AVED Digital Disk Recorder (DDR) Software Instructions

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Overview

These instructions describe how to begin using the AVED DDR software called RaveHD. RaveHD is a Linux based tool developed by the Spectsoft company. See http://www.spectsoft.com/wiki/RaveManual/Products/RaveHD for more information.

In these instructions, in all cases where **username** in bold type is written, replace with your username. In cases where the font is *italic* – these are commands you need to enter in a Linux X-terminal window.

There are two applications in the RaveHD software package: **ravecap** and **raveplay**.

Ravecap

Ravecap is the capture application. This allows recording from tape to digital format on disk. This will store individual frames into DPX format in the /video/capture directory on Beowulffish.

Raveplay

Raveplay is the video playback and database query interface. Use this to playback captured video or to query the database.

Caveat

Do not run ravecap and raveplay simulateously, and do not run more than one instance of ravecap or raveplay. Ravecap and raveplay use a customized library for remote VCR control over the network called libbranza, and libbranza is not designed to work in more than one application simulateously.

Disk storage overview

There are two storage locations used with the RaveHD DDR software. The /video/capture directory is used to stage captured video for review and playback, and /video/ravedb is used for the video database.

Video is captured with **ravecap.** This video is stored in the /video/capture directory on beowulffish, which is linked to the 1TB fiber RAID on beowulffish. This RAID on beowulffish is a very fast fiber RAID that is intended to only be used for capture, playback, and processing.

After video is captured, if it needs to be archived for query, it is then moved to /video/ravehd on beowulffish, which is linked to the 2TB RAID on nanomia. Video moved/copied to /video/ravehd is done over a private 1GB Ethernet, so this should be fast.

This organization is intended to support very fast read and write speeds that are required for capture and playback, and a larger, but slower disk to store video archives that don't require fast read and write speeds.

The following describe the disk organization and mount points.

```
---------->  represents links or mount points
```

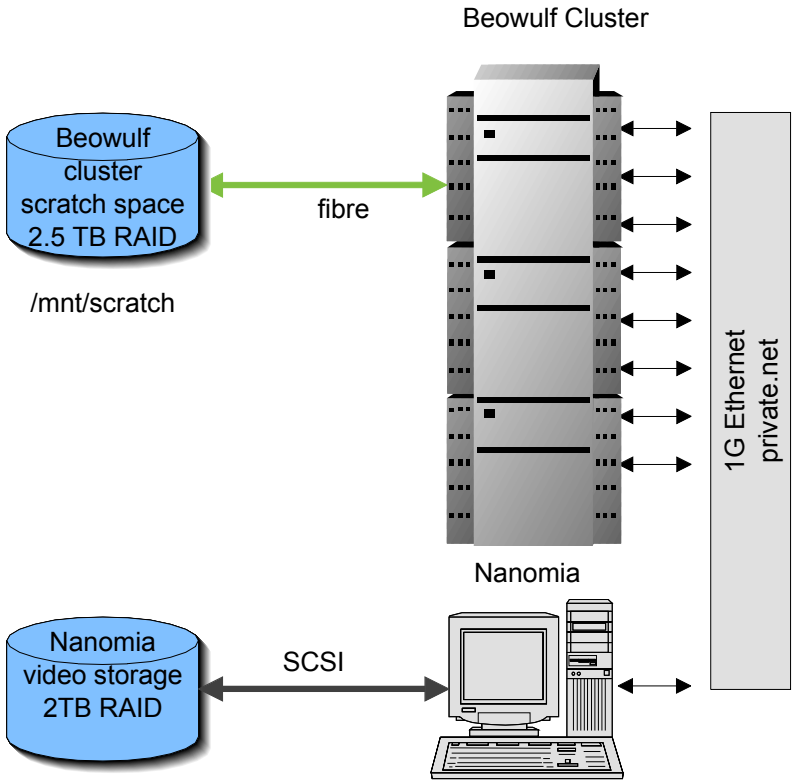
Captured video is stored here:

```
/video/capture
        \
         ---------> /mnt/scratch/video/capture
```

Permanent video in the database is stored here (this includes DPX frames and the mysql database):

```
/video/ravedb
        \
         ------> /nanomia/RAID/video/ravedb
                        \
                         ------->nanomia.private.net:/RAID/video/ravedb
```

Physical storage architecture



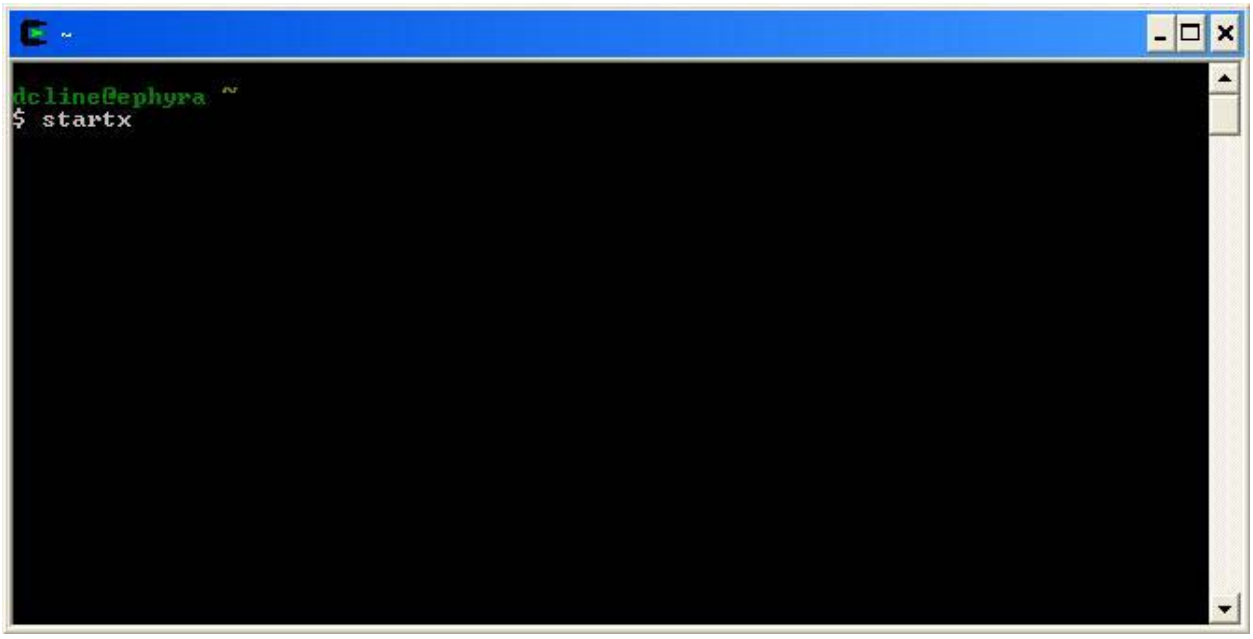
Ephyra setup

The following steps must be done first, before running the DDR software. You will need an account on both Ephyra and Beowulffish to continue with these steps.

1. Turn on Ephyra - this will start the net422 driver (a driver used for remote VCR control). You do not need to be logged into Ephyra, but Ephyra must finish its boot cycle in order for the required net422 service to start.

2. Turn on the VCR and insert tape.

3. Launch cygwin and run X windows display manager. double click Cygwin icon on the desktop. In the Cygwin window enter *startx*.



4. Login to Beowulffish using *ssh -Y* **username***@beowulffish***.** The -Y switch will secure forward the X display from Beowulffish to Ephyra.

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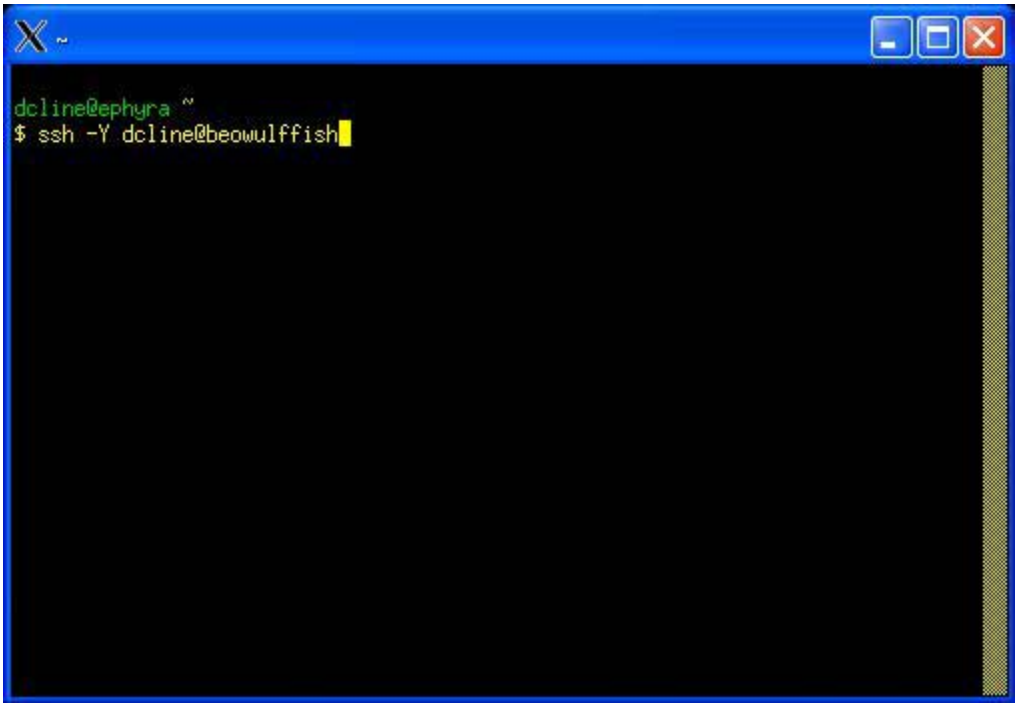
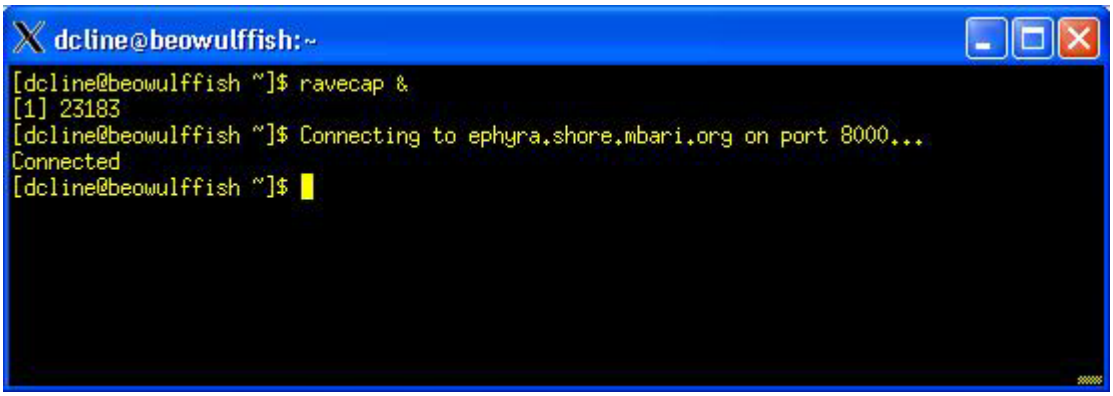


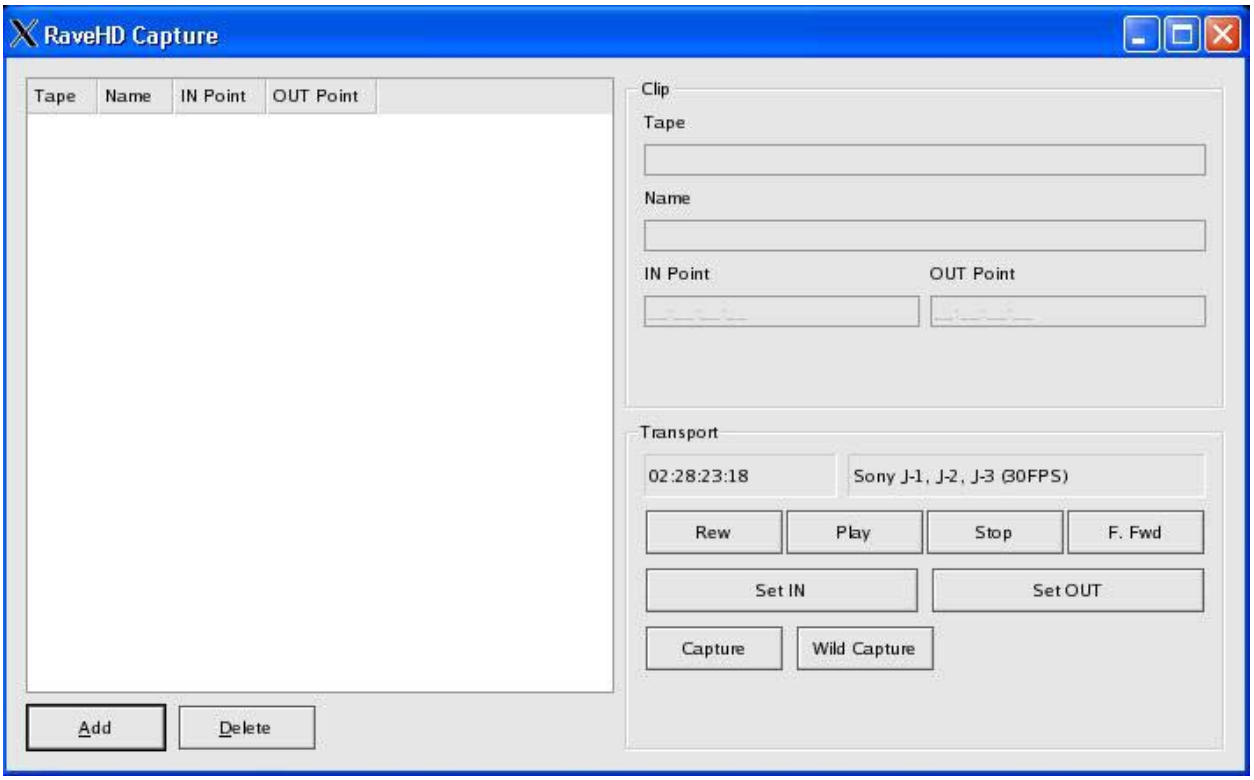
Ravecap

Starting ravecap

Run ravecap with the command *ravecap* . This will run the ravecap application which will then connect to the net422 driver on Ephyra. You should see a message indicating it is connected.



When ravecap starts, you will see the ravecap application:

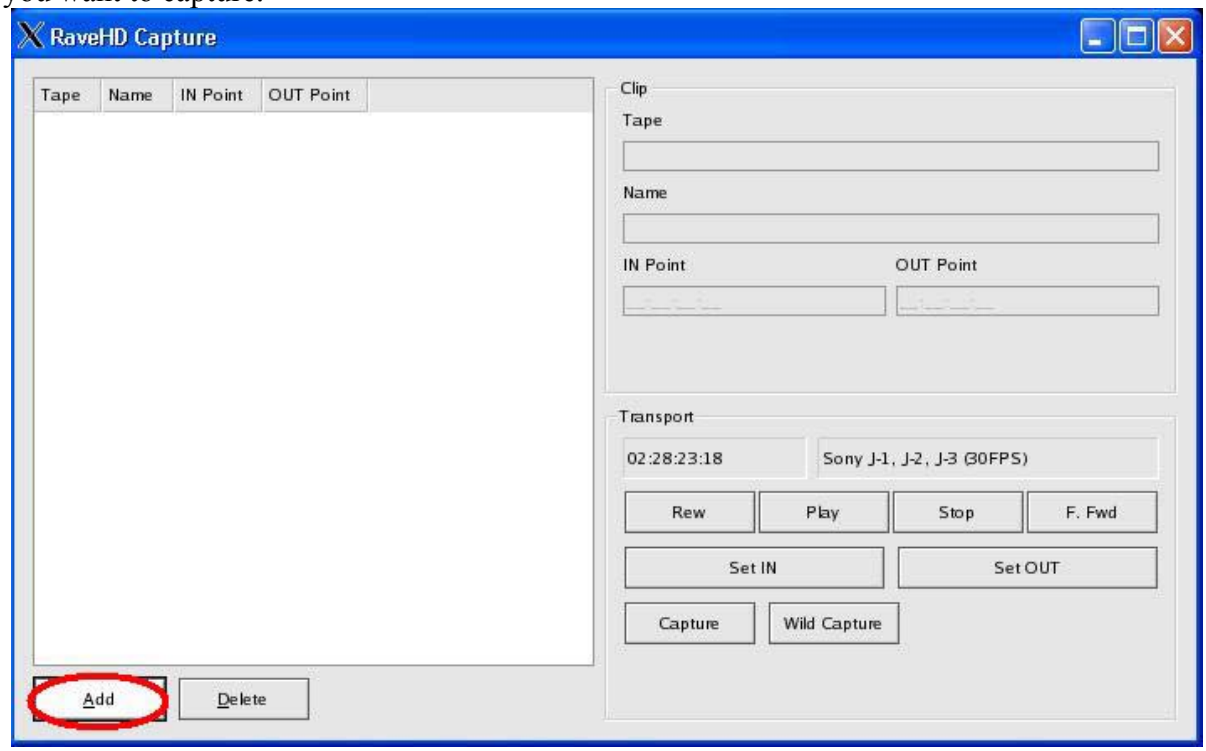


Using ravcap

There are two modes of capture: capture using set IN/OUT points, or a wildcapture. Wildcapture simply captures whatever is playing on the VCR, and does not cue the VCR to specific timecodes. Wildcapture is not covered in the document because it is assumed most of the capture will be done at defined timecodes.

Capture using IN/OUT set points

To batch capture a series of tapes and/or IN/OUT points, click the **Add** button for each **clip you want to capture.



**Note that the reference to "clip" is a bit of a misnomer. A clip refers to a series of individual DPX frames, not a Quicktime of MPEG clip, for example, but this is how ravecap refers to a sequence of frames.

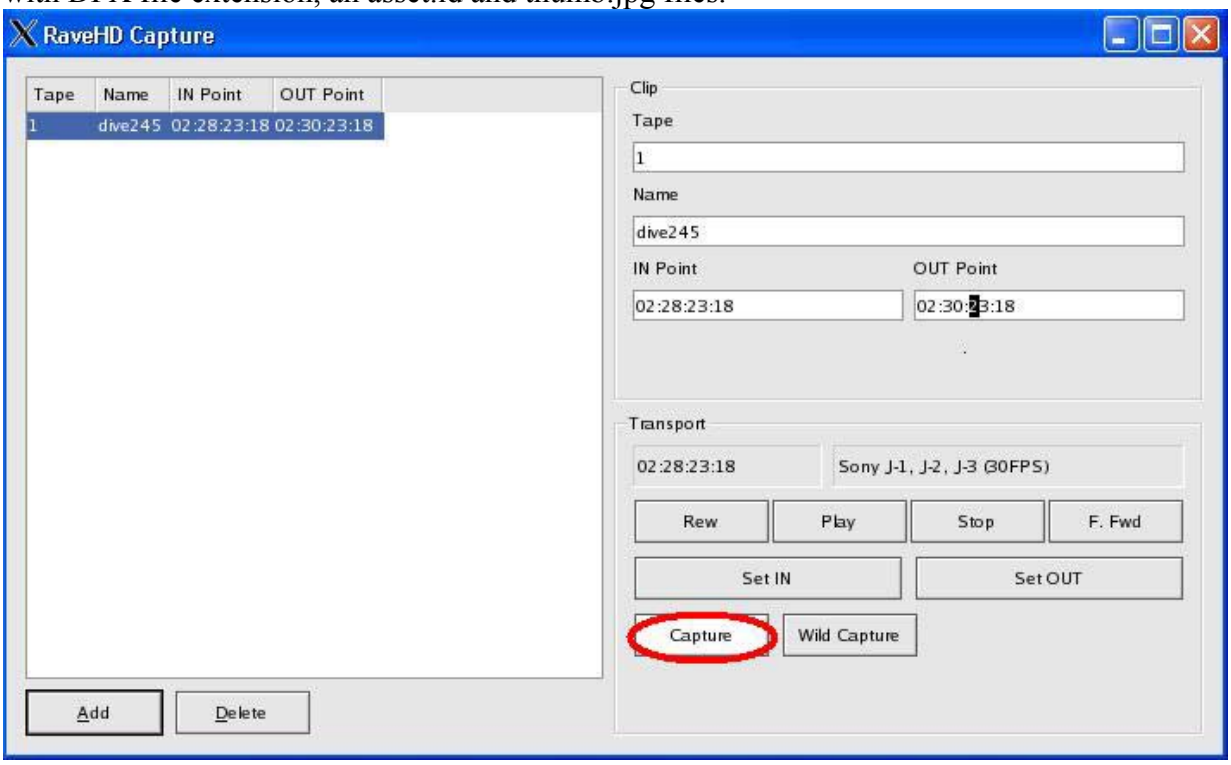
You need to minimally modify the **Name** and **IN/OUT** points for each clip.

The **Name** field is used to format the output directory and output frames. All output is stored in the /video/capture partition on beowulffish. For example, the Name "dive245" creates the directory /video/capture/dive245, with the frames dive245.001.DPX, dive245.002.DPX, etc.. Make sure this is unique, or you will clobber a previously captured clip.

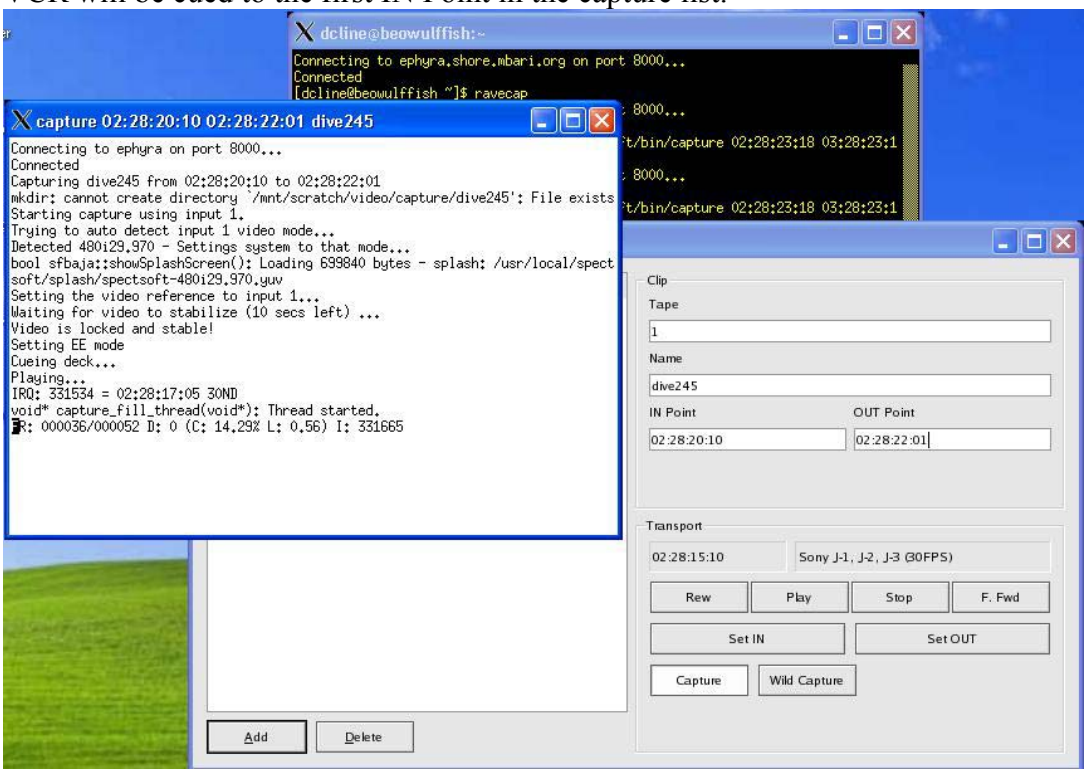
Note that the **Tape number** is optional for AVED work and typically does not need to be used. This is only for user reference when creating the batch list and is not used to cue the VCR.

IN/OUT points can be entered two ways: either in the **Clip** pane in hour:min:sec:frame format, or the **SetIN/SetOUT** buttons can be used to set the points (this will grab the timecode from the VCR and set the IN/OUT point fields for you).

When finished setting up the clips, click the **Capture** button to start the batch capture. This will capture the user-defined clips in sequence, one after another. When the capture is finished, a directory for each should be created in /video/capture. Each directory will contain a series of files with DPX file extension, an asset.id and thumb.jpg files.



When capture is started, an additional window will start showing the capture progress, and the VCR will be cued to the first IN Point in the capture list.

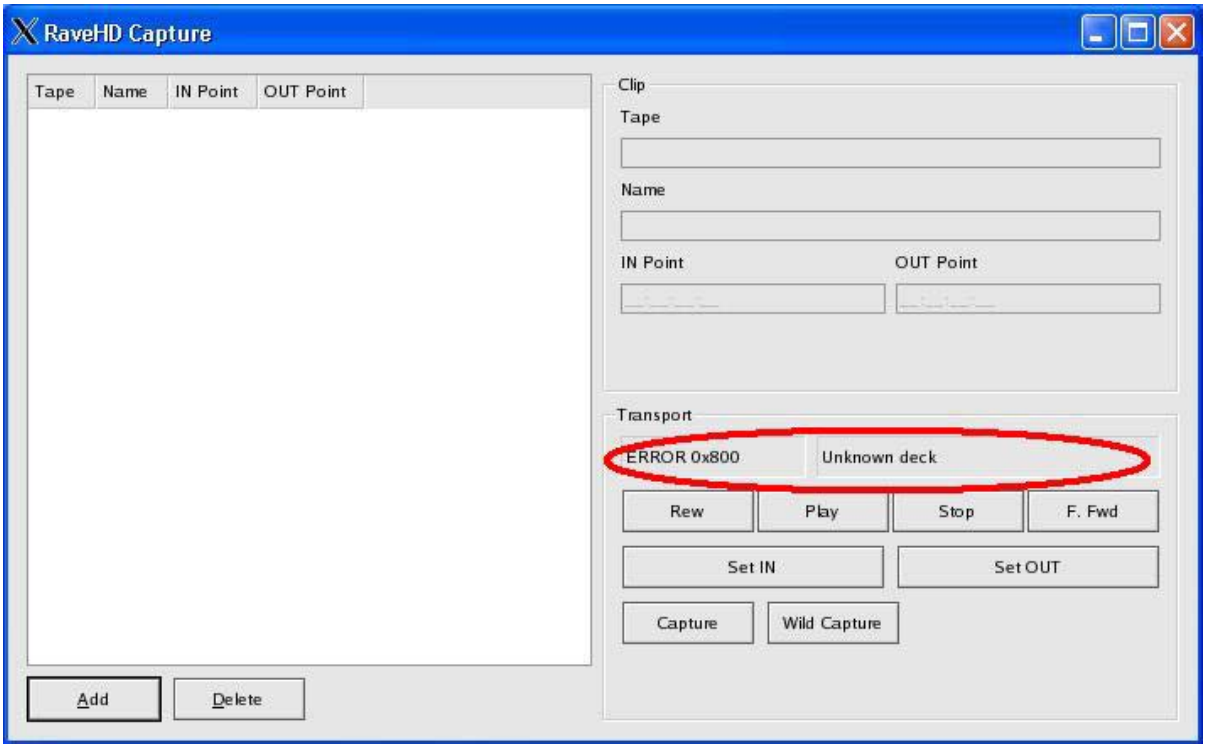


Deleting batch capture

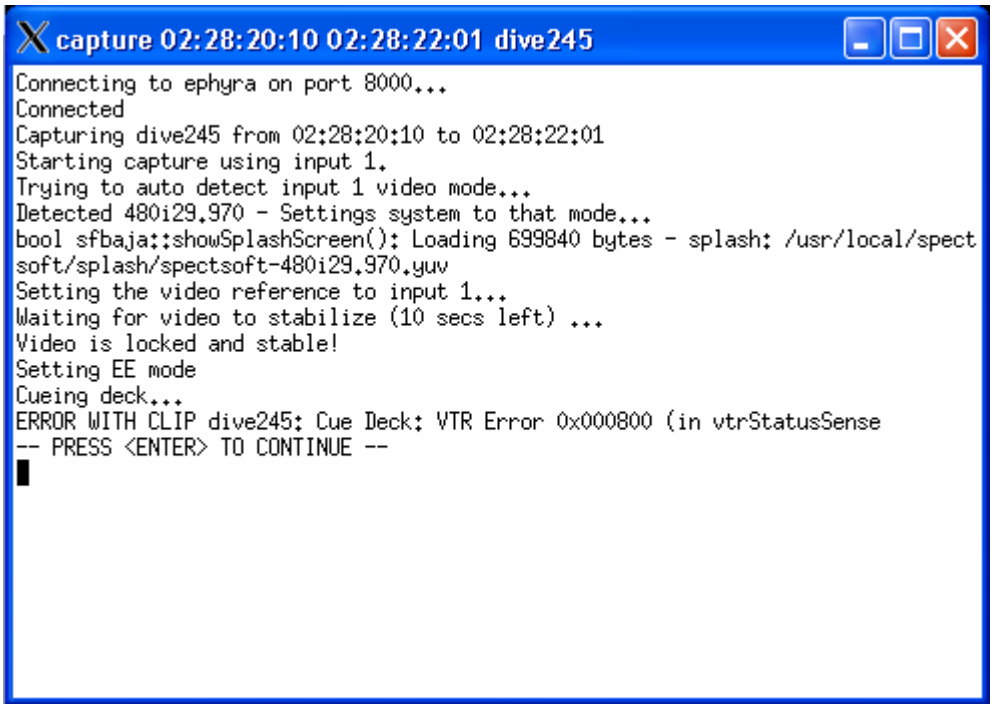
Note that clicking the **Delete** button only deletes the clip from the capture list in the graphical interface, it does not delete the files from the /video/capture directory.

Capture problems

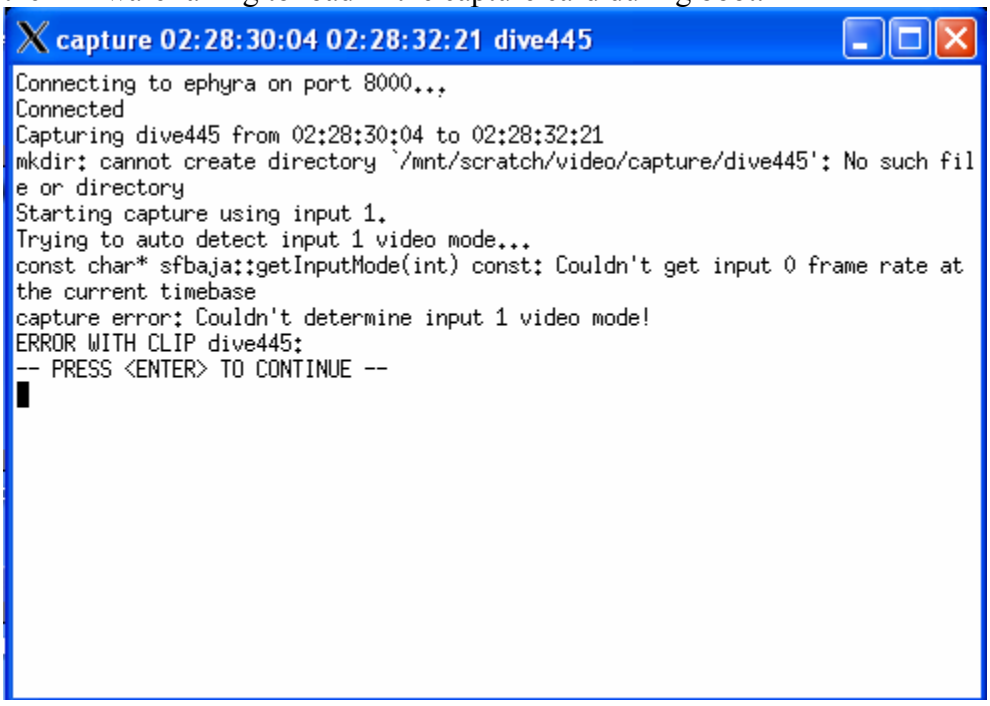
If the error "**Unknown deck" or "ERROR 0x800"** in the **Transport** pane occurs, this is because the VCR is not on. To fix this error, turn on the VCR and wait a few seconds. When the VCR is connected, the timecode and the VCR type in the Transport pane will reset to a valid type of Panasonic or Sony VCR identification code.



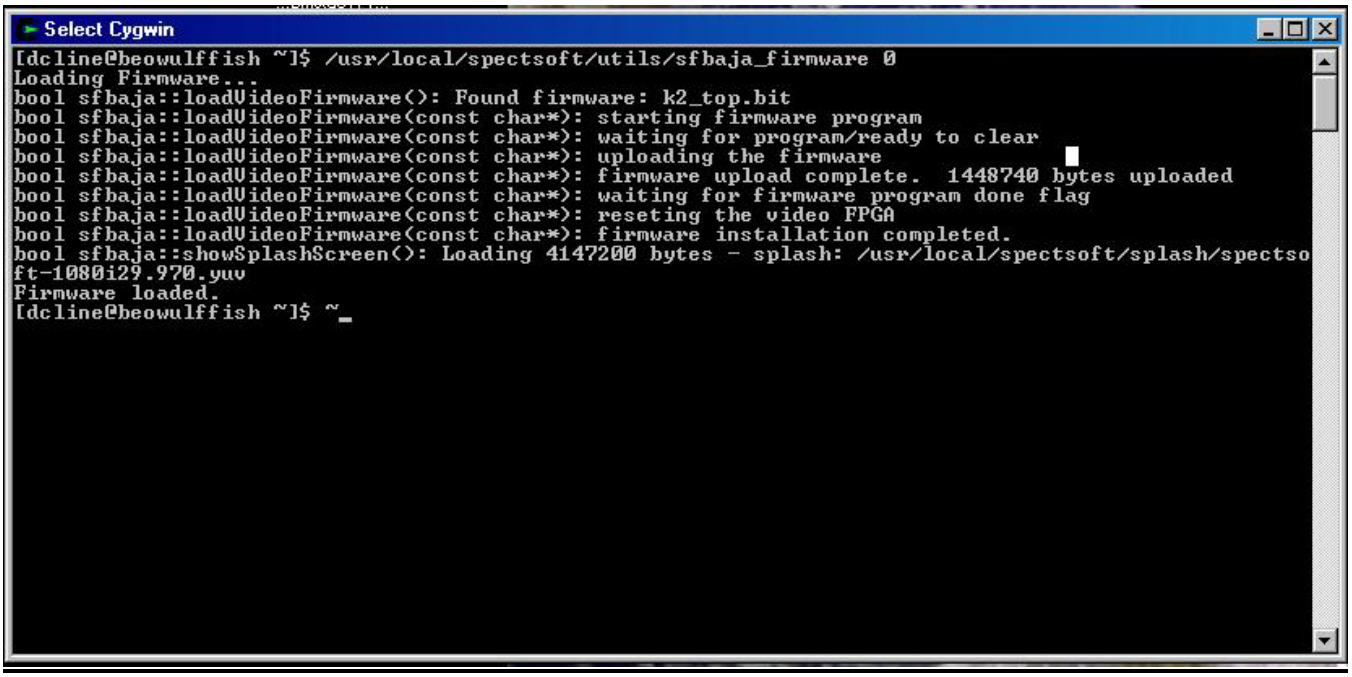
If during capture, the error **"ERROR WITH CLIP … VTR ERROR 0x00800 (in vtrStatusSense)** occurs, this is generally because network traffic is high, and the connection between Ephyra and Beowulffish is poor and in this case, the net422 driver works poorly.



To fix this error, try rerunning the capture, or running the capture during low network traffic time such as in the morning, or after 5 pm,. This problem is typically only during cueing of the VCR. Once the VCR is cued correctly, the capture completes successfully.
If capture fails and you get the **"Couldn't determine input 1 video mode"** error, this is due to the firmware failing to load in the capture card during boot.



To fix this, run the script *usr/local/spectsoft/utils/sfbaja_firmware 0* to reload the firmware.



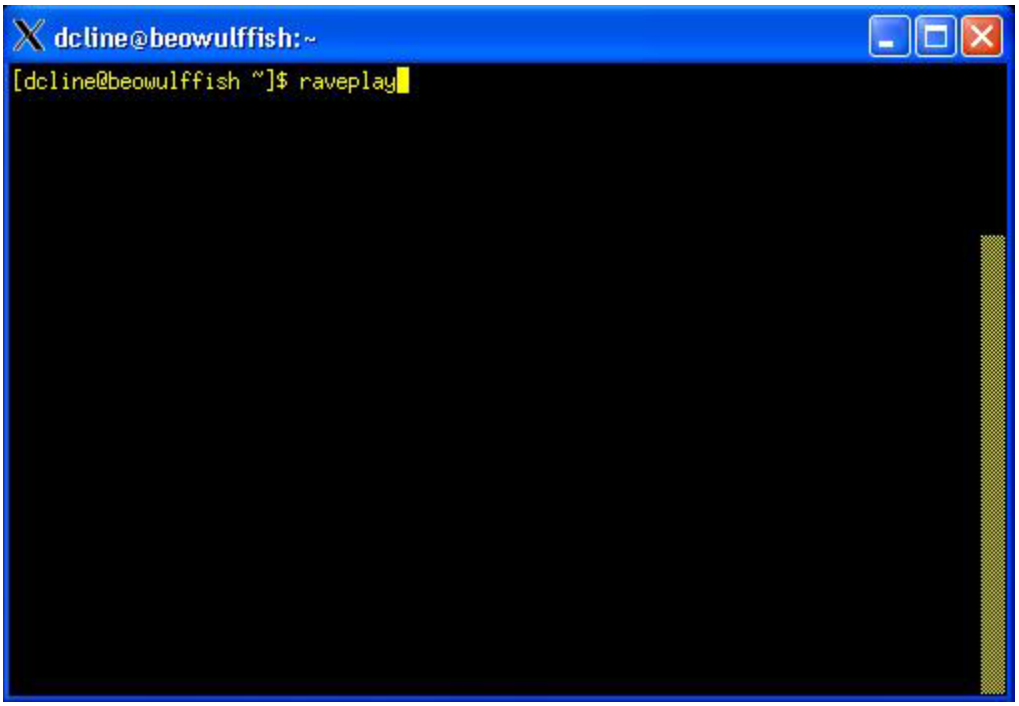
Raveplay

Raveplay overview

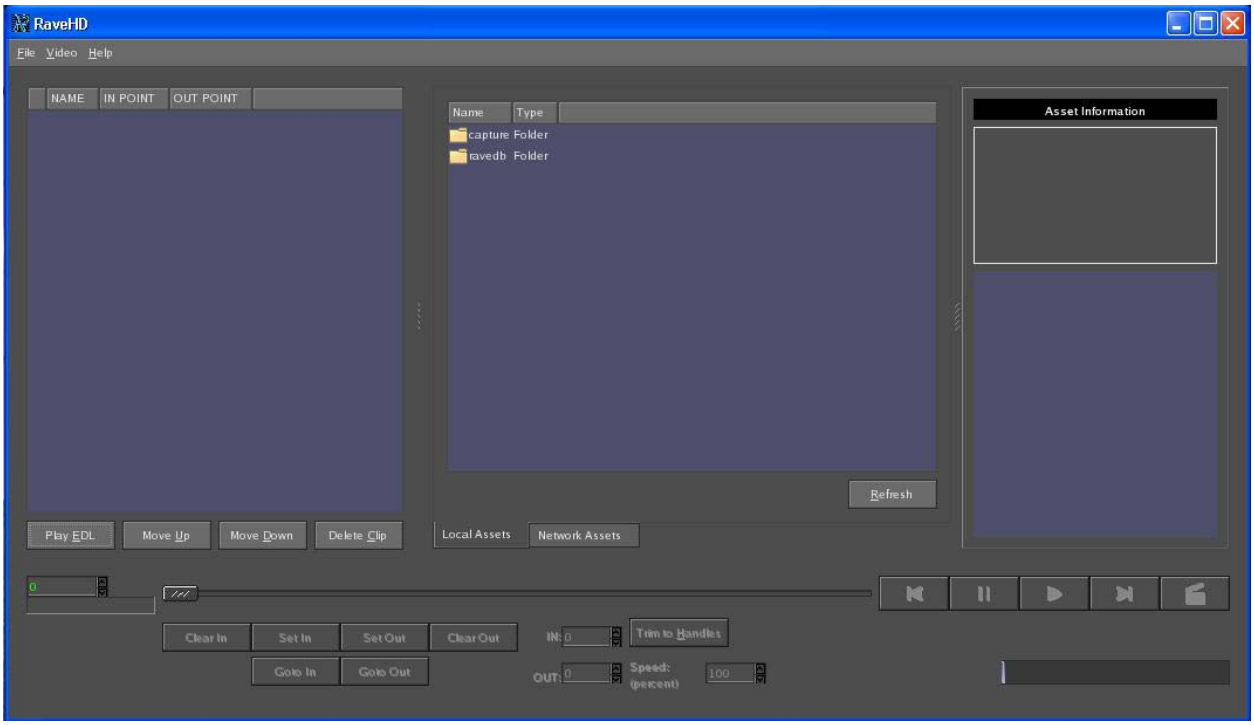
Raveplay is the video playback and database query interface. Use this to playback captured video or to query the database. Before captured video can be queried, it must be entered in the database. Refer to section **Adding video to the database** for details on how to do this.

Playing back video

Raveplay can be used to playback captured video. To launch raveplay, first login using steps 1-3 in the **Starting ravecap** section**,** then start raveplay with *raveplay*



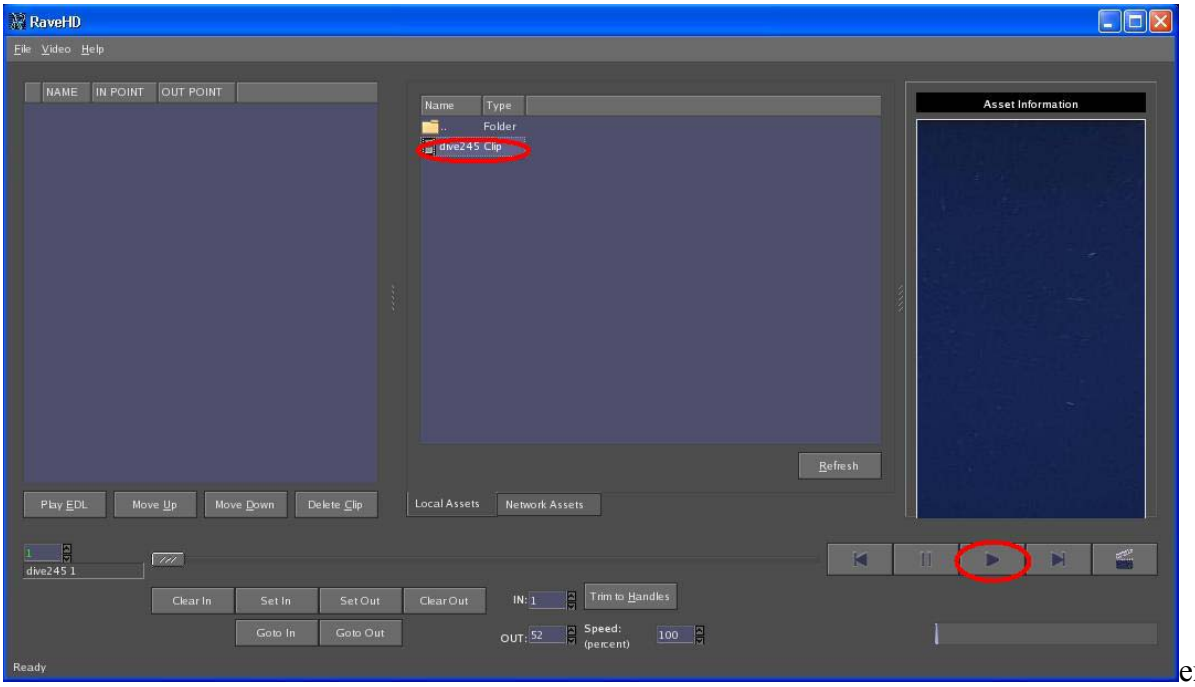
Once raveplay is started, in the middle of the RaveHD GUI, you'll see two tabs labeled **Local Assets** and **Network Assets.** Local assets are those assets that can be played, but can not be searched. Network assets are video that are physically in a database on a separate disk that can be searched.



In the Local Assets tab, the **capture** directory refers to captured video and **ravedb** is video in the database. These correspond to the directories /video/capture and /video/ravedb respectiviely. This allows one to playback video both on the local disk /video/capture (Beowulffish RAID) and on the network disk /video/ravedb (Nanomia RAID). Playing back video from the network disk (Nanomia RAID) will be slower because it's playing back over the Beowulf cluster 1GB intranet.

Playing back captured video

To play a video, navigate to the clip you want to look at. This can be either in **capture**, or **ravedb**. An icon in the shape of reel indicates a clip. Once this is highlighted, the video control buttons (ffw, play, reverse, etc.) can be used to play the video.



ext,

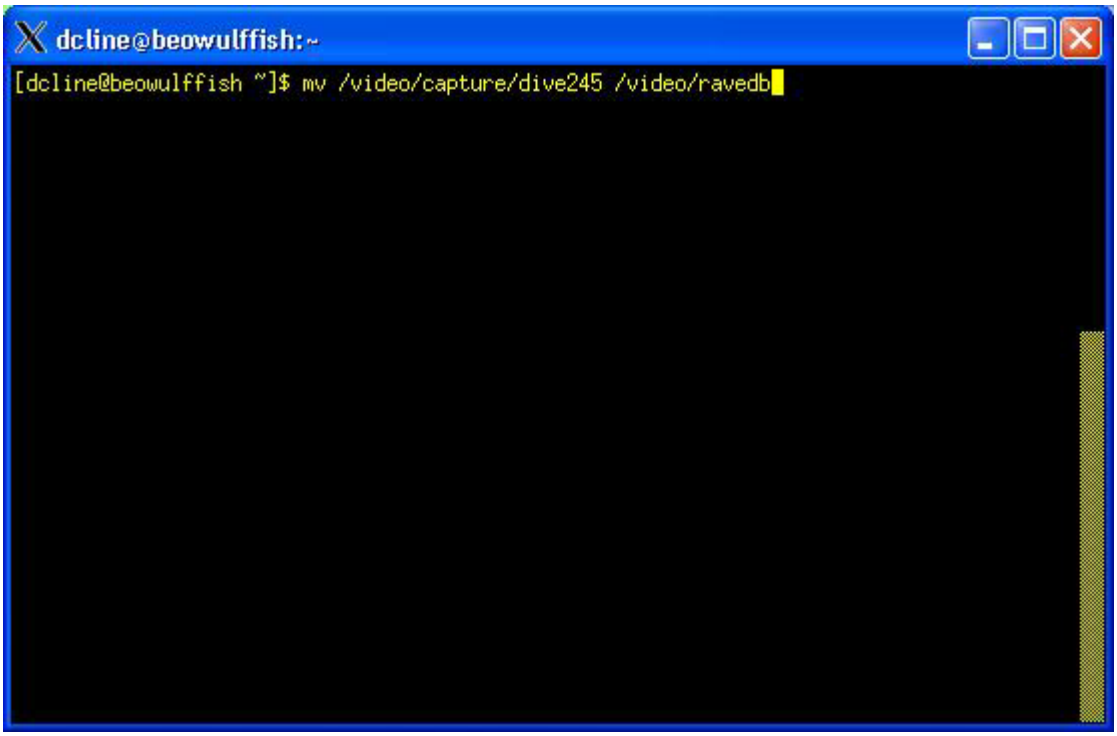
To play back the video, set the mode of the capture card to be the same mode as the captured video. For video SD captured video, choose the **Video** menu, select **Mode**, then select **480i29.97** to playback SD captured video. Note that currently HD playback is not supported. Only playback of SD captured video is supported. Also, note that the video will not playback in the RaveHD GUI, so do don't expect a window to pop up displaying the video. Instead, the video plays through the capture card and only works if you have a monitor connected to the playback output of the capture card.

For more details on Network Assets, select the **Help** Menu then click **Manual**. When the web browser opens, navigate to The GUI Interfaces, then Network Assets to find more information that describes the options.

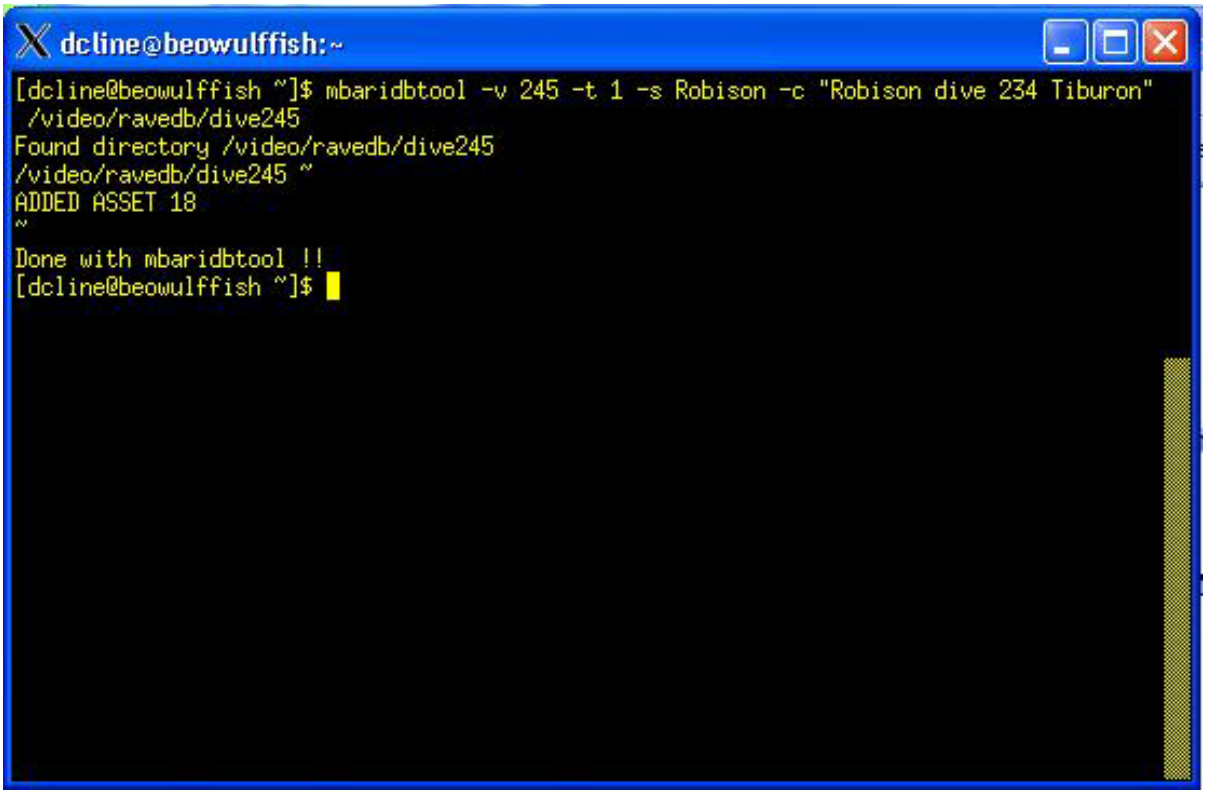
Adding video to the database

For video to be searched, it must first be added to the database. There are two simple steps to add video to the database. The first is to move video to the /video/ravedb directory and the second is to add the metadata to the database using the mbaridbtool script.

First, move captured clip to the /video/ravedb directory. This will physically move all the video files and will take some time, especially if this is a long captured segment.



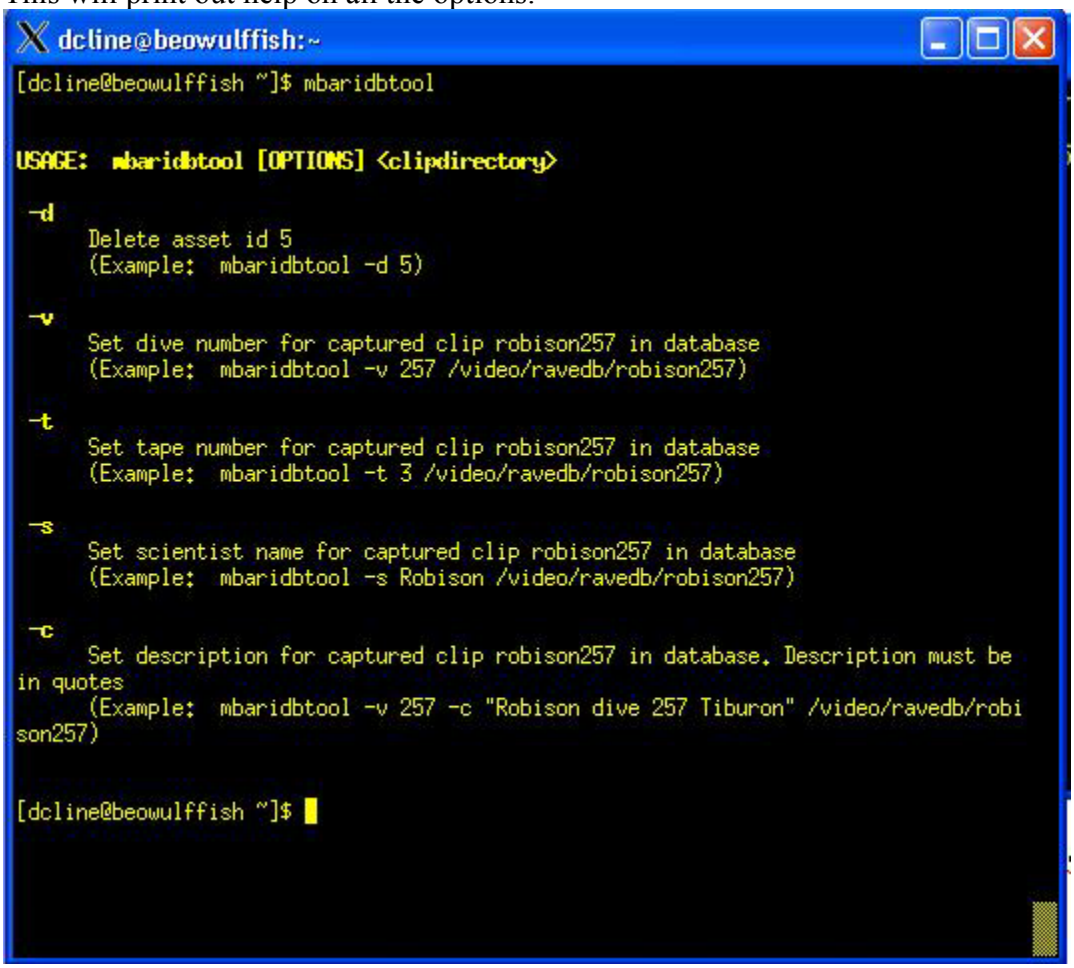
Next, enter clip metadata into the nanomia database using the mbaridbtool script, e.g. to set dive 234, tape 1, and scientist Robison use the command: *mbaridbtool -v 245 -t 1 -s Robison -c "Robison dive 234 Tiburon" /video/ravedb/dive245*



For more information on the mbaridbtool script, type mbaridbtool for help

 # mbaridbtool

This will print out help on all the options.



Raveplay

Querying the database

Raveplay can also be used to query the database. To query the database, click the **Network Assets** tab. All assets have user-defined metadata associated with them. AVED defined metadata is dive, tape, scientist, user, description, starttimecode, and endtimecode. All of these metadata can be searched through raveplay.

Searchable metadata description

Field	Description	Default	Max characters
dive	MBARI dive number	-1	20
tape	tape number	-1	20
scientist	MBARI or other scientist		20
user	user who digitized and/or entered video data in to database	Logged in user	20
description	General description		255
starttimecode	Starting timecode in hour:min:second:frame format		20
endtimecode	Ending tmecode in hour:min:second:frame format		20

To list all the metadata, click the **Add** button in the **Network Assets** window and a drop-down list of all metadata will display. For each metadata you want to search on, click **Add**, select the metadata from the drop down list, then enter the search criteria to the right of the metadata. Click the **Refresh** button to start and refresh the search results. Complex search criteria are not supported, so keep searches simple.

Deleting video from the database

Video is deleted using the **mbaridbtool** command that must be run as root user on either nanomia or beowulffish. All video is deleted by the asset id. Each time a new asset is entered in the video database this is unique. To get the asset id number, see the **Network Assets** in the **raveplay** interface. When you run the mbaridbtool command to delete an asset, you will be asked if you want to delete the video associated with the asset. This will physically delete all the files and the directory that contains the video so use with caution. You do not need to physically delete all the files, if you are simply deleting a database entry before reentering a corrected entry, for example.

Deleting video from the database - continued

Example usage:

To delete asset id 245:

```
   #  mbaridbtool -d 245
Do you want to delete the video files associated with asset id 245 in /video/capture/newclip ? [yes|no]
yes
    Found directory /video/ravedb/dive245
   Found video files in directory /video/ravedb/dive245
   Removed `/video/ravedb/dive245/dive245.00001.dpx'
   Removed `/video/ravedb/dive245/dive245.00002.dpx'
...
   DELETED ASSET 245
    Done with mbaridbtool !
```

Capabilities of Raveplay beyond the scope of this document

Raveplay can also be used for editing video and printing back to tape, but these capabilities are beyond the scope of what is covered in this document. Printing back to tape is only supported if your VCR supports this capability. For details on these functions, see the online help at:

http://www.spectsoft.com/wiki/RaveManual/GUI/EDL

and

http://www.spectsoft.com/wiki/RaveManual/GUI/Print

Miscellaneous

Extracting timecode from the captured clip.

For clips entered in the database, timecode ranges can be seen in the raveplay application. For clips captured and not in the database, the **extracttimecode** command can be used,

e.g. to find the starting and ending ranges of the captured clips using wildcapture on Beowulffish, run for each starting and ending frame:

```
        # extracttimecode
/video/capture/V2627Smoothridge200m/V2627Smoothridge200m.000001.dpx

        01:24:15:14 30ND

        # extracttimecode
/video/capture/V2627Smoothridge200m/V2627Smoothridge200m.018000.dpx

        01:34:15:13 30ND
```

The 30ND means 30 frames per second, and no drop-frames. This means we don't lose any of our frames during capture so the timecodes are contiguous.