SWANSON TELESCOPE

Digital Video Capture Instructions



MdM Spring 2011

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Forewords

The Swanson observatories uses freeware software called VirtualDub. VirtualDub is a video capture/processing utility for 32-bit and 64-bit Windows platforms (98/ME/NT4/2000/XP/ Vista/7), licensed under the <u>GNU General Public License (GPL)</u>. It lacks the editing power of a general-purpose editor such as Adobe Premiere, but is streamlined for fast linear operations over video. It has batch-processing capabilities for processing large numbers of files and can be extended with <u>third-party video filters</u>. VirtualDub is mainly geared toward processing AVI files, although it can read (not write) MPEG-1 and also handle sets of BMP images.



Virtual Dub is installed on the Laptop in the Swanson Control Room. (Images Courtesy of VBAS)

It is assumed that the user of these instructions is familiar with the Swanson Telescope and has received the Basic and Advanced training for operating the scope.

Starting VirtualDub

After starting the laptop and login allows for the operative system to finish the startup. Check again that the DVR and Analog Digital Video Converter (ADVC) have been turned on and the input selection on the ADVC is on Analog (See Picture 1).



Picture 1: ADVC Blue Light shall be on Analog (right)

1. Locate the VirtualDub Icon on the desktop (see Picture 2).



Picture 2: VirtualDub Icon on the desktop

2. Start Virtual Dub by double click the icon on the desktop. VirtualDub interface (menu contents and buttons) will start in the View/Editing mode, recognizable by the control buttons on the bottom left corner of the window (Picture 3). The VirtualDub Interface changes depending of the mode of operations: View/Editing or VideoCapture. Be aware of which mode you are operating.



Picture 3: VirtualDub View/Edit Buttons

VirtualDub 1.9.11	
File Edit View Go Video	Audio Options Tools Help
Open video file	Ctrl+O
Reopen video file	F2
Append AVI segment	
Preview input	Space
Preview filtered	Enter
Preview output from start	FS
Run video analysis pass	
Save as AVI	F7
Save old format AVI	Shift+F7
Save segmented AVI	
Close video file	Ctrl+W
Export	•
Queue batch operation	•
File Information	
Set text information	
Save WAV	
Load processing settings	Ct/+L
Save processing settings	Ctrl+S
Start frame server	
Capture AVI	
Run script	
Job control	F4
Recent file list	
Quit	

Picture 4: Switch to Capture Mode

- 3. Open the File menu and select the "Capture AVI..." item (Picture 4). VirtualDub will switch to "capture mode" and the video input will be displayed on the screen.
- 4. While in capture mode, screen size, frame rate and filters can be adjusted to the proper setting. The most common setup are used as default. IN case you want access to these options, such as stretch the video from its native resolution to the whole window, open the Video menu and select "Stretch to window" item, as shown (Picture 5)



Picture 5: Video CaptureOptions

Set Up Video Recording

5. Open the File menu in capture mode and select the "Set capture file..." item or just press the F2 button (See Figure 6).



Picture 5: Set Video Recording File

6. VirtualDub will show the usual Windows Explorer screen. Input the proper file location and file name.

VirtualDub 1.1). 11 - capture m	ode []			
Set Capture File	Same Capitale	. Nop			? 🗙
Save in: Ny Recent Documents Desktop My Cocuments My Cocuments	Desitop	oes.	×	* = = =	
Ny Network Places	File name: Save as type: filename as the dofau	Asto Video 1 Auto Video Ister It.	ອອະສ (".ອາງ	¥ •	Save Cancel

Picture 6: Set File Location and Name

7. Once selected the file name and location, it will be shown in the window bar (see Picture 7).

ice Video Audio Capture Help	
Capture video	F5, F6
Test video capiture	F7
Stop capture	Esc
Real-time profiler	
Settings	F9
Preferences	F10
Stop conditions	
Timing	
Disk. [/O	
Capture drives	
Full screen	Alt+Enter
Hide display on capture	
Display large timer	
 Show information panel 	
 Show status bar 	
Timing graph	
Log	FB
Enable multisegment capture	
Start capture on left-click in pan	e
Autoincrement filename after ca	pture
Enable timing log	

Picture 6: Set File Location and Name is dysplayed

- 8. To start capture the images, open the Capture menu and select the "Capture Video" item (F5, F6)
- 9. There are many other options available in the Capture menu. Among the most useful there are
 - 1. "Full Screen" (Alt+Enter to move into Full Screen, CTRL+Esc to exit)
 - 2. Auto-increment Filename after capture
 - 3. Enable Timing Log

10. To Stop the capture of the video, open the Capture Menu and select Stop Capture item.

Please note that you cannot grab or capture single frames or images while capturing a video. To extract a single frame or a snap shoot of the video, you need to exit capture mode and enter View/Editing

Troubleshooting

Video feed do not show on computer monitor:

Check if the DVR and the ADVC are turned on

Check if the driver for the AVDC is working (Control Panel of Windows)

Check if the Analog video signal is available at the battle station or the Foyer monitors. If it is, Check that the DVR and the ADVC are turned on and the ADVC input is set to Analog.

Check if VirtualDub is in capture mode.

Advanced Users: Video Streaming

VLC Live Video Streaming Tutorial

Overview

VLC (Video LAN Client) is a multi-platform media player and streaming solution VBAS uses to stream content from the Swanson image server or live cam to the Planetarium. A streaming server is not needed and, according to the VLC Web site (<u>www.videolan.org</u>), this is not advised. The VLC player can be used as a server and a client to stream media content.



VLC is installed on the Laptop in the Swanson Control Room.

Before you start streaming via VLC, make sure VLC is added to the Firewall exception. To do so, on a PC, go Start menu > Control Panel > Windows Firewall > Click the Exceptions tab > Check if VLC is in the list. If not, Click Add Program, find it, and add it. Click OK.

This setup should be already in place and be the default. However it may happen that other users have decided to change the setting of the laptop or simply installed a windows security upgrade with unpredictable consequences. Just in case follow the previous steps and be sure nothing has changed.

The following steps will demonstrate how to set up and view a stream using the built-in streaming/transcoding wizard within VLC.

Streaming Live Video from Stella Cam: Connecting devices

After starting the laptop and login allows for the operative system to finish the startup. Check again that the DVR and Analog Digital Video Converter (ADVC) have been turned on and the input selection on the ADVC is on Analog (See Picture 1) and that that video is showing on the Foyer television screen.



Picture 1: ADVC Blue Light shall be on Analog (right)

Setting up Streaming from the S21 Control Room

- Locate the the VLC Media Player icon on the desktop (A Orange and white cone) and lunch the program.
- 2. From the Media menu, choose Streaming or press the shortcut "Ctrl+S" as shown in the picture below



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3. In the Open Media window, select "Capture Device" tab. The "Capture Mode" should be set to "DirectShow" as in picture below . Press the button "Stream" at the bottom right.

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🕮 File 🛛 🛞 Dec 🗌 🖞 Retwork	E Capture Device	
Capture mode	DirectShow	×
Device Selection		
Video device name Refresh let	Configure Default	-
Audo-device name Retheah lat	Configura Cotault	×
Quitores		
Video size		
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4. The Stream dialog box will appear. The first step is to select the Source. By default, this is "dshow://", i.e., the ADVC, as shown in picture below. Press "Next"

🚊 Stream Output	? 🗙
Source	
This claicing will allow you to stream or convert your media for use locally, on your private network, or or internet. You should start by checking that source matches what you want your input to be and then press the "Na button to continue.	n fe ext*
Source	
Source: [dihew:]/	
Type: dihow	
	Next
Destrutions	
Ontions	
Iteam	Çancel

5. Next Step is to select the Destination of the streaming. First, check the box "Display locally"; this will allow to see the images also on the laptop in the S21 control room. Second, in the drop box "New destination" select "HTTP". Third, at this point all should look like the picture below an you need to press the button "Add".

🚖 Stream Output		?⊠
Source		1
Destinations		
Destinations	a methods you need. Be sure to check with transcoding that the	
format is compatible with the method us	sed.	
New destination Display locally	HTTP Add	
Transcoding options		
Profile	Video - H.264 + AAC (MP4)	
Previous Options	Ner Stream Ca	xt Incel

6. By Pressing the button "Add" you have added a destination to the streaming data, in this case another computer on the net. You can also add a file to record your session by selecting "File". Remember that AVI file can quickly eat up giga-bites of HD space.

📥 Stream Output	? 🔀
Source	
Destinations	
Destinations HTTP	×
This module outputs the transcoded stream to a network via HTTP.	
Path /	
Transcoding options Activate Transcoding	
Profile Video - H.264 + AAC (Mr	P4) 💌 🖹 🔳
Previous	Next
Options	
	Stream Cancel

7. Leave the HTTP module as it is, with Port number= "8080{ and Path ="/" as For transcoding, check the "Activate Transcoding" box; this step is crucial, or the streaming could be jittery or stopped because the signal is not transcoded.. The picture above shows as Profile="Video - H.264 +AAC (MP4)". Even if this is a working options, sometimes the planetarium laptop has an hard time to process this type of data due to limited processor capabilities. A safer profile would be to use "<u>WMV+WMA</u>". Click "Stream" button on the bottom right. You are streaming now.

Viewing Stream viewing from the Planetarium

To view a VLC streaming video, the user must have a VLC Media Player ^A already installed on the computer in the planetarium. This should be the default but...

- 1. Launch the VLC Media Player 📥.
- 2. From the Media menu select "Open Network Stream" or "Ctrl+N".



3. In the Network tab, you are requested to "Please enter a network URL:"; type in this: "<u>http://192.168.1.11:8080</u>". Please notice that the editor will suggest you previous entries and you may simply select the right one. Click "Play" and after few seconds you should see the streamed images.

Network Protecol Please enter a retwork URL: http://182.106.3.1.11.9890 Pttp://www.scarangle.com/ubisain.avi rtp://ibi:3294 nmm://htmia.saavplea.com/ubisain.avi rtp://ibi:3294 http://www.yourtable.com/ubitat/vwegg54e	ER EN	Disc.	The Carework	E Capitare Device	
Please online a notwork URLI (http://1982.1584.1.1.11.9000 Prtp://00.12234 nmme://nmma.asaamplee.com/utmaam.aas rttp://barvar.asaamplee.com/ut/aam.aas rttp://barvar.asaamplee.com/utattrivi-oggi-ke	Network I	hotecol			
http://182.104.1.11.9000 http://www.countelle.com/Atheam.avi rtp://bit/224 news://news.countelle.com/Atheam.avi rtp://bit/subscom/Atheam.avi rtp://www.yourtable.com/Ath?iv=ggis4e	Finance	der a reftere	4.181		
http://www.socample.com/stoam.avi mp://dp.i234 mmi:/henne.com/stoam.avi ntap:/henne.com/stoam.avi http://www.joamlabe.com/watd/wwwgg64e	http://1	2 160 1 114	1000		
	vitap.() Hitp:()	ternetation www.yourtu	sko arg: 8080/fast. ski.com/watch?v=	udp 0864x	

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Tricks and Tips

Before you start streaming via VLC, make sure that the connections between the planetarium and the S21 Control Room are working. To do so, from the planetarium laptop, ping the S21 Laptop at 192.168.1.11 or from the S21 Laptop, ping the planetarium at 192.168.1.31.

Below is a reference map of all the ip addresses



Make sure VLC is added to the Firewall exception on both computers or the firewall is turned off altogether (This is the default configuration until somebody or a MS Windows update changes it...)

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Once the video is streaming, to go in "Full Screen Mode" press the button located in the bottom of the viewing window. To exit "Full Screen Mode" simply press the "Esc" key on the keyboard.

If the video shows on the laptop but it does not display on the dome via the two projectors, go in VLC Preference, go to Video Preferences and unselect the "Video Overlay" option.