dtmwMXFP2DV = 134,	// Panasonic P2 DV25/50/HD
	dtmwMXFAvid = 135,	// Avid OPAtom direct to mediafiles
	dtmwMXFP2AVCi = 163,	// Panasonic AVCi 100/50 writer
	dtmwMXFDCP = 167,	// Unencrypted DCP
	dtmwMXFOP1a = 172,	// Op1a - yuv, j2k, dnxhd, avci, dvhd
//	dtmwLiveDng = 178,	// DNG bayer (direct write only)
	dtmwMXFSMDK = 186,			// Sony HDCam MXF
	dtmwMXFSony422 = 192,	// Sony XDCam 4:2:2 50 MBit
	dtmwMFXEasyDCP = 196,	// Encrypted DCP (requires EasyDCP license)
	dtmwMP4 = 197,				// MP4 with 264 compression
//	dtmwMXFSonyXAVC = 198,// Sony XAVC Container
	dtmwMXFAS02 = 201,			// MXF AS-02

	//
	//
	//
	dtmftrtIndex = 172		// Special case, write an RTIN directly
};

#ifndef DTFOUR_CHAR_CODE
	#define DTFOUR_CHAR_CODE(x)		((unsigned long)(x))
#endif
#ifndef DTRFOUR_CHAR_CODE
	#define DTRFOUR_CHAR_CODE(x)((((unsigned long) ((x) & 0x000000FF)) << 24) \
								+ (((unsigned long) ((x) &
0x0000FF00)) << 8) \
								+ (((unsigned long) ((x) &
0x00FF0000)) >> 8) \
								+ (((unsigned long) ((x) &
0xFF000000)) >> 24))
#endif

enum {
/** dtmwWave = 1,		// Windows WAV audio files (audio)
* Audio only
*/
```

```
#define DTWAVE_FORMAT_PCM                       1
/**     dtmwMov2 = 183,
* dv25, dv50, dvhd, dnxhd, ycbcr, cineform, rgb10, avci100
*/
        dtmwfccdv25                                     = DTRFOUR_CHAR_CODE('dv25'), // DV-
25 4:2:0
        dtmwfccdv50                                     = DTRFOUR_CHAR_CODE('dv50'), // DV-
50 4:2:2
        dtmwfccdvhd                                     = DTRFOUR_CHAR_CODE('dvhd'), // DV-
100/DVHD
        dtmwfcckYCbCr8Bit                       = DTFOUR_CHAR_CODE('2vuy'),          //
yuv2/uyvy
        dtmwfcckYCbCr10Bit                      = DTFOUR_CHAR_CODE('v210'),          // v210
        dtmwfccCineForm                                 = DTRFOUR_CHAR_CODE('CFHD'),//
CineForm lossless/lossy codec

//      dtmwMovh264 = 190,
//      dtmwMov = 2,                    // QuickTime movie files (audio video info)
/**     dtmwAvi = 3,                // Video for windows, Audio Video Interleave (audio video info)
* dv25, dv50, dvhd, ycbcr8, ycbcr10, cineform
*/
        //dtmwfccdv25
        //dtmwfccdv50
        //dtmwfccdvhd
        //dtmwfcckYCbCr8Bit
        //dtmwfcckYCbCr10Bit
        //dtmwfccCineForm

/**     dtmwLiveTga = 99,   // 32 Bit Uncompressed only
* 32 RGB only
*/
        dtmwBI_RGB                                      = 0,

/**     dtmwLiveTiff = 101, // 32 Bit Uncompressed only
* 32 RGB only
*/
        //dtmwBI_RGB

/**     dtmwLiveYuv = 104, // 8/10 Bit Uncompressed YCbCr only
* 8 and 10 bit ycbcr
*/
        //dtmwfcckYCbCr8Bit
        //dtmwfcckYCbCr10Bit

/**     dtmwHdrYuv = 106, //
* 8 and 10 bit ycbcr
*/
        //dtmwfcckYCbCr8Bit
        //dtmwfcckYCbCr10Bit

/**     dtmwAdvWave = 107,      // Windows WAVE format extension (multi channel) audio
plugin (no dual mono)
* Audio Only
*/
        //DTWAVE_FORMAT_PCM
```

```
#define DTWAVE_FORMAT_EXTENSIBLE        0xFFFE

/**     dtmwAdvAiff = 108, // Apple/SGI format multi channel audio plugin
* Audio Only
*/
        dtmwfcck16BitBigEndianFormat     = DTFOUR_CHAR_CODE('twos'),            /*16-bit big
endian*/

/**     dtmwMXFSonySD = 110,    // Sony IMX MPEG SD
* IMX PAL and NTSC
*/
        dtmwfcckIMXD10_NTSC_50              = DTFOUR_CHAR_CODE('mx5n'),  // FinalCut
Pro 5.0 Studio
        dtmwfcckIMXD10_NTSC_40              = DTFOUR_CHAR_CODE('mx4n'),  // FinalCut
Pro 5.0 Studio
        dtmwfcckIMXD10_NTSC_30              = DTFOUR_CHAR_CODE('mx3n'),  // FinalCut
Pro 5.0 Studio
        dtmwfcckIMXD10_PAL_50               = DTFOUR_CHAR_CODE('mx5p'),  // FinalCut
Pro 5.0 Studio
        dtmwfcckIMXD10_PAL_40               = DTFOUR_CHAR_CODE('mx4p'),  // FinalCut
Pro 5.0 Studio
        dtmwfcckIMXD10_PAL_30               = DTFOUR_CHAR_CODE('mx3p'),  // FinalCut
Pro 5.0 Studio

/**     dtmwLiveDpx = 111,// RGB10 or YCBCR10
* YCbCr 10 and RGB10
*/
        dtmwfcc10LinDPX                                 = DTFOUR_CHAR_CODE('R10k'),
        // Big endian
        dtmwfcc10LogDPX                                 = DTFOUR_CHAR_CODE('R10g'),
        // Big endian
        //dtmwfcckYCbCr8Bit
        //dtmwfcckYCbCr10Bit

/**     dtmwBWaveF = 117,// Broadcast wave format
* Audio only
*/
        //DTWAVE_FORMAT_PCM

/**     dtmwMXFSonyHD = 127,    // Sony 25/35mbit 4:2:2 XDCam (old XDCam)
* MPEG 4:2:0 only
*/
        dtmwfccDT_MPEGHD_VBR_I                  = DTRFOUR_CHAR_CODE('mgv1'),//
4:2:0 XDCAM HD VBR Interlace
        dtmwfccDT_MPEGHD_VBR_P                  = DTRFOUR_CHAR_CODE('mgv2'),//
4:2:0 XDCAM HD VBR Progressive
        dtmwfccDT_MPEGHD_VBR_I_17           = DTRFOUR_CHAR_CODE('mc17'),// 4:2:0
XDCAM HD VBR Interlace 17.5 Mbps
        dtmwfccDT_MPEGHD_VBR_P_17           = DTRFOUR_CHAR_CODE('mv17'),// 4:2:0
XDCAM HD VBR Progressive 17.5 Mbps
        dtmwfccDT_MPEGHD_VBR_I_25           = DTRFOUR_CHAR_CODE('mc25'),// 4:2:0
XDCAM HD VBR Interlace 25 Mbps
        dtmwfccDT_MPEGHD_VBR_P_25           = DTRFOUR_CHAR_CODE('mv25'),// 4:2:0
XDCAM HD VBR Progressive 25 Mbps
```

```
	dtmwfccDT_MPEGHD_VBR_I_35		= DTRFOUR_CHAR_CODE('mc35'),// 4:2:0
XDCAM HD VBR Interlace 35 Mbps
	dtmwfccDT_MPEGHD_VBR_P_35		= DTRFOUR_CHAR_CODE('mv35'),// 4:2:0
XDCAM HD VBR Progressive 35 Mbps
	dtmwfccDT_MPEGHD_CBR_I			= DTRFOUR_CHAR_CODE('mgc1'),//
4:2:0 XDCAM HD CBR Interlace 25 Mbps
	dtmwfccDT_MPEGHD_CBR_P			= DTRFOUR_CHAR_CODE('mgc2'),//
4:2:0 XDCAM HD CBR Progressive 25 Mbps

/**	dtmwMPEG4 ,		// MPEG-2 h264 essence
* h264
*/
	drmwfcckH264CodecType		= DTFOUR_CHAR_CODE('avc1'),	/*
MEDIASUBTYPE_AVC1	'AVC1' H.264 bitstream without start codes.*/

/**	dtmwMXFP2DV = 134,	// Panasonic P2 DV25/50/HD
* DV25, DV50, DVHD
*/
	//dtmwfccdv25
	//dtmwfccdv50
	//dtmwfccdvhd

/**	dtmwMXFAvid = 135,	// Avid OPAtom direct to mediafiles
* DNxHD
*/
	dtmwfcckDNxHD_220x_10		= DTFOUR_CHAR_CODE('AV10'),	// 1920x1080
10 Bit P (220x/185x/175x)
	dtmwfcckDNxHD_145x			= DTFOUR_CHAR_CODE('AVd2'),	//
1920x1080 8 Bit P  (145/120/115) ~equiv hdcam/dvcpro100
	dtmwfcckDNxHD_220x			= DTFOUR_CHAR_CODE('AVd3'),	//
1920x1080 8 Bit P  (220/185/175)
	dtmwfcckDNxHD_220_10		= DTFOUR_CHAR_CODE('AVd4'),	// 1920x1080
10 Bit i (220/185/175)
	dtmwfcckDNxHD_145			= DTFOUR_CHAR_CODE('AVd5'),	//
1920x1080 8 Bit i  (145/120/115)
	dtmwfcckDNxHD_220			= DTFOUR_CHAR_CODE('AVd6'),	//
1920x1080 8 Bit i  (220/185/175)
	dtmwfcckDNxHD_720_220x		= DTFOUR_CHAR_CODE('AVd7'),	// 1280x720
10 Bit P  (220x/175x/90x)
	dtmwfcckDNxHD_720_220		= DTFOUR_CHAR_CODE('AVd8'),	// 1280x720 8
Bit P   (220x/175x/90x)
	dtmwfcckDNxHD_720_145		= DTFOUR_CHAR_CODE('AVd9'),	// 1280x720 8
Bit P   (145x/120x/115x)
	dtmwfcckDNxHD_36			= DTFOUR_CHAR_CODE('AVd0'),	// 1920x1080
8 Bit P  (36)

/**	dtmwMXFP2AVCi = 163,	// Panasonic AVCi 100/50 writer
* AVCi 100
*/
	dtmwfccAVCi100				= DTFOUR_CHAR_CODE('ai16'),

/**	dtmwMXFDCP = 167,	// Unencrypted DCP
* JPEG-2000
*/
```

```
	dtmwfccJ2_Cinema2K                              = DTRFOUR_CHAR_CODE('J22K'), //
Digital cinema 2K (alias)
	dtmwfccJ2_Cinema4K                              = DTRFOUR_CHAR_CODE('J24K'), //
Digital cinema 4K (alias)

/**	dtmwMXFOP1a = 172,	// Op1a - yuv, j2k, dnxhd, avci, dvhd
* YCbCr 8, DVHD, AVCi, DNxHD, JPEG-2000
*/
	//dtmwfcckYCbCr8Bit
	//dtmwfccdvhd
	//dtmwfccAVCi100
	fccJPEG2000_YCbCr                       = DTRFOUR_CHAR_CODE('J2GV'), //
SAMA/YCbCrJ2K/Grass Valley Infinity

/**	dtmwLiveDng = 178,	// DNG bayer (direct write only)
* Bayer (direct write only)
*/

/**	dtmwMXFSMDK = 186,		// Sony HDCam MXF
* HDCam
*/
	dtmwfccHDCamSR                                  =  DTFOUR_CHAR_CODE('HDSR'),
	dtmwfccHDCamSR_444                              =  DTFOUR_CHAR_CODE('HDS4'),

/**	dtmwMXFSony422 = 192,	// Sony XDCam 4:2:2 50 MBit
* MPEG 4:2:2
*/
	dtmwfccDT_MPEG422                               = DTRFOUR_CHAR_CODE('mg01'),//
4:2:2 MPEG-2

/**	dtmwMFXEasyDCP = 196,	// Encrypted DCP (requires EasyDCP license)
* JPEG-2000
*/
	//dtmwfccJ2_Cinema2K
	//dtmwfccJ2_Cinema4K

/**	dtmwMP4 = 197,		// MP4 with 264 compression
* h264
*/
	//drmwfcckH264CodecType

/**	dtmwMXFSonyXAVC = 198,// Sony XAVC Container
* XAVC
*/

/**	dtmwMXFAS02 = 201,		// MXF AS-02
* JPEG-2000 (SAMA), YCbCr 8, XDCam
*/
	//dtmwfcckYCbCr8Bit
	//fccJPEG2000_YCbCr
	//fcckJPEG2000CodecType
	dtmwfcckXAVC                                    = DTFOUR_CHAR_CODE('xavc'),
	dtmwfcckXAVC4K                                  = DTFOUR_CHAR_CODE('xav4'),
	//dtmwfccDT_MPEG422 (XDCam)
```

```
};


/** Open a new file, stream or network source for preview
 */
DTMWHANDLE DTMWCALLTYPE dtmwOpen(char * szFileName, unsigned long dwFlags,
        unsigned long dwFileType, unsigned long dwFourCC, unsigned long dwWidth, unsigned long
dwHeight,
        unsigned long dwRate, unsigned long dwScale, unsigned long dwAudioChannels,
        unsigned long dwAudioRate, unsigned long dwAudioBits);
typedef DTMWHANDLE (DTMWCALLTYPE * p_dtmwOpen)(char * szFileName, unsigned long
dwFlags,
        unsigned long dwFileType, unsigned long dwFourCC, unsigned long dwWidth, unsigned long
dwHeight,
        unsigned long dwRate, unsigned long dwScale, unsigned long dwAudioChannels,
        unsigned long dwAudioRate, unsigned long dwAudioBits);

/** Close the currently open stream or file
 */
long DTMWCALLTYPE dtmwClose(DTMWHANDLE dtmw);
typedef long (DTMWCALLTYPE * p_dtmwClose)(DTMWHANDLE dtmw);

/** Returns recommended and supported write types
 */
long DTMWCALLTYPE dtmwGetWriteTypes(DTMWHANDLE dtmw, unsigned long dwIndex, unsigned
long * pdwTypes);
typedef long (DTMWCALLTYPE * p_dtmwGetWriteTypes)(DTMWHANDLE dtmw, unsigned long
dwIndex, unsigned long * pdwTypes);

/** The final file name used for the target file
 */
long DTMWCALLTYPE dtmwTargetFileName(DTMWHANDLE dtmw, char * tszString);
typedef long (DTMWCALLTYPE * p_dtmwTargetFileName)(DTMWHANDLE dtmw, char * tszString);

/** Target video media's height
 */
long DTMWCALLTYPE dtmwTargetHeight(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetHeight)(DTMWHANDLE dtmw, long *pVal);

/** Target video media's width
 */
long DTMWCALLTYPE dtmwTargetWidth(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetWidth)(DTMWHANDLE dtmw, long *pVal);

/** Target pitch depending on frame type
*/
long DTMWCALLTYPE dtmwTargetPitch(DTMWHANDLE dtmwPV, long lType, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetPitch)(DTMWHANDLE dtmwPV, long lType, long
*pVal);

/* Target video media's bit depth
 */
long DTMWCALLTYPE dtmwTargetBitDepth(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetBitDepth)(DTMWHANDLE dtmw, long *pVal);
```

```
/* Target video media's fourcc compression code
 */
long DTMWCALLTYPE dtmwTargetFourCC(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetFourCC)(DTMWHANDLE dtmw, long *pVal);

/* Target video media's bit rate
 */
long DTMWCALLTYPE dtmwTargetBitRate(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetBitRate)(DTMWHANDLE dtmw, long *pVal);

/* Target video media's quality
 */
long DTMWCALLTYPE dtmwTargetQuality(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetQuality)(DTMWHANDLE dtmw, long *pVal);

/* Target video media's frame size for the requested or current frame
 */
long DTMWCALLTYPE dtmwTargetFrameSize(DTMWHANDLE dtmw, long dwFrameType, long
*pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetFrameSize)(DTMWHANDLE dtmw, long
dwFrameType, long *pVal);

/* Target video total channels
 */
long DTMWCALLTYPE dtmwTargetVideoChannels(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetVideoChannels)(DTMWHANDLE dtmw, long *pVal);

/* Target audio total channels
 */
long DTMWCALLTYPE dtmwTargetAudioChannels(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetAudioChannels)(DTMWHANDLE dtmw, long *pVal);

/** Target audio media frequency
 */
long DTMWCALLTYPE dtmwTargetAudioFrequency(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetAudioFrequency)(DTMWHANDLE dtmw, long
*pVal);

/** Target audio media bits per sample
 */
long DTMWCALLTYPE dtmwTargetAudioBitsPerSample(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetAudioBitsPerSample)(DTMWHANDLE dtmw, long
*pVal);

/* Target audio media's fourcc compression code
 */
long DTMWCALLTYPE dtmwTargetAudioFourCC(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetAudioFourCC)(DTMWHANDLE dtmw, long *pVal);

/** Target video rate value (FPS = TargetRate / TargetScale)
 */
long DTMWCALLTYPE dtmwTargetRate(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetRate)(DTMWHANDLE dtmw, long *pVal);

/** Target video scale value (FPS = TargetRate / TargetScale)
```

```
 */
long DTMWCALLTYPE dtmwTargetScale(DTMWHANDLE dtmw, long *pVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetScale)(DTMWHANDLE dtmw, long *pVal);

/** Return Target metadata information that are numeric (DWORDs or longs)
 */
long DTMWCALLTYPE dtmwTargetMetaDataDWORD(DTMWHANDLE dtmw, long
dwMetaDataElement, long dwVal);
typedef long (DTMWCALLTYPE * p_dtmwTargetMetaDataDWORD)(DTMWHANDLE dtmw, long
dwMetaDataElement, long dwVal);

/** Return Target metadata information that are string data
 */
long DTMWCALLTYPE dtmwTargetMetaDataSTR(DTMWHANDLE dtmw, long dwMetaDataElement,
char * szMAX_PATHString);
typedef long (DTMWCALLTYPE * p_dtmwTargetMetaDataSTR)(DTMWHANDLE dtmw, long
dwMetaDataElement, char * szMAX_PATHString);

/** Set the write type for the video frames
 */
long DTMWCALLTYPE dtmwSetWriteType(DTMWHANDLE dtmw, long lWriteType);
typedef long (DTMWCALLTYPE * p_dtmwSetWriteType)(DTMWHANDLE dtmw, long lWriteType);

/** Set the channel for the video frames (0, 1, 2, 3, 4 etc.) (0 = 0x03, 1 = 0x0C, 2 = 0x30, 3 =
0xC0 etc.)
 */
long DTMWCALLTYPE dtmwSetVideoChannel(DTMWHANDLE dtmw, long lVideoChannel);
typedef long (DTMWCALLTYPE * p_dtmwSetVideoChannel)(DTMWHANDLE dtmw, long
lVideoChannel);

/** Set the audio channel pair to monitor (0  = 1+2, 1 = 3+4, 2 = 5+6, 3 = 7+8 etc.)
 */
long DTMWCALLTYPE dtmwSetAudioChannelPair(DTMWHANDLE dtmw, long lAudioChannelPair);
typedef long (DTMWCALLTYPE * p_dtmwSetAudioChannelPair)(DTMWHANDLE dtmw, long
lAudioChannelPair);

//
long DTMWCALLTYPE dtmwSetVitcType(DTMWHANDLE dtmwPV, long dwVal);
typedef long (DTMWCALLTYPE * p_dtmwSetVitcType)(DTMWHANDLE dtmw, long dwVal);

//
long DTMWCALLTYPE dtmwSetLtcType(DTMWHANDLE dtmwPV, long dwVal);
typedef long (DTMWCALLTYPE * p_dtmwSetLtcType)(DTMWHANDLE dtmw, long dwVal);

/** Set the next VITC (vertical blank) time code
 */
long DTMWCALLTYPE dtmwNextVitcFrame(DTMWHANDLE dtmw, long dwVal);
typedef long (DTMWCALLTYPE * p_dtmwNextVitcFrame)(DTMWHANDLE dtmw, long dwVal);

/** Set the next VITC (vertical blank time code) user bits
 */
long DTMWCALLTYPE dtmwNextVitcUb(DTMWHANDLE dtmw, long dwVal);
typedef long (DTMWCALLTYPE * p_dtmwNextVitcUb)(DTMWHANDLE dtmw, long dwVal);

/** Set the next LTC (SMPTE) time code
```

```
 */
long DTMWCALLTYPE dtmwNextLtcFrame(DTMWHANDLE dtmw, long dwVal);
typedef long (DTMWCALLTYPE * p_dtmwNextLtcFrame)(DTMWHANDLE dtmw, long dwVal);

/** Set the next LTC (SMPTE time code) user bits
 */
long DTMWCALLTYPE dtmwNextLtcUb(DTMWHANDLE dtmw, long dwVal);
typedef long (DTMWCALLTYPE * p_dtmwNextLtcUb)(DTMWHANDLE dtmw, long dwVal);

/** PutVideoFrame sends one video frame
 */
long DTMWCALLTYPE dtmwPutVideoFrame(DTMWHANDLE dtmw, unsigned char * psvFrame, long
dwSize);
typedef long (DTMWCALLTYPE * p_dtmwPutVideoFrame)(DTMWHANDLE dtmw, unsigned char *
psvFrame, long dwSize);

/** PutAudioFrame returns a safe array containing one video frame worth of audio data
 */
long DTMWCALLTYPE dtmwPutAudioFrame(DTMWHANDLE dtmw, unsigned char * psaFrame, long
dwSize);
typedef long (DTMWCALLTYPE * p_dtmwPutAudioFrame)(DTMWHANDLE dtmw, unsigned char *
psaFrame, long dwSize);

/** Get current extended data
 */
long DTMWCALLTYPE dtmwPutNextExtendedData(DTMWHANDLE dtmw, unsigned char *pvData,
long lSize, long lFlags);
typedef long (DTMWCALLTYPE * p_dtmwPutNextExtendedData)(DTMWHANDLE dtmw, unsigned
char *pvData, long lSize, long lFlags);

/** SetMode - send a mediacmd structure (advanced)
*/
long DTMWCALLTYPE dtmwSetMode(DTMWHANDLE dtmwPV, void * pMediaCmd);
typedef long (DTMWCALLTYPE * p_dtmwSetMode)(void * pMediaCmd);

/** Get the version
*/
long DTMWCALLTYPE dtmwVersion(long *pVerMajor, long *pVerMinor, long *pVerMod, long
*pVerBuild);
typedef long (DTMWCALLTYPE * p_dtmwVersion)(long *pVerMajor, long *pVerMinor, long
*pVerMod, long *pVerBuild);

// dwFlags
   //! Send this in if you just need the filename (faster than getting all the info)
#define DPOSSIZENAME_FILENAME_ONLY                0x40000000          // Same as
DFRAME_SKIP_FRAME
   //! Flag for mediafile/avhal to get audio dframe
#define GetAudio     0x00000000
   //! Flag for mediafile/avhal to get video dframe
#define GetVideo     0x00000001
//! Flag for mediafile/avhal to put audio dframe
#define PutAudio     GetAudio
//! Flag for mediafile/avhal to put video dframe
#define PutVideo     GetVideo
//! Film 24 FPS time code
```

```
#define TC2_TCTYPE_FILM          0x00000001  // 24 fps
//! Non Drop Frame 30 FPS time code
#define TC2_TCTYPE_NDF           0x00000002  // NTSC Non Drop Frame
//! Drop Frame 29.97 FPS time code
#define TC2_TCTYPE_DF            0x00000004  // NTSC Drop Frame
//! PAL 25 FPS time code
#define TC2_TCTYPE_PAL           0x00000008  // PAL
//! Double PAL 50 FPS
#define TC2_TCTYPE_50            0x00000010  // PAL 720p (double rate)
//! 720p DROP 59.94 FPS
#define TC2_TCTYPE_5994          0x00000020  // NTSC 59.94fps 720p (NTSC DF double)
//! 720p DROP 59.97 FPS
#define TC2_TCTYPE_5997          0x00000022  // NTSC 59.94fps 720p (NTSC DF double)
//! 720p 60 FPS
#define TC2_TCTYPE_60            0x00000040  // NTSC 60fps 720p (NTSC NDF double)
//! 23.98 FILM for NTSC 23.98 FPS  (This is actually 24)
#define TC2_TCTYPE_NTSCFILM    0x00000080  // NTSC FILM 23.98
//! 23.98 TRUE (actual 23.98 drop per Avid)
#define TC2_TCTYPE_2398          0x00000084  // TRUE 23.98
//! Hundredths of a second HH:MM:SS:/100  100 FPS effective
#define TC2_TCTYPE_100           0x00000044  // Hours:Minutes:Seconds:Hundreds
//! IRIG time code, uses both time code and user bits
#define TC2_TCTYPE_IRIG  0x00000045  // Hours:Minutes:Seconds:Xxx

// dwFrameFlags
#define DPOSSIZENAME_VIDEO_FRAME           0x00000001
   //! Is this file type currently recording
#define DPOSSIZENAME_RECORDING                     0x00000004
   //! This frame needs to be made black (default frame) in MediaFile
#define DPOSSIZENAME_PLEASE_BLACK          _PDFRAMEFLAGS_PLEASE_BLACK  //
        0x00000080
   //! This is a mono audio chunk
#define DPOSSIZENAME_MONO_AUDIO_FRAME  0x00000100
   //! This is a stereo audio chunk
#define DPOSSIZENAME_STEREO_AUDIO_FRAME        0x00000200
#define DPOSSIZENAME_QUAD_AUDIO_FRAME  0x00000400
#define DPOSSIZENAME_4_1_AUDIO_FRAME     0x00000800
#define DPOSSIZENAME_5_1_AUDIO_FRAME     0x00001000
#define DPOSSIZENAME_7_1_AUDIO_FRAME     0x00002000
#define DPOSSIZENAME_9_1_AUDIO_FRAME     0x00004000
#define DPOSSIZENAME_AUDIO_MASK                    (DPOSSIZENAME_MONO_AUDIO_FRAME|
DPOSSIZENAME_STEREO_AUDIO_FRAME|DPOSSIZENAME_STEREO_AUDIO_FRAME|
DPOSSIZENAME_QUAD_AUDIO_FRAME|DPOSSIZENAME_4_1_AUDIO_FRAME|
DPOSSIZENAME_5_1_AUDIO_FRAME| DPOSSIZENAME_7_1_AUDIO_FRAME|
DPOSSIZENAME_9_1_AUDIO_FRAME)
#define DPOSSIZENAME_FRAME_MASK                    0x0000FFFF
   //! This frame contains audio data see DFRAME::dwType
#define DFRAME_TYPE_AUDIO              0x00010000
   //! 16 bit audio
#define DPOSSIZENAME_AUD_16_16_BIT                 0x00100000
   //! 20 bit audio in 24
#define DPOSSIZENAME_AUD_20_24_BIT                 0x00200000
   //! 24 bit audio in 24
#define DPOSSIZENAME_AUD_24_24_BIT                 0x00400000
   //! 24/32 bit audio in 32
```

```
#define DPOSSIZENAME_AUD_24_32_BIT              0x00800000
   //! 32/32 bit audio in 32
#define DPOSSIZENAME_AUD_32_32_BIT              0x01000000
   //! Audio is compressed
#define DPOSSIZENAME_AUD_COMPRESSED             0x02000000
   //! Audio is big endian, else little endian
#define DPOSSIZENAME_AUD_BIGENDIAN_BIT  0x00080000
   //! Just for completeness
#define DPOSSIZENAME_AUD_LITTLEENDIAN_BIT       0x00000000
   //! This frame is independent of other frames for decode see DFRAME::dwType
#define DFRAME_TYPE_KEYFRAME 0x10000000
   //! This frame is independent of other frames for decode (an MPEG I Frame) see
DFRAME::dwType
#define DFRAME_TYPE_KEYFRAME_I       0x10000000
   //! This frame requires previous keyframe(s) (for MPEG a P Frame) see DFRAME::dwType
#define DFRAME_TYPE_KEYFRAME_P       0x80000000
   //! This frame requires more than one frame to decode (for MPEG a B Frame) see
DFRAME::dwType
#define DFRAME_TYPE_KEYFRAME_B       0x20000000
//! This frame should be skipped (decoded, but not displayed) - Used to reach seek frame on a
non key frame from key frame see DFRAME::dwType
#define DFRAME_SKIP_FRAME            0x40000000

/** Set info on a frame of audio or video for RTIN files
*/
long DTMWCALLTYPE dtmwPutFileFrameInfo(DTMWHANDLE dtmwPV, unsigned long dwRTChannel,
unsigned long dwFrame, unsigned long dwFlags,
                              size_t nPosition, size_t nSize, unsigned long dwFrameFlags, unsigned
long dwRepsSamples);
typedef long (DTMWCALLTYPE * p_dtmwPutFileFrameInfo)(DTMWHANDLE dtmwPV, unsigned long
dwRTChannel, unsigned long dwFrame, unsigned long dwFlags,
                                        size_t nPosition, size_t nSize, unsigned long dwFrameFlags,
unsigned long dwRepsSamples);

/** AddVideoChannel - rtIndex add a video channel to the rtindex file
*/
long DTMWCALLTYPE dtmwAddVideoChannel(DTMWHANDLE dtmwPV, char * szVideoFile, unsigned
long dwFileType, unsigned long dwFourCC, unsigned long dwWidth, unsigned long dwHeight,
        unsigned long dwRate, unsigned long dwScale, unsigned long * pdwVideoChannelHandle);
typedef long (DTMWCALLTYPE * p_dtmwAddVideoChannel)(DTMWHANDLE dtmwPV, char *
szVideoFile, unsigned long dwFileType, unsigned long dwFourCC, unsigned long dwWidth,
unsigned long dwHeight, unsigned long dwRate, unsigned long dwScale, unsigned long *
pdwVideoChannelHandle);

/** AddAudioChannel - rtIndex add an audio channel to the rtindex file
*/
long DTMWCALLTYPE dtmwAddAudioChannel(DTMWHANDLE dtmwPV, char * szAudioFile, unsigned
long dwFileType, unsigned long dwAudioChannels,
        unsigned long dwAudioRate, unsigned long dwAudioBits, unsigned long *
pdwAudioChannelHandle);
typedef long (DTMWCALLTYPE * p_dtmwAddAudioChannel)(DTMWHANDLE dtmwPV, char *
szAudioFile, unsigned long dwFileType, unsigned long dwAudioChannels,
        unsigned long dwAudioRate, unsigned long dwAudioBits, unsigned long *
pdwAudioChannelHandle);
```

```
/** Get the video codec extra data (e.g. avc1 MP4 avcC box)
* Passing NULL pData will return size
*/
long DTMWCALLTYPE dtmwCodecData(DTMWHANDLE dtmw, unsigned char * pData, unsigned
long dwSize);
typedef long (DTMWCALLTYPE * p_dtmwCodecData)(DTMWHANDLE dtmw, unsigned char * pData,
unsigned long dwSize);

/** Get the audio codec extra data (e.g. acc config bytes)
* Passing NULL pData will return size
*/
long DTMWCALLTYPE dtmwAudioCodecData(DTMWHANDLE dtmw, unsigned char * pData,
unsigned long dwSize);
typedef long (DTMWCALLTYPE * p_dtmwAudioCodecData)(DTMWHANDLE dtmw, unsigned char *
pData, unsigned long dwSize);


#ifdef __cplusplus
}                       // PREVENT C++ NAME-MANGLING
#endif

////////////////////////////////////////////////////////////////////////

#endif //__DTMEDIAWRITE_DRASTIC_API_9204jrewf348j4_H_
```

This manual has been compiled to assist the user in their experience using the **Drastic DTMediaWrite SDK**. It is believed to be correct at the time of writing, and every effort has been made to provide accurate and useful information. Any errors that may have crept in are unintentional and will hopefully be purged in a future revision of this document. We welcome your feedback.

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