



Windows CVR Software Development Kit

Software Programming Guide

APPROVAL SHEET

AUTHORIZED SIGNATURE	
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ABOUT SDK:

This SDK provides the knowledge and example of usage to use the custom video renderer (CVR).

These interfaces are listed in 3 parts:

- 1) Create and Destroy Video Renderer
- 2) Create and Destroy Channel Window
- 3) Access Video Buffer
- 4) Access Overlay Buffer

All interfaces and parameters are detailed described to make it easy to use.

The SDK package contains library, included file, document, and sample source code, which helps you to build an application to use renderer.

The SDK structure is shown as follows.

SDK PACKET:

- **DOC**: Documents
- **INC**: Header files
- **LIB**: LIB & DLL files for VC & NET (VB/C#/J#)
- **SAMPLES**: Sample Source Codes
- HISTORY.TXT SDK Update History

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1.01 CVRSDK_CREATE

The function helps you to create a video renderer. Video renderer is a base container for inserting multiple channel windows.

```
PVOID CVRSDK_CREATE();
```

Parameters:

Return Value:

PVOID

Examples:

EX1: To create a video renderer.

```
PVOID pVideoRenderer = CVRSDK_CREATE();
```

1.02 CVRSDK_DESTROY

To call this function will release all resources of the video renderer.

```
BOOL CVRSDK_DESTROY( PVOID pVideoRenderer );
```

Parameters:

Parameter	IN/OUT	Description
pVideoRenderer	IN	Pointer of the video renderer to be destroyed.

Return Value:

BOOL

Examples:

EX1: Destroy the video renderer.

```
CVRSDK_DESTROY( pVideoRenderer );
```

1.03 CVRSDK_SNAPSHOT_BMP

This function is to do snapshot to a BMP file from video renderer or channel window.

```

    BOOL  CVRSDK_SNAPSHOT_BMP( PVOID      pChannelWindow,
                                CHAR *     pszFilePathName
    );

```

Parameters:

Parameter	IN/OUT	Description
pChannelWindow	IN	Specifies which channel window to get BMP file.
pszFilePathName	IN	Specifies the file name of captured BMP file.

Return Value:

BOOL

Examples:

EX1: To snapshot BMP from the channel window.

```
CVRSDK_SNAPSHOT_BMP( pChannelWindow, "D:\\20101031.BMP" );
```

1.04 CVRSDK_SNAPSHOT_JPG

This function is to do snapshot to a JPG file from video renderer or channel window.

```

    BOOL CVRSDK_SNAPSHOT_JPG( PVOID      pChannelWindow,
                               CHAR *     pszFilePathName
    );

```

Parameters:

Parameter	IN/OUT	Description
pChannelWindow	IN	Specifies which channel window to get JPG file.
pszFilePathName	IN	Specifies the file name of captured JPG file.

Return Value:

BOOL

Examples:

EX1: To snapshot JPG from the channel window.

```
CVRSDK_SNAPSHOT_JPG( pChannelWindow, "D:\\20101031.JPG" );
```

1.05 CVRSDK_INSERT_CHANNEL_WINDOW

This function is used to insert channel window to the video renderer.

```
PVOID CVRSDK_INSERT_CHANNEL_WINDOW( PVOID      pVideoRenderer,
                                     HWND       hDisplayWindow,
                                     ULONG      nVideoWidth,
                                     ULONG      nVideoHeight,
                                     BOOL       bThumbDraw = FALSE,
                                     BOOL       bMaintainAspectRatio = FALSE,
                                     DWORD      dwBackgroundColor = 0x00000000

                                     );
```

Parameters:

Parameter	IN/OUT	Description
pVideoRenderer	IN	Pointer of the video render to accept channel window.
hDisplayWindow	IN	Pointer to one HWND window handle.
nVideoWidth	IN	Video width
nVideoHeight	IN	Video height
bThumbDraw	IN	Turn on/off ThumbDraw function.
bMaintainAspectRatio	IN	To keep maintain video's aspect ratio
dwBackgroundColor	IN	Set the background color

Return Value:

A PVOID to indicate the embedded channel window.

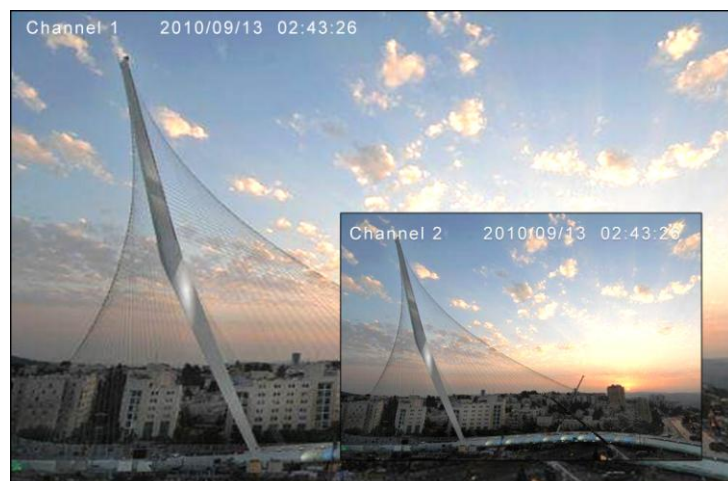
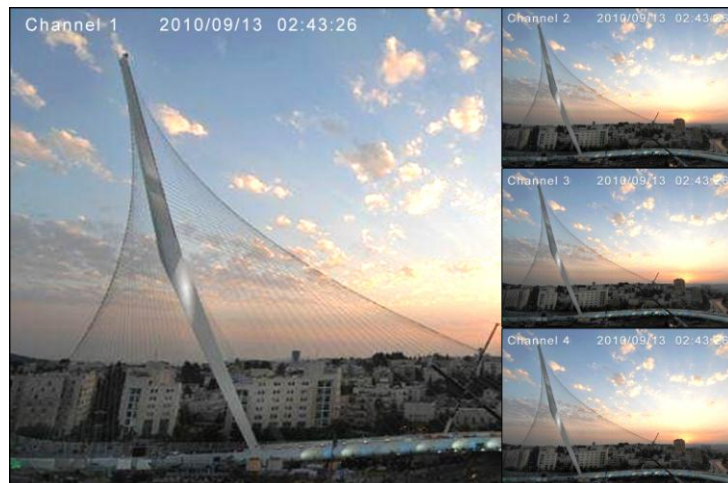
Examples:

EX1: To insert channel window to the video renderer.

```
HWND hWnd = CreateWindowEx( ... );
```

```
PVOID pChannelWindow = CVRSDK_INSERT_CHANNEL_WINDOW( pVideoRenderer, hWnd, 1920, 1080 );
```

EX2: multi-channel can be inserted by calling this function multi-times with different window handle, such as these pictures as below:



1.06 CVRSDK_REMOVE_CHANNEL_WINDOW

This function is used to remove the channel window from the video renderer.

```

    BOOL CVRSDK_REMOVE_CHANNEL_WINDOW( PVOID pVideoRenderer,
                                        PVOID pChannelWindow
    );

```

Parameters:

Parameter	IN/OUT	Description
pVideoRenderer	IN	Pointer of the video render to remove channel window
pChannelWindow	IN	Pointer of channel window to be removed

Return Value:

BOOL

Examples:

EX1: To remove the channel window from the video renderer.

```

CVRSDK_REMOVE_CHANNEL_WINDOW( pVideoRenderer, pChannelWindow );

```

1.07 CVRSDK_RESIZE_CHANNEL_WINDOW

This function is used to resize the channel window.

```
BOOL CVRSDK_RESIZE_CHANNEL_WINDOW( PVOID pChannelWindow );
```

Parameters:

Parameter	IN/OUT	Description
pChannelWindow	IN	Pointer of channel window to be resized.

Return Value:

BOOL

Examples:

EX1: To resize channel window

```
CVRSDK_RESIZE_CHANNEL_WINDOW( pChannelWindow );
```

1.08 CVRSDK_UPDATE_VIDEO_BUFFER

This function is to update video buffer on the channel window.

```

BOOL CVRSDK_UPDATE_VIDEO_BUFFER( PVOID  pChannelWindow,
                                BYTE * pVideoFrameBuffer,
                                ULONG  nVideoColorSpaceType,
                                ULONG  nVideoWidth,
                                ULONG  nVideoHeight,
                                BOOL   bVideoIsInterleaved
                                );

```

Parameters:

Parameter	IN/OUT	Description
pChannelWindow	IN	Pointer of channel window to be updated.
pVideoFrameBuffer	IN	Pointer of video frame buffer.
nVideoColorSpaceType	IN	Video color space type, in MAKEFOURCC.
		SUPPORT COLOR SPACE: MAKEFOURCC('Y','U','Y','2') MAKEFOURCC('U','Y','V','Y') MAKEFOURCC('Y','V','1','2') MAKEFOURCC('I','4','2','0') MAKEFOURCC('I','Y','U','V')
nVideoWidth	IN	Width of the video frame in video frame buffer.
nVideoHeight	IN	Height of the video frame in video frame buffer.
bIsInterleaved	IN	Specifies the video frame is interleaved.

Return Value:

BOOL

Examples:

EX1: To update video stream for channel window

```

CVRSDK_UPDATE_VIDEO_BUFFER( pChannelWindow,
                             pVideoFrameBuffer,
                             MAKEFOURCC('Y','U','Y','2'),
                             1920,
                             1080,
                             TRUE );

```

1.09 CVRSDK_CREATE_OVERLAY_BUFFER

This function is used to Create overlay buffer. The width and height of overlay window should be indicated by user. The size of overlay window can be different from channel window.

```
PVOID CVRSDK_CREATE_OVERLAY_BUFFER( PVOID pChannelWindow,
                                     ULONG nWidth,
                                     ULONG nHeight
                                   );
```

Parameters:

Parameter	IN/OUT	Description
pChannelWindow	IN	Pointer of channel window to show overlay.
nWidth	IN	Width of overlay window.
nHeight	IN	Height of overlay window.

Return Value:

PVOID: Pointer of overlay window.

Examples:

EX1: To create overlay buffer.

```
PVOID pOverlayWindow = NULL;
```

```
pOverlayWindow = CVRSDK_CREATE_OVERLAY_BUFFER( pChannelWindow, 330, 60 );
```

Remark:

Microsoft's GDI+ is valid only for the OS newer than WINXP SP3.

1.10 CVRSDK_DESTROY_OVERLAY_BUFFER

This function is used to destroy overlay buffer.

```

    BOOL CVRSDK_DESTROY_OVERLAY_BUFFER( PVOID  pChannelWindow,
                                         PVOID  pOverlayWindow
    );

```

Parameters:

Parameter	IN/OUT	Description
pChannelWindow	IN	Pointer of channel window to show overlay.
pOverlayWindow	IN	Pointer of overlay window.

Return Value:

BOOL

Examples:

EX1: To destroy overlay buffer.

```
CVRSDK_DESTROY_OVERLAY_BUFFER( pChannelWindow, pOverlayWindow );
```

Remark:

Microsoft's GDI+ is valid only for the OS newer than WINXP SP3.

1.11 CVRSDK_LOCK_OVERLAY_BUFFER

This function is used to acquire the permission to access the overlay buffer. User can access multi-layered overlay buffer on renderer. It is recommended to put less updating data on one layer, then put frequently updating data on the other layer.

```

BOOL CVRSDK_LOCK_OVERLAY_BUFFER( PVOID pChannelWindow,
                                  PVOID pOverlayWindow,
                                  HDC * pMemoryDC
);

```

Parameters:

Parameter	IN/OUT	Description
pChannelWindow	IN	Pointer of channel window to accept overlay.
pOverlayWindow	IN	Pointer of overlay window.
pMemoryDC	IN	Pointer of HDC

Return Value:

BOOL

Examples:

EX1: To acquire the permission to access the overlay buffer.

```

HDC hMemoryDC = GetWindowDC( hWnd );
CVRSDK_LOCK_OVERLAY_BUFFER( pVideoRenderer, pOverlayWindow, &hMemoryDC );

```

Remark:

Microsoft's GDI+ is valid only for the OS newer than WINXP SP3.



1.12 CVRSDK_UNLOCK_OVERLAY_BUFFER

This function is used to release the permission to access the overlay buffer.

```
BOOL CVRSDK_UNLOCK_OVERLAY_BUFFER( PVOID pChannelWindow,  
                                   PVOID pOverlayWindow,  
                                   HDC hMemoryDC  
);
```

Parameters:

Parameter	IN/OUT	Description
pChannelWindow	IN	Pointer of channel window to release overlay.
pOverlayWindow	IN	Pointer of overlay window.
hMemoryDC	IN	Handle of HDC

Return Value:

BOOL

Examples:

EX1: To release the permission to access the overlay buffer.

```
CVRSDK_UNLOCK_OVERLAY_BUFFER( pChannelWindow, pOverlayWindow, hMemoryDC );
```

Remark:

Microsoft's GDI+ is valid only for the OS newer than WINXP SP3.

1.13 CVRSDK_SHOW_OVERLAY_BUFFER

This function is used to show the overlay buffer.

```

    BOOL CVRSDK_SHOW_OVERLAY_BUFFER( PVOID  pChannelWindow,
                                      PVOID  pOverlayWindow,
                                      BOOL    bShowOverlay,
                                      ULONG   nPositionX,
                                      ULONG   nPositionY
    );

```

Parameters:

Parameter	IN/OUT	Description
pChannelWindow	IN	Pointer of channel window to show overlay.
pOverlayWindow	IN	Pointer of overlay window.
hMemoryDC	IN	Show overlay or not.
nPositionX	IN	Coordinate X of overlay window position on channel window.
nPositionY	IN	Coordinate Y of overlay window position on channel window.

Return Value:

BOOL

Examples:

EX1: To show overlay buffer.

```
ULONG nPositionX = 0;
```

```
ULONG nPositionY = 0;
```

```
CVRSDK_SHOW_OVERLAY_BUFFER( pChannelWindow, pOverlayWindow, hMemoryDC, nPositionX,
nPositionY );
```

Remark:

Microsoft's GDI+ is valid only for the OS newer than WINXP SP3.