



Switch
User Guide



User Guide for Mac

5.3



Contacting Telestream

To obtain product information, technical support, or provide comments on this guide, contact us using our web site, email, or phone number as listed below.

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Introducing Switch

Telestream® Switch™ is a professional cross-platform media player, inspector, and correction tool. Switch comes in three licensed versions: Switch Player, Switch Plus, and Switch Pro.

Switch plays virtually any media file, displays detailed information about that file, and enables you to make changes to the file.

In Inspect mode, Switch displays information about a media file, such as its speaker labels, aspect ratio, clean aperture, bitrate, metadata, encoding formats, and types of audio channels. In Edit mode, Switch lets you trim, resize, crop, change aspect ratio; rearrange audio tracks, and edit speaker assignments. You can also attach secondary audio to your video when exporting.

Note: When in unlicensed free-trial mode, Switch adds video and audio watermarks to your media, and may limit premium features. When unlicensed, Switch watermarks media display when in *transcode* mode and truncates media when in *pass-through* mode.

To remove the watermarks and limitations, purchase a Switch license, enter the serial number, and activate the license.

For a list of features included for Switch Player, Switch Plus, and Switch Pro, see the [Switch Product Comparison Chart](#).

See also [Switch Product Page](#).

Topics

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Switch supports a wide variety of media standards, file formats, codecs, and containers. For a current list of supported playback types, see [Playback Format Support](#).

Note: Telestream updates Switch support of various formats through Telestream Media Framework (TMF).

Switch can play many codecs and formats, including uncompressed 4:2:2 10-bit (v210) and Apple ProRes 4444 XQ.

Switch Demo Restrictions

The Switch *Free Trial* (unlicensed version) includes all features of Switch Pro. However, the *Free Trial* version adds video and audio watermarks to your media during playback and may limit other premium features.

Switch Versions

Switch is available in three licensing levels: Switch Player, Switch Plus, and Switch Pro.

For a list of features included for Switch Player, Switch Plus, and Switch Pro, see the [Switch Product Comparison Chart](#).

See [Activating a License Serial Number](#).

Switch Resources

For up-to-date information about Switch, visit the following Telestream resources:

Tutorials and Demos

Telestream provides tutorials and product demos on the Switch Training Resources page:

<https://telestream.net/switch/resources.htm#docs>

Telestream provides a video introduction to Switch via the *Watch Video Introduction* button on the *Welcome* screen.

Switch Literature, Documentation, and Knowledge Base

Find current versions of Switch literature, user guides, and customer case studies on the Switch Literature and Documentation page. Find Switch technical articles on the Switch Knowledge Base.

Switch Literature and Documentation

<https://telestream.net/switch/resources.htm#docs>

Switch Knowledge Base

[Switch Knowledge Base](#)

Switch User Guide

Telestream provides the Switch User Guide via the *View User Guide* button on the *Welcome* screen.

Switch User Website

Telestream provides the Switch website via the *Visit Website* button on the *Welcome* screen.

Getting Help

To get help using Switch, select the *Help* menu. This menu enables you to search for help by topic, open the user guide, purchase Switch, or get customer-support help.

Searching Help

To search the help system for any topic or key word, do the following:

1. Click *Help*.
2. In the *Search* field, enter a term and press Return.

Switch displays a window that enables you to select related menu items or help topics. Switch indicates, with a pointer, menu item that match the search.

Note: As long as there are characters in the *Search* field, Switch doesn't display the other *Help* menu items, even if you reopen the *Help* Menu. To redisplay the full *Help* menu, select a search item or delete all characters from the *Search* field.

Customer Support

Telestream offers technical support through our website and email.

Reporting Files That Switch Can't Open or Display

Note: This procedure is for sending details to Telestream for problem files, not for requesting help. This procedure does not receive a response from Telestream.

To report that Switch can't open or display a file, do the following:

1. Select the window displaying the media file you want to report.
2. Select *Help > Report A Problem File*.
Switch opens a reporting dialog box.
3. Click the *Report* button to send a technical report of your file to the Telestream support team; or click *Cancel* to abort this reporting action.
When Switch sends your report, it opens a confirmation message in a browser.
4. Click *Submit Feedback* to open a new support case.

Sending Information to Support

To collect and send diagnostic information to the Telestream support team, do the following:

1. Select *Help > Gather Support Information*.
Switch collects information about Switch.
2. When Switch finishes collecting information, enter your support case number and click *Reveal*.

Switch saves diagnostic information in a file on your desktop, and generates an unique filename. Sending this file to Telestream enables the support team to diagnose any problems you have reported.

Contacting Support

To contact the Telestream support team, do any of the following:

- Select *Help > Contact Support*.
Switch opens the Switch Support page on the Telestream Website.
- Select *View Switch Website*.
Switch opens the Switch Product page on the Telestream Website.

Installation

You can install Switch on any Mac computer that meets the minimum system requirements.

Note: Switch installers are available at: telestream.net

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System Requirements

Note: Minimum specifications support playback of standard-definition content. Playback of demanding content such as 4K/UHD, HEVC, and high-frame-rate video might require more powerful hardware. To play demanding content on minimal systems, select *Use faster (lower-quality) scaling for video playback* in the [Setting Display Preferences](#) menu.

Note: The following list of system requirements is current at the time of publication, but subject to change. Verify that the system on which you plan to install Switch meets the platform requirements specified in [Switch Technical Specifications](#).

- OS Version: macOS Big Sur 11, macOS Monterey 12, macOS Ventura 13
- CPU: 2.4 GHz Core 2 Duo or faster, Any Core 3, i5, or i7

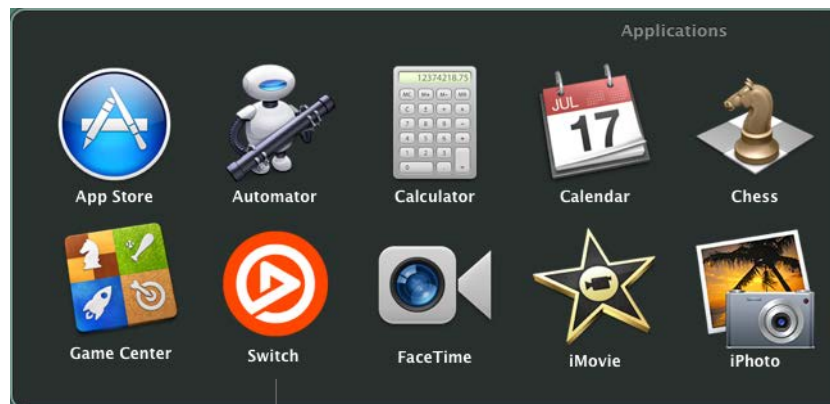
- RAM: 4 GB minimum
- Display: 1280 x 768 or larger, 50 Hz or faster
- Graphics:
 - 256 MB or more graphics memory

Installing Switch

To install Switch, do the following:

1. Log on with administrator rights and provide your administrator name and password during installation.
2. Download the DMG file here:
<https://telestream.net/switch/overview.htm>
3. Run the installer.
If you have an older version of Switch already installed on your computer, the installer upgrades to the newer version.
4. Agree to the license terms and follow the instructions displayed by the installer.
5. Double-click the Switch DMG file in your Downloads folder.
6. Click and drag the Switch icon into the Applications folder.

The installer adds the Switch application to your Mac Applications folder. You can run Switch at any time by clicking the application icon. You can also drag the icon to your dock for easy access in the future.



Click application icon

Purchasing Switch

You can find the pricing for Switch on the Switch product page, here:

[Switch Product Page](#)

1. Select *Help > Buy*.
Switch opens the Telestream product-purchasing page in a web browser.

2. Enter the quantity desired, and click *Add To Cart*.
After you purchase Switch, Telestream sends you a serial number in a confirmation email, and opens the *Preferences* dialog.
3. Once you have obtained your product serial number, enter it into the Serial Number field in the *Preferences* dialog.
4. Click *Activate*.
Once licensed, Switch does not place video or audio watermarks on outputs.

Switch Watermarks

During unlicensed playback, Switch superimposes a logo watermark on DNxHD and HEVC/H.265 assets. Switch places an audio watermark in 15 second intervals on all media using Dolby AC-3 audio.

Switch watermarks all unlicensed video exports in transcode mode. Switch truncates exports when either audio, video, or both are in pass-through mode. Licensed exports have no watermark or truncation. Switch sets the truncation at 30 seconds, or at half the duration of the file if it is less than 30 seconds long.

Activating or deactivating a license while a video is open immediately changes the video display accordingly.

Activating a License Serial Number

If your computer is connected to the Internet and you purchased an upgrade via the Telestream Store online, manually activate your Switch license. Use the serial number in the receipt email from Telestream. Also, you can manually activate Switch on another Mac not connected to the Internet. To purchase a license for Switch, click the *Buy* button.

To enable upgraded features, or to activate additional copies of Switch, you must have access to the Internet. Enter your serial number to manually activate the features purchased.

Note: If your computer doesn't have Internet access, don't use this process. Instead, use a separate computer with Internet access to open the Manual Activation Guide on the Telestream Web site.

1. Select *Switch > Preferences*.
2. Click *License*. Enter the serial number from your email receipt.
It's best to copy and paste the serial number to avoid typing mistakes. When typing it in, be sure to enter only zeros (no letter Os), capitalize all letters, and include all hyphens.
Switch enables the *Activate* button.

3. Click *Activate*.

Switch contacts the Telestream Store. Telestream activates your Switch serial number.

Note: If you experience problems activating, contact Telestream Customer Support at: desktopsupport@telestream.net or 877-681-2088.

See [Production & Streaming: Renewal & Licensing Questions](#).

Deactivating a License Serial Number

You can activate a Switch serial number on only one computer at a time, but you don't need to purchase a separate license for each computer you run it on. You can install Switch, unactivated, on multiple computers (see [Activating a License Serial Number](#)). To activate Switch on a different computer, first deactivate the serial number on any computer that already has it activated.

To deactivate a Switch serial number, select *Switch > Preferences > License*. Then click *Deactivate*.

Note: When you deactivate your serial number on your computer, it must have Internet access. You can also change licensing by clicking *Change* and entering a different serial number.

Uninstalling Switch

To uninstall Switch, first close Switch. Then, do the following:

1. > > Click and drag Switch from the Applications folder to the trash icon.

Updating/Activating/Deactivating Switch

To check for software updates, see [Updating Switch Automatically](#) in the *Preferences and Updates* section.

To activate a license serial number for Switch, see [Activating a License Serial Number](#).

To deactivate a license serial number for Switch, see [Deactivating a License Serial Number](#).

Configuration

To set preferences in Switch, select *Switch > Preferences*. The *Preferences* dialog enables you to change the update interval, activate licenses, and deactivate licenses.

Topics

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Customizing General Settings

To change Switch general settings, do the following:

1. Select *Switch > Preferences > General*.
2. In the *Default Export Directory* field, select *Same as Source* or *Last Used*.
3. If you select *Last Used*, Switch exports to the last directory used in an export. If that directory no longer exists, Switch exports to the source directory.
4. (Optional) Check *Watch for growing files* to cause Switch to watch for files that are still being created.

Note: If the durations shown are not accurate, and you are not using growing files, make sure the *Watch for growing files* preference is not checked. Relaunch Switch if you change this setting.

Updating Switch Automatically

To enable Switch to check for software updates, do the following:

1. Select *Switch > Preferences > Update*.

2. To set the interval at which Switch checks for updates, choose *Daily*, *Weekly*, *Monthly* or *Never* from the *Check For Updates* menu.
3. To check for updates manually, click *Check Now*.

Setting Display Preferences

To set display preferences, do the following:

1. Select *Switch > Preferences*.
2. Click *Display* to open the *Display Settings* window.
3. Check the boxes for any of the following preferences desired:
 - *Improve playback performance by giving up search for captions after the first few samples* Abandons searching for captions if they are not found in the first few samples. This improves performance.
 - *Use faster (lower-quality) scaling for video playback* To play demanding content on minimal systems, select this setting.
 - *Disable desktop display when external preview is enabled* Disables rendering of video for desktop playback which can improve quality and reliability of external device playback.
 - *When possible, decode at reduced scale* This option works for J2K, ProRes RAW, ProRes on Windows, Sony RAW, and Sony Simple Studio Profile (SStP) files. When possible, Switch decodes at the scale you select from the drop-down menu. This improves performance.

Setting Audio Preferences

To set audio preferences, do the following:

1. Select *Switch > Preferences*, then click *Audio*.
Switch opens the *Audio Settings* window.
See *Audio* under [The Preferences Dialog](#).
2. Select one of these modes from the *Mode* drop-down menu:
 - *Custom analog dialog normalization*
 - *Custom Digital dialog normalization*
 - *Line out*
 - *RF*
3. Adjust the *Cut* and *Boost* levels for *Dynamic Range Compression* by moving the sliders.
For more information about dynamic range compression settings, see [Switch Audio Preferences](#).

4. To set the audio destination, select *Audio > Destination*.

See [Destination](#) under *Audio*. Also see [To configure audio for SDI output in Switch, toggle Audio to Edit In the Inspector and Audio Transcode](#).

Troubleshooting Video Scopes

Using the video scopes can affect Switch performance. Switch first converts each decompressed video frame to an uncompressed format that the scope accepts. Switch runs the scope on that frame, and converts that result to an uncompressed format for display. Performance degrades most in playback of large video files, and those with higher frame rates. Closing the *Video Scopes* window prevents this additional processing.

Video codecs with hardware acceleration, such as H.264 on Mac, perform better than those without hardware acceleration.

If Switch drops frames when the *Video Scopes* window is open, any of the following might mitigate the problem:

- Avoid playing multiple videos at once.
- Quit any unused applications to free up resources for Switch.
- Disable display of captions using the *View > Subtitles / Closed Captions* menu item.
- Disable the search for captions in the *Display* tab of the *Preferences* dialog.
- Consider using reduced-scale decoding (accessible in the *Display* tab of the *Preferences* dialog) if your video uses a codec that supports it, such as ProRes, ProRes Raw, J2K, Sony Raw, or Sony SStP MPEG-4.
- Try playing in slow motion using the *Control > Slow Motion Forward* menu item, or via the JKL keys. Try frame-stepping with the arrows keys instead of playback.

Enabling ARM Systems for SStP and Cineform Playback

Sony is discontinuing support for the SDK for the Sony Simple Studio Profile (SStP) codec on ARM. To play back SStP or Cineform files in Switch installed on a system with an ARM CPU, launch Switch on Rosetta.

To launch Switch on Rosetta, do the following:

1. Quit Switch.
2. Select the Switch application in the Finder *Applications* folder.
3. Select *File > Get Info*.
Finder opens a dialog.
4. Check the box labeled *Open using Rosetta*.
5. Launch Switch.

- Open the file desired for playback.

To have Switch launch natively after you're done playing back SStP or Cineform files, uncheck Open using Rosetta. The next time it launches, Switch runs natively again.

Opening Files

In Switch, you can open video files as primary files; and you can open audio or subtitle files as secondary files. Also, you can associate and close media files.

Topics

- [Launching Switch 26](#)
- [Opening Video Files 27](#)
- [Opening a Recent Media File 27](#)
- [Opening Audio or Subtitle Files 27](#)
- [Opening Flags 28](#)
- [Opening Recent Files 28](#)
- [Closing Files 28](#)

Launching Switch

To launch Switch, do the following:

1. Install Switch.
See [Installing Switch](#).
2. Double-click Launchpad button located the tool bar at the bottom of the desktop.
3. To launch Switch, in Launchpad, click the Switch button.
Switch opens and displays a *Welcome* screen. From the Welcome screen, you can watch an introduction video, browse the user guide, visit the Telestream Website, or open a media file.
4. (Optional) To force the display of the *Welcome* screen when all media files have been closed, on the *Welcome* screen, check *Show Welcome Screen when all media is closed*.
See [Welcome Screen](#).

Opening Video Files

To open a video file in Switch, do the following:

1. On the *Welcome* screen, select *File > Open File*, or click *Open Other....*

Switch displays the *Open* dialog.

2. Navigate to the file you want to open. Click *Open*; or click *Cancel* if you decide to not open any video files.

Note: Every time it opens an un-indexed file, Switch indexes the file. Certain file types, such as MOV and MP4, always contain indexes. Certain other file types, such as MPEG-2PS and TS, never contain indexes.

Note: Many media containers, such as MPEG-2 Transport Streams, do not provide information about the duration of the media inside. When Switch first opens the file, it estimates the video, audio, subtitle, and container durations in the *Media Inspector* and *Media Player*. Once Switch is done indexing it calculates these durations accurately. Do not rely on the durations shown until Switch is done indexing. If durations shown are not correct, and you are not using growing files, make sure the *Watch for growing files* preference is unchecked. Relaunch Switch after changing this setting.

Opening a Recent Media File

To open a media file that was recently open, do one of the following:

- On the *Welcome* screen, select a file in the *Recent Media* list. Click *Open*.
- Select *File > Open Recent*, and click the name of a recently opened file from the list.

Opening Audio or Subtitle Files

To open an audio or subtitle file in Switch, do the following:

1. Select *File > Open Secondary Audio File*, or *File > Open Secondary Subtitle File*.
2. Switch displays the *Open* dialog.
3. Navigate to the file you want to open. Click *Open*; or click *Cancel* if you decide to not open an audio file or a subtitle file.

Note: Secondary audio and subtitle files play along with the primary media file you have open. These are useful for supplying background audio for a video that has no embedded audio, or for supplying subtitles for a video that has no embedded subtitles. Secondary audio or subtitle files also can be used as alternatives to the primary audio or subtitle files.

Opening Flags

In Switch, you can flag video frames, add comments to the flags, and share the flags with others. You can flag frames individually or in sequence, and can color-code the flags. Also, you can export the flags to share with others in XML text files. Switch XML flag files are both human-readable and easily parsed.

To open flags, do the following:

1. Select *File > Open Flags File*.
2. Switch displays the *Open* dialog.
3. Navigate to the file you want to open. Click *Open*; or click *Cancel* if you decide to not open a flag file.

See [Opening the Flags Tab](#).

Opening Recent Files

To re-open previously-opened video files, select *File > Open Recent*.

Switch displays a list of your most recently opened video files. Every time a file is opened or exported, Switch adds it to the list.

Closing Files

To close a file, do the following:

1. Select the media window in which Switch displays the file.
2. Select *File > Close*.

Playback

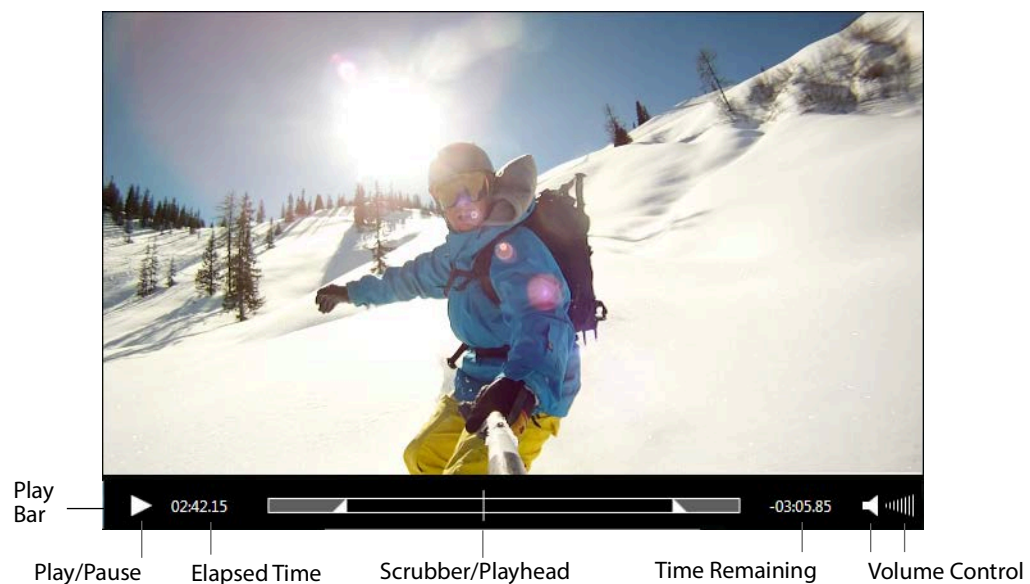
You can play media files using Switch. Switch provides a complete set of controls through the *Control* menu.

Topics

- [Viewing Frame Type, Data Rate, and Flags in the Timeline 33](#)
- [Controlling Audio Volume 35](#)

Viewing Media in the Preview Area

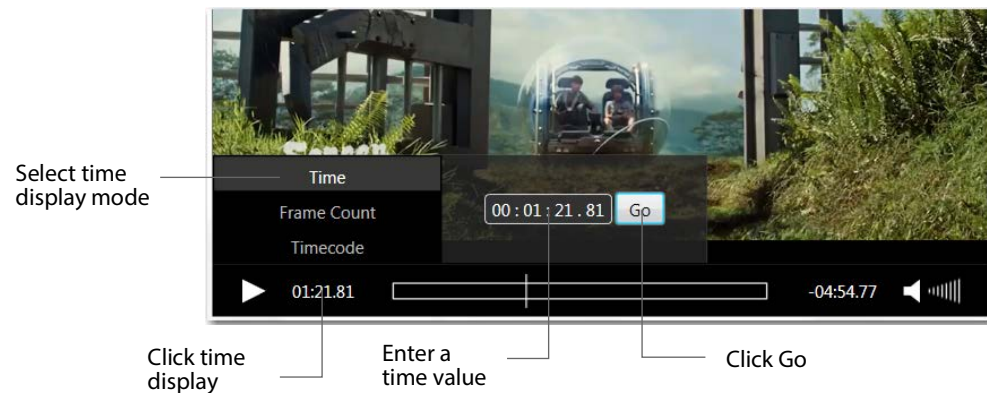
The Switch Play Bar in the Preview area provides the easiest way to control the playback of your media files. The controls in the Play Bar are described below.



Play/Pause Click the *Play/Pause* button to play the video; click again to pause it.

Note: In addition to clicking *Play/Pause* on the Play Bar, you can also play and pause by pressing the Spacebar. It acts as a toggle between play and pause modes.

Elapsed Time Displays how long the video has been playing. Click the time display to change display mode to *Time*, *Frame Counter*, or *Timecode*. You can also enter a time value and click *Go* to go to that time in the video.



Note: When the Time Display mode is set to Frame Count, Switch appends a plus sign (+) to the end of the current frame number whenever playback has exceeded the length of the video. This usually happens when the audio is longer than the video. Switch displays black frames from the end of the video to the end of the clip.

Scrubber/Playhead Click and slide to change the location in the video you are viewing. You can also click on any position in the scrubber timeline to cause the playhead to jump to that location.

To jump the playhead to an un-indexed part of a clip, hold down the Option key while clicking on the desired position in the scrubber timeline. Switch skips indexing the previous portions and continues indexing from the location selected. Switch might display a spinning progress indicator for up to 10 seconds during this operation. If Switch can't provide the requested video frame within ten seconds, the video display remains black. You might still be able to step through nearby frames.

For frame-accurate scrubbing, hold down the Shift key while scrubbing. If you move the scrubber less than a half second from the previous seek event, Switch seeks any type of frame; I-frame, B-frame, or P-frame.

For quick scrubbing, move the scrubber more than a half second from the previous seek event, Switch seeks only I-frames, making scrubbing more responsive.

Note: The skip index feature works for MPEG-2 TS & PS files exclusively. For all navigation commands, such as flag navigation, chapter navigation, jump to mark in/out, and 10 second skip, you can skip indexing over portions of the video you don't want to use. To skip indexing, use normal navigation controls while holding down the

Option key.

Subtitle and Caption display is disabled when using the skip index feature. If a portion of the video is skipped using the skip index feature, you will not be able to see that portion unless you close and reopen the file.

Note: Switch can begin playback before it has completed indexing and decoding the whole file. Also, you can jump ahead in a clip before indexing is complete.

Once you've skipped indexing a section of the video, Switch can't display the video, and can lose accuracy when jumping to subsequent portions. Close the video, reopen it, and restart indexing from the beginning.

Time Remaining Displays time remaining for the video to play. Display is shown in either seconds or frames depending on the Elapsed Time display mode (Time, Frame Counter, or Time Code).

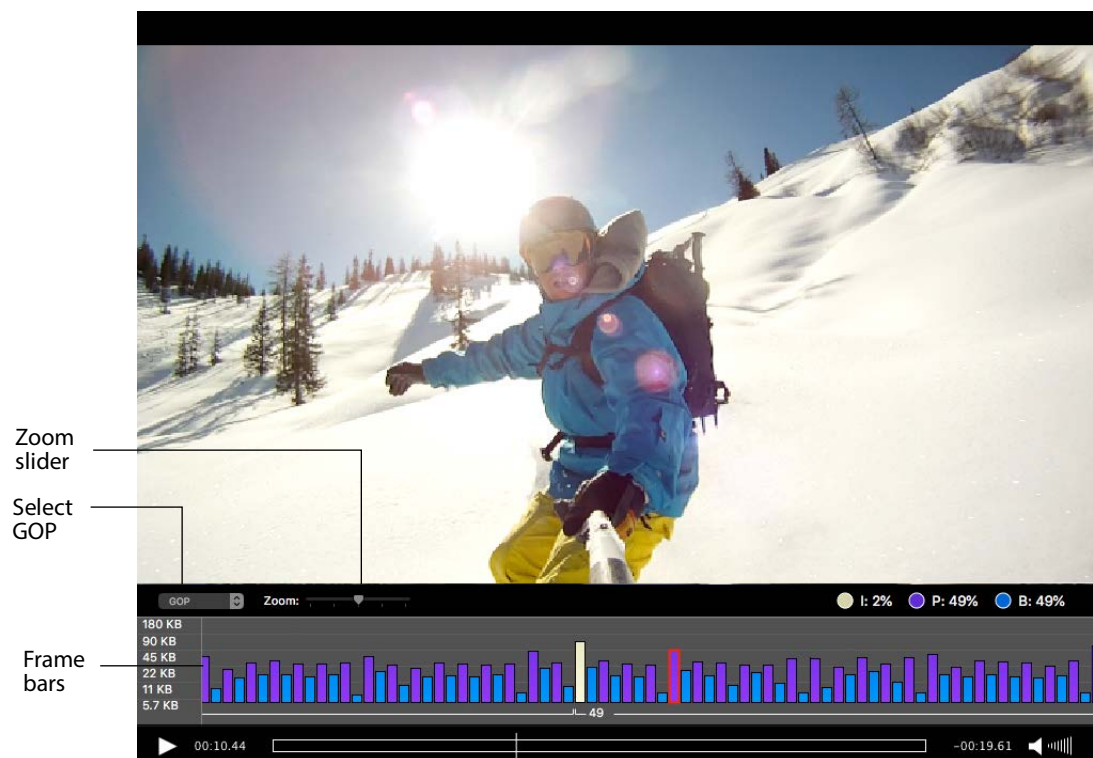
Volume Control Click the speaker button to mute or un-mute the audio. Click and slide the bars icon to increase or decrease the volume.

Viewing Frame Type, Data Rate, and Flags in the Timeline

The timeline enables you to view the frame types or the data rate of your video. It also allows you to view any flags you have set. To open the timeline, select *View > Show Timeline*. After the timeline opens, the menu changes to *Hide Timeline*. Alternatively, you can press **command+T** to show or hide the timeline.

GOP Mode

Select *GOP* (Group of Pictures) mode to display the video frame types. Each bar represents a frame, which you can select by clicking it. Purple bars represent P-frames, or *predictive frames*. P-frames contain only the pixels changed since the previous I-frame. Blue bars represent B-frames. B-frames are *bidirectional predictive frames*. B-frames contain only the data that have changed from the preceding frame or are different from the data in the very next frame. White bars represent I-frames. I-frames are *intra-coded frames*. I-frames contain all the pixels for the frame being displayed. You can also zoom the timeline display by sliding the Zoom slider.



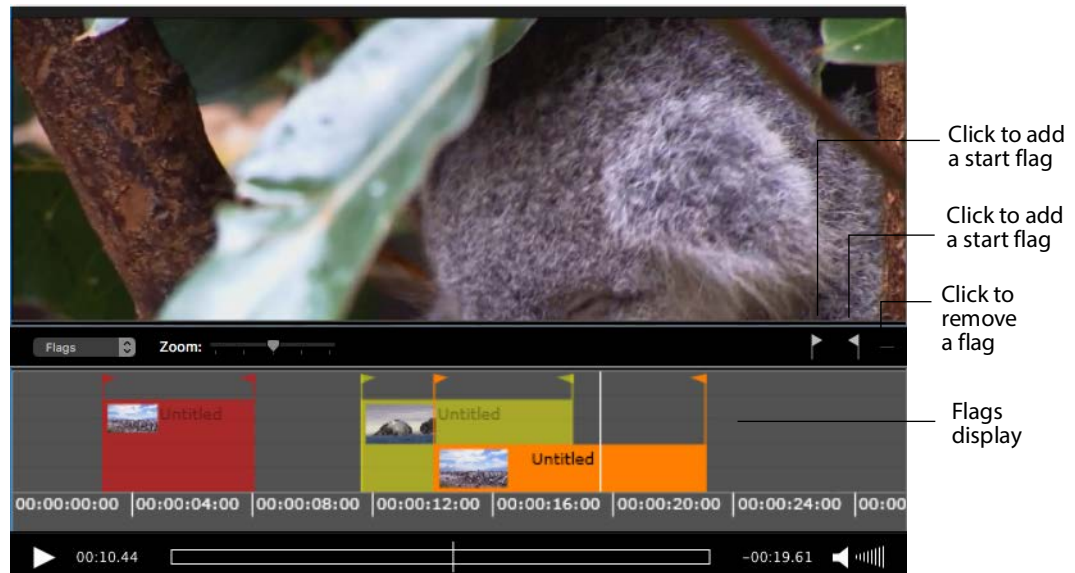
Datarate Mode

Select *Datarate* mode to display the datarate for each video frame, showing the overall data of the video charted across the timeline in the form of peaks and valleys. You can also zoom the timeline display by sliding the Zoom slider.

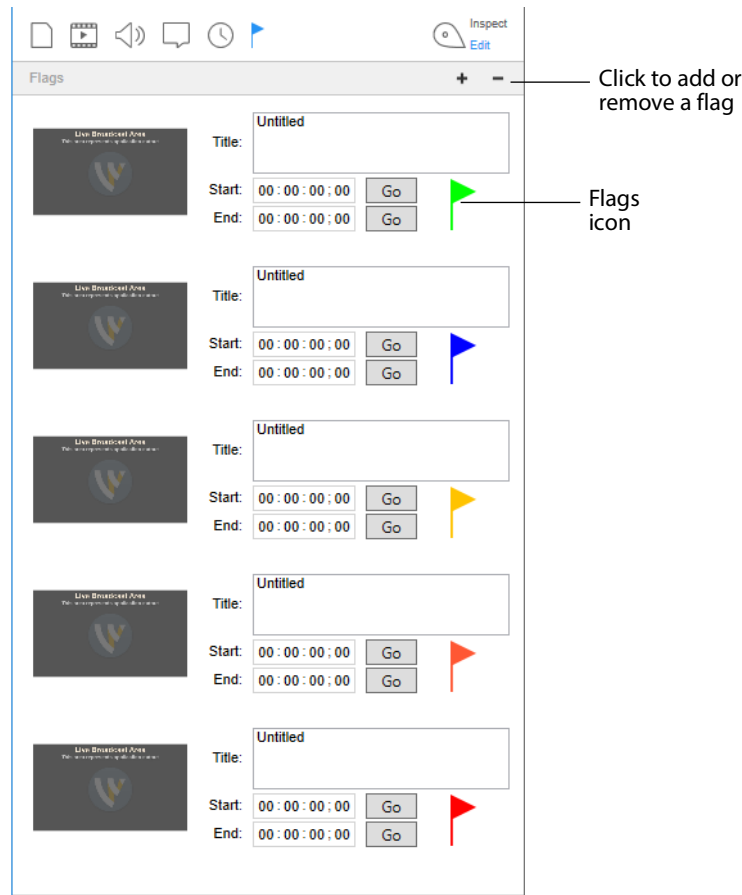


Flags Mode

Select *Flags* mode to display all flags on the timeline. Click the left flag icon to add a new *start* flag. Click the right flag icon to add a new *end* flag. Select a flag and click the minus (-) button to remove a flag.



The flag settings for this timeline are set in the Inspector using the *Flags* tab. Click the plus (+) button to add a new flag. Select a flag and click the minus (-) button to remove a flag. Click on the flag icon to change its color to any of five: Green, Blue, Yellow, Orange, or Red. (See [Flags Tab](#))



Controlling Audio Volume

You can control audio playback volume, or mute audio, through the *Audio* menu.

Select *Increase Volume* or *Decrease Volume* to change the audio volume level, or select *Mute* to silence it entirely. You can also mute all non-active media windows by selecting *Mute Inactive Windows*. Additionally, you can mute all audio, or just the audio of selected files, tracks or channels by selecting *Mute Files*, *Mute Tracks*, or *Mute Channels*. Select *Solo Files*, *Solo Tracks* or *Solo Channels* to mute all but the selected file, track or channel. You can configure advanced audio controls as well, including *Loudness Type*, *Peak Hold*, and *Destination*.

See the [Audio Menu](#) for details.

Inspection

Switch allows you to either inspect or edit your media files through a *Media Inspector* window.

See [Windows in Switch](#) on how to edit media files.

Topics

- [Opening the Media Player 36](#)
- [Opening the Media Inspector 37](#)
- [Opening the Container Tab 37](#)
- [Opening the Video Tab 38](#)
- [Opening the Audio Tab 39](#)
- [Opening the Subtitle Tab 40](#)
- [Opening a Subtitle File 40](#)
- [Opening the Time Tab 40](#)
- [Opening the Flags Tab 41](#)

Opening the Media Player

To open the *Media Player*, do the following:

1. From the *Welcome* screen, select *File > Open File*.
2. Browse to a file, select it, and click *Open*.

See [Playback](#).

Comparing Alternate Media

To compare alternate media files associated with your primary media file, do the following:

1. Open a primary media file.

2. Select *View > Show Alternate Media*.
See [View Menu](#).
3. Select *File > Compare Alternate Media*. Open as many as 16 alternate media files.
Switch displays all open alternate media files in the *Alternate Media File* menu.
See [File Menu](#).
4. Select *View > Alternate Media File*.
Switch displays the names of all open alternate media files.
See [View Menu](#).

Opening a Flags File

To open a flags file, do the following:

1. Select *File > Open Flags File*.
2. Browse to a flags file and double-click it to open it.

See [File Menu](#).

Opening the Media Inspector

The *Media Inspector* enables you to inspect or edit your media files. To open the *Media Inspector*, open a media file in Switch. Then, do the following:

- Select *Window > Show Inspector*.

Note: If *Hide Inspector* is displayed as a menu item, it means that the *Media Inspector* already is open.

See [Welcome Screen](#).

Opening the Container Tab

To open the *Container* tab, do one of the following:

- Open the *Media Inspector*. Then click the *Container* tab.
See [Opening the Media Player](#).
- Select *Inspect > Container*.

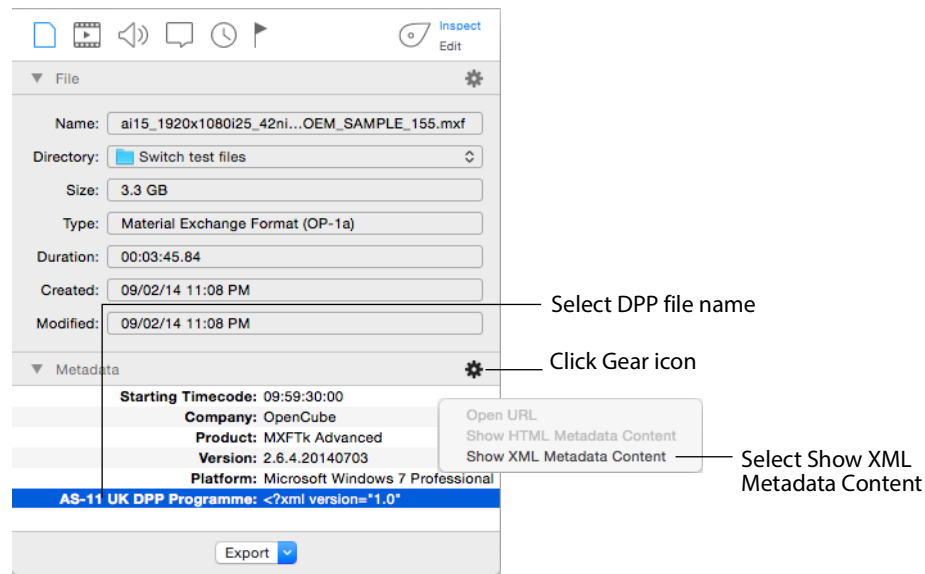
See [Container Tab](#).

Viewing Metadata and Secondary Audio/Subtitles

To view embedded DPP file content, do the following:

1. Select the file from the list at the bottom of the *Metadata* pane.

- Click the Metadata gear icon and select *Show XML Metadata Content* from the drop-down menu.



Switch displays the metadata content in a window.

Adding Metadata and Secondary Audio/Subtitles

To add metadata, click the associated plus (+) button and add available metadata such as Album, Artist, Director, or Year.

To add secondary audio and subtitle files, click the associated plus (+) button and navigate to the file you want to add.

To remove an added file, select it and click the minus (-) button.

Click the gear button to make additional settings.

To open the metadata URL, click the Metadata gear button.

To copy the URL of the audio or subtitle file, or to show its location, click the *Secondary Audio* or *Secondary Subtitle* gear button.

See [Metadata and Secondary Audio/Subtitles Pane](#).

Opening the Video Tab


The *Video* tab displays data for the video portion of the media file, such as video format, size, or rate. To open the *Video* tab, do one of the following:

- Open the *Media Inspector*. Then click the *Video* tab.
See [Opening the Media Player](#).
- Select *Inspect* > *Video*.

- Select *Edit* > *Video*.

See [Video Tab](#).

Viewing Contradictory-Data Details

When Switch displays a contradictory-data alert icon  in the Video tab of the Inspector, you can view the details of the data contradiction.

1. To view the details, do one of the following:
 - Hover the cursor over the alert icon
Switch displays an explanatory message.
 - Click the alert icon
Switch lists all the conflicting data values for the flagged field.

See [Contradictory-Data Alerts in the Video Pane](#).

Opening the Audio Tab

The *Audio* tab enables you to inspect the audio portion of your media. This includes channel, format, bitrate, and duration. To open the *Audio* tab, do one of the following:

- Open the *Media Inspector*. Then click the *Audio* tab.
See [Opening the Media Player](#).
- Select *Inspect* > *Audio*.
- Select *Edit* > *Audio*.

See [Audio Tab](#).

Setting Audio Track Options

To determine how Switch displays and plays audio tracks, do the following:

1. Open the *Audio* tab on the *Media Inspector*.
See [Opening the Audio Tab](#).
2. To display channel settings, click the down-arrow to the right of the *Program* field.
3. Do any of the following:
 - To change the speaker name, when allowed, click the current speaker name and select a new name from the list displayed.
 - To mute a channel, check *Mute* for that channel.
 - To play only one channel, check *Solo* for that channel. *Solo* turns off the sound for all *other* channels.

See [Audio Track Display](#).

Opening the Subtitle Tab

The *Subtitle* tab enables you to inspect the subtitling in your media. To open the *Subtitle* tab, do one of the following:

- Open the *Media Inspector*. Then click the *Subtitle* tab.
See [Opening the Media Player](#).
- Select *Inspect > Subtitle*.
- Select *Edit > Subtitle*.

See [Subtitle Tab](#).

Opening a Subtitle File

To open a subtitle file, do the following:

1. Select *File > Open Secondary Subtitle File* menu. Browse to the desired subtitle file, and double-click the file name.

Switch associates the selected subtitle file with the currently-open primary video file, and displays the subtitle file in the subtitle tab list.

2. To display the subtitle controls, select the subtitle file.

See [Subtitle Tab](#).

Opening the Time Tab

The *Time* tab enables you to inspect the timing of your subtitles. To open the *Time* tab, do one of the following:

- Open the *Media Inspector*. Then click the *Time* tab.
See [Opening the Media Player](#).
- Select *Inspect > Time*.
- Select *Edit > Time*.

See [Time Tab](#).

The *Time* tab displays entry points (chapters) in your media that you have created in Switch. To change the chapters, consult the [Windows in Switch](#) section.

Note: You can view only the chapter markers you created in the current session. Chapter markers resident in the file when opened in Switch will not be visible -- even if they were previously created using Switch.

Opening the Flags Tab

The *Flags* tab enables you to inspect the timing of your subtitles. To open the *Flags* tab, do one of the following:

- Open the *Media Inspector*. Then click the *Flags* tab.
See [Opening the Media Player](#).
- Select *Inspect > Flags*.
- Select *Edit > Flags*.

See [Flags Tab](#).

Export

You can export movies, still frames, iTunes packages, flags, or Media Inspector data from Switch. Also, you can re-encode and export clips for playback in various applications and devices.

Note: You can re-encode *from* most QuickTime-supported formats, but you can't export to all QuickTime-supported formats.

Topics

- [Exporting Movies 42](#)
- [Exporting iTunes Packages 43](#)
- [Completing the Asset-Only ITMSP Package on iTunes Connect 44](#)
- [Exporting Video Frames 45](#)
- [Exporting Flags 45](#)
- [Exporting Inspector Data 51](#)

Exporting Movies

You can export your video at any time by selecting one of the menu items: *Movie*, *iTunes Store Package*, or *Current Video Frame*. You can also export your flags or the *Media Inspector* info. To export your media as a movie, do the following:

1. Select *Export > Movie*.
Switch opens a dialog box displaying the *Container*, *Video*, and *Audio* setup information.
2. To change any of these, click its *Edit* button.
3. Click *Export*.
Switch displays the *Save* dialog.
4. Enter a filename for your movie and navigate to the location where you want to save your movie.

5. Click *Save* when finished.

See [Export Menu](#) and [Opening the Media Player](#).

Exporting iTunes Packages

You can export the following iTunes packages:

- Music Video (NTSC)
- Music Video (PAL)
- Music Video (HD)
- Television (NTSC)
- Television (PAL)
- Television (HD)
- Film (NTSC)
- Film (PAL)
- Film (HD)

Note: If the selected iTunes Store profile doesn't allow your export settings, Switch displays an error message to help you choose correct export settings.

To export an iTunes package, do the following:

1. Select *Export > iTunes Store Package*.

Switch opens a dialog box displaying the *Container*, *Video*, and *Audio* setup information.

2. To change any of these, click its *Edit* button.

3. Click *Export*.

Switch displays the *Save* dialog.

4. Enter a filename for your movie and navigate to the location where you want to save your iTunes package.

5. Click *Save* when finished.

Switch displays a dialog box.

6. For *Asset Type*, select *Feature* or *Preview*.

If you select *Preview*, select also a *Preview Territory*.

Preview Territory remains grayed-out until you select *Preview*.

Note: The *Feature* asset type embeds the secondary audio into the package, whereas *Preview* does not.

7. Enter your provider name.

The *Continue* button remains grayed-out until you enter a provider name.

8. Select a language and locale for *Metadata*, *Spoken Language*, and *Primary Assets*.
9. Click *Continue* to continue.
If Switch is not licensed, Switch displays a warning that the export will be water-marked.
Switch displays the *Save* dialog box.
10. Enter a filename for your movie and navigate to the location where you want to save your movie.
11. Click *Save*.

See [Export Menu](#) and [Opening the Media Player](#).

Completing the Asset-Only ITMSP Package on iTunes Connect

Switch creates an asset-only ITMSP(.itmSP) package, but you still need to enter additional information via *iTunes Connect* to complete the package.

If you do not have an iTunes Connect account, you have two options:

1. Take the iTunes package created by Switch to an iTunes authorized aggregator for delivery.
2. Apply for an iTunes Account.

Assets must meet these iTunes Video specifications:

- iTunes requires film to be delivered as ProRes 422 (HQ) at their native frame-rate: the frame-rate originally captured by the camera's image sensor.
- Movies are usually either 23.976, 24 or 25 fps. This is often different from the frame-rate that is found on tape, archived storage, NLE (Non-Linear Editor) projects or masters for broadcast which are 29.97i (NTSC or 25i (PAL). Consult with iTunes if the native frame rate is neither 23.976, 24 or 25 fps.

Subtitles must be provided as an iTunes Timed Text (.itt) formatted file.

The following settings are required for iTunes delivery:

- ProRes 422 (HQ)
- 4:2:2: color space
- 1920 x 1080 1:1 (square) pixel aspect ratio for HD

Other requirements:

- Must begin and end with at least one black frame
- 5.1 audio when available in addition to the stereo track
- Audio source in Linear PCM 16 or 24 bit at 48Khz
- Closed Caption or English iTT Subtitle required for distribution in U.S. iTunes Store
- SD Assets: User must select the correct aspect ratio when SD assets are selected.

- **Chapters:** The first chapter stop must be at 00:00:00. If using a frame-accurate time-code format, the first chapter stop must be at 00:00:00:00.
- **Accessibility XML:** User must review the XML and make necessary edits to following asset and accessibility tags. Please refer to the *Vendor Tool Guide* for additional information.

```
Asset:
<attribute name="image.textless_master"></attribute>
<attribute name="image.burned_subtitles.locale"></attributes>
<attribute name="image.burned_forced_narrative.locale"></attribute>
Accessibility:
<accessibility_info>
<accessibility_role="captions" available=" " />
<accessibility_role="captions" available=false" reason_code" " />
</accessibility_info>
```

Exporting Video Frames

To export a single frame of your media, pause your media and do the following:

1. Select *Export > Current Video Frame*.

See [Export Menu](#).

Switch displays the *Save* dialog box.

2. Enter a filename for your video frame. Then navigate to the location where you want to save your video frame as a still picture.
3. Click *Save*.

Exporting Flags

You can save and open all of your flags in a file. This enables you to transfer your flags between different Switch users. To save your flags, do the following:

1. Select *Export > Flags*.

See [Export Menu](#).

Switch displays the *Save* dialog box.

2. Enter a filename for your flags file. Then navigate to the location where you want to save your flags.
3. Click *Save*.

Switch exports flag files with a single root element <Switch> which maximizes compatibility with other applications, particularly Vantage.

Note: Please keep in mind that flags files save a media path relative to the system they were created on. If you want to open a flags file on another machine, open the media first, and then the flags file. This associates the two and enables you to export the updated flags file.

Here is a sample flags file:

```
<?xml version="1.0" encoding="UTF-8"?>
<Switch>
  <Media>/Users/telestream/Desktop/DVwithCaptions.mov</Media>
  <Flags>
    <Flag Title="Bad frame" UUID="838C2FF0-F84C-4B56-A35A-C7B6B43C53AA"
Start="1001001" End="1001001" Level="Error"/>
    <Flag Title="Make it look like this." UUID="F15599F6-1A65-4527-
A862-29B1E1C58642" Start="61061061" End="61061061" Level="Good"/>
    <Flag Title="Slate" UUID="899C0852-9EC1-4E69-A14D-3D799782927D"
Start="140140140" End="141808475" Level="Neutral"/>
    <Flag Title="Start of captions" UUID="C0B1066D-FFB8-4D27-
AFE0-3FC7530DDB6D" Start="153153153" End="153153153" Level="Info"/>
    <Flag Title="Check audio here." UUID="E5107F72-1C60-4197-
AF5B-0C426DBD8F3C" Start="508508509" End="508508509" Level="Warning"/>
  </Flags>
</Switch>
```

See also [Opening Flags](#).

Flags XML Elements

Flags files are written in standard XML using elements defined by Telestream. You can create your own scripts and applications for reading and writing flags files using the following XML elements.

Flags XML Element	Description
<Media>	Contains the absolute path to the media file that the flags refer to. The path is formatted for the operating system (Mac or Windows) on which the file was created. When Switch opens a flags file before any media has been opened, Switch extracts this path, opens the file, and loads the flags associated with it. This is primarily for users that are creating a flags file, and need to save their work and resume it later. You can't move this path to other accounts or to other computers. For those cases, first open a media file, and then open a flags file to be associated with it.
<Flags>	Contains a list of flags. Each <Flag> element may have one or more attributes. If any attributes are omitted, Switch uses their default values. All attributes have been supported since the introduction of the flags feature in Switch 4.0.

Attribute	Description
Title	Contains the user's comment about the flagged video frame.
Details	Holds more information than the Title field, allowing more detailed descriptions of the flagged frame.
UUID	A Universally Unique Identifier; used to distinguish each flag from the others.
Start StartTime StartTimeCode StartFrameIndex	For each flag, use only one of these attributes. If you include more than one, Switch will pick one and ignore the others. These four attributes are described in this table, below.
Start	<p>Contains a numeric value that describes the start of the first frame that has been flagged. This is the preferred format for specifying the start of the flag. It is the most accurate; avoids ambiguity--such as when dealing with files that have multiple timecode sources, noncontiguous timecode, or repeated timecodes--and it works for audio-only files, video-only files, and files with both audio and video. When exporting flags files this is the attribute Switch uses to specify the start of the flag.</p> <p>The value is the time, in one hundred nanosecond ticks, between the start of the video (zero) and the start of the display time of the frame. For example, the first frame in a video always has a display time of zero. The value for the Start attribute of the first frame would be 0. In a 29.97 fps video. The second frame, which has an initial display time of approximately 0.033366700033367 seconds, would have a value of 333667.</p>

Attribute	Description
StartTime	<p>Contains a string value that describes the first frame that has been flagged. The value is a display time, in HH:MM:SS.SS (hours, minutes, seconds, and fractional seconds) format, which must be during the display time of the desired frame. Since this format allows for accuracy only to a one-hundredth of a second, you may need to round up. For example, the value for the StartTime attribute of the first frame would be "00:00:00.00". For a 29.97 fps video, the second frame, which has an initial display time of approximately 0.033366700033367 seconds, you should specify a value of "00:00:00.04". The value for the StartTime attribute should be "00:00:00.07". Defaults to "00:00:00.00".</p> <p>Requires Switch 4.5 or later.</p>
StartTimeCode	<p>Contains a string value that describes the first frame that has been flagged. The value is a timecode, in HH:MM:SS;FF (hours, minutes, seconds, and frames) format. The last delimiter is a colon to signal non-drop-frame timecode format, or a semi-colon to signal drop-frame timecode format.</p> <p>Switch supports multiple timecode sources, but flags use only the Made-by-Switch timecode, which always starts at zero. For example, the value for the StartTimeCode attribute of the first frame would be "00:00:00;00" (drop-frame). For a 29.97 fps video. The second frame would have a value of "00:00:00;01" (drop-frame). The StartTimeCode attribute should not be used in conjunction with audio-only files. Defaults to "00:00:00;00" (drop-frame) or "00:00:00:00" (non-drop-frame) depending on the format of the timecode of the video track. Requires Switch 4.5 or later</p>
StartFrameIndex	<p>Contains a numeric value that describes the first frame that has been flagged. The value is a zero-based index. For example, the first frame would have a value for the StartFrameIndex attribute of 0. The value for the second frame would be 1, and the value for the third frame would be 2. The StartFrameIndex attribute should not be used in conjunction with audio-only files. Defaults to 0.</p>

Attribute	Description
End	<p>Contains a numeric value that describes the last frame flagged.</p> <p>This is the preferred attribute for specifying the end of the flag, as it is the most accurate and avoids ambiguity. Also, it works for audio-only files, video-only files, and files with both audio and video.</p> <p>Switch sets this attribute when exporting flags to specify the end of the flag. However, when you are creating flags files for opening in Switch, you can use any one of the following attributes: End, EndTime, EndTimeCode, or EndFrameIndex. Use only one of these attributes for each flag. If you include more than one, Switch will pick one and ignore the others.</p> <p>The End attribute has the same value as the Start attribute. When describing a sequence of frames, this value is inclusive. The frame that starts at this value is included in the sequence. The first frame in a video always has a display time of zero. The value for the End attribute of the first frame would be 0. In a 29.97 fps video, the second frame, which has an initial display time of approximately 0.033366700033367 seconds, would have a value of 333667. The value for the End attribute would be 667334. Defaults to 0.</p>

Attribute	Description
EndTime	<p>Contains a string value that describes the display time for the last frame that has been flagged. The value is a display time, in HH:MM:SS.SS (hours, minutes, seconds, and fractional seconds) format, which must be during the display time of the desired frame. Since this format allows for accuracy only to a one-hundredth of a second, you may need to round up.</p> <p>For example, the value for the EndTime attribute of the first frame would be "00:00:00.00". For a 29.97 fps video, the second frame, which has an initial display time of approximately 0.033366700033367 seconds, you should specify a value of "00:00:00.04". The third frame has an initial display time of approximately 0.066733400066733 seconds, so the value for the EndTime attribute should be "00:00:00.07". Defaults to "00:00:00.00". Requires Switch 4.5 or later.</p>

Attribute	Description
EndTimeCode	Contains a string value that describes the last frame that has been flagged. The value is a timecode, in HH:MM:SS;FF (hours, minutes, seconds, and frames) format. The last delimiter is a colon to signal non-drop-frame timecode format, or a semi-colon to signal drop-frame timecode format. Switch supports multiple timecode sources, but flags can only use the Made-by-Switch timecode, which always starts at zero. For example, the value for the EndTimeCode attribute of the first frame would be "00:00:00;00" (drop-frame). For a 29.97 fps video, the second frame would have a value of "00:00:00;01" (drop-frame). The third frame would have the value "00:00:00;02". Do not use the EndTimeCode attribute in conjunction with audio-only files. Defaults to "00:00:00;00" (drop-frame) or "00:00:00:00" (non-drop-frame) depending on the format of the chosen timecode of the video track. Requires Switch 4.5 or later.
EndFrameIndex	Contains a numeric value that describes the last frame flagged. The value is a zero-based index. For example, the first frame would have a value for the EndFrameIndex attribute of 0. The value for the second frame would be 1, and the value for the third frame would be 2. Do not use the EndFrameIndex attribute in conjunction with audio-only files. Defaults to 0.
Level	Used to categorize each flag. Each level has the following color when displayed in Switch: <ul style="list-style-type: none"> • Red Error • Orange Warning • Yellow Info • Blue Neutral • Green Good

Exporting Inspector Data

You can save your *Media Inspector* information in a text file. To save your inspector information, do the following:

1. Select *Export > Inspector Info*.

See [Export Menu](#).

Switch displays the *Save* dialog box.

2. Enter a filename for your video frame.

The two formats that may be exported are: TXT or JSON.

3. Navigate to the location where you want to save your *Inspector* data.**4. Click *Save*.**

Switch saves the Media Inspector data into a file that is readable in a text editor. The data file looks something like this:

```
Generated by Switch Version x.x on Mon May 23 12:33:19 20xx
https://telestream.net/switch
```

CONTAINER

Path: C:\Users\Firstname.Lastname\Downloads\Videoname.mov

Directory: C:\Users\Firstname.Lastname\Downloads

File Name: Videoname.mov

Size: 46.9 MB

Type: QuickTime Movie

Creation Date: Mon Oct 25 15:33:38 20xx

Modification Date: Mon Oct 25 15:33:50 20xx

Estimated Duration: 00:02.72

Video Track Count: 1

Audio Track Count: 0

Subtitle Track Count: 0

Subtitle Segmentation: TRUE

Complex Composition Playlist: TRUE

MOV Time Code: Enabled

Time Code: 00:00:00:00

MPEG-2 File Type/Brand: QuickTime File Format

VIDEO

Encoded Width: 1280

Encoded Height: 720

Duration in Scale: 68
Duration: 00:02.72
Frame Count: 68
Time Scale: 25
Format: Apple ProRes 4444
Bitrate: 138.0 Mbit/s
Subsampling: 4:4:4
Colorspace: ITU-R BT.709
Color Primaries: ITU-R BT.709-5
Color Matrix Coefficients: ITU-R BT.709-5
Color Transfer Characteristics: ITU-R BT.709-5
Language: English
Frame Rate and Field Order: 25.00 fps, Progressive
Clean Aperture: 0 x 0
Pixel Aspect Ratio: Square Pixels
Display Width: 1280
Display Height: 720
ProRes Encoder: ap10
MPEG-4 Compressor Name: Apple ProRes 4444
dimension: [{ "type": "clef", "width": 1280, "height": 720, "\$annotation": { "type": "Clean Aperture" } }, { "type": "prof", "width": 1280, "height": 720, "\$annotation": { "type": "Production Aperture" } }, { "type": "enof", "width": 1280, "height": 720, "\$annotation": { "type": "Encoded Pixels" } }]

Menus

Switch has menus that provide access to all its controls and features.

Topics

- [Switch Menu 54](#)
- [File Menu 55](#)
- [Edit Menu 56](#)
- [Inspect Menu 57](#)
- [Control Menu 58](#)
- [Audio Menu 60](#)
- [View Menu 61](#)
- [Export Menu 68](#)
- [Window Menu 68](#)
- [Help Menu 70](#)

Switch Menu

About Switch

Displays the version of Switch you are running.

Preferences

Opens the *Preferences* dialog. If the *Preferences* dialog is already open, it becomes the active window.

Services

Presents the Mac Services available.

Hide Switch

Hides the Switch application window (leaves other window displayed).

Hide Others

Hides all application windows (leaves the Switch window displayed).

Show All

Shows all application windows.

Quit Switch

Closes all files and exits.

The Preferences Dialog

The left-side navigation pane contains the following tabs:

- *General*
- *Update*
- *License*
- *Display*
- *Audio*

The sliders for Dynamic Range Compression let you control the following:

- Mode
- Cut
- Boost

Note: Switch allows Dolby E passthrough regardless of these settings. Switch doesn't decode Dolby E tracks, but treats them as PCM tracks.

File Menu

Open

Displays the *Open* dialog for opening a media file.

Open Secondary Audio File

Opens a secondary audio file that plays along with the currently-open primary media file.

Open Secondary Subtitle File

Opens a secondary subtitle file that plays along with the currently-open primary media file.

Open Flags

Opens a flags file.

See [Opening a Flags File](#).

Compare Alternate Media

Opens media files to be compared with your primary media file. You can open up to sixteen alternate media files.

When the files are open, Switch lists them on the *Alternate Media File* menu where they can be selected or cycled through sequentially.

See [Comparing Alternate Media](#) and [View Menu](#).

Open Recent

Displays the most recently accessed media files. Every time a file is opened or saved it is entered into this list.

Close Window

Closes the currently active media file window.

Edit Menu

Undo

Reverses your last change in Switch. Switch offers an unlimited number of undo actions (within computer memory limitations). Undo information is stored on a per-window basis. If you close a window and then reopen it, your undo information is lost. Undo does not undo edit actions.

Redo

Reverses your last undo action. Switch offers an unlimited number of redo actions (within computer memory limitations). Redo information is stored on a per-window basis. Also, if you close window then reopen it, your redo information is lost. Redo does not re-do edit actions.

Cut

Copies (and removes) the selection and stores it on the clipboard allowing you to paste it into a selected target.

Copy

Copies (but does not remove) the selection and stores it on the clipboard allowing you to paste it into a selected target.

Paste

Duplicates the content in the clipboard into the currently selected location.

Select All

Selects all items in the currently active window.

Copy Link to Current Frame

Allows you to copy a Switch link to the current frame of video. You can add this link to a web page or application. When a user clicks this link, the browser or application opens the video frame in Switch.

For details, see the [SwitchEngine API Customer Integration Guide](#) available on the Telestream website.

Set Mark In

Sets the Mark In location in your media file.

Set Mark Out

Sets the Mark Out location in your media file.

Add Flag

Adds a new flag with the start time at the current location in the video.

Set Flag Out

Sets the end time of a selected flag to the current location in the video.

Inspect Menu

Container

Opens the Media Inspector window and selects the Container tab.

Keyboard shortcut: Control + 1 keys.

Video

Opens the Media Inspector window and selects the Video tab.

Keyboard shortcut: Control + 2 keys.

Audio

Opens the Media Inspector window and selects the Audio tab.

Keyboard shortcut: Control + 3 keys.

Subtitles

Opens the Media Inspector window and selects the Subtitles tab.

Keyboard shortcut: Control + 4 keys.

Time

Opens the Media Inspector window and selects the Time tab.

Keyboard shortcut: Control + 5 keys.

Flags

Opens the Media Inspector window and selects the Flags tab.

Keyboard shortcut: Control + 6 keys.

Allow Editing

Toggles between edit and inspect mode each time selected.

Keyboard shortcut: Control + 7 keys.

Control Menu

Switch also provides a complete set of playback controls through the *Control* menu. The *Control* menu includes play, rewind, fast and slow motion, jump, skip, and loop controls.

Play/Pause

Starts playing your selected media. When a media is playing the *Play* menu item changes to *Pause*. To pause a media, select *Pause*. When paused, the word *Play* is displayed. Select *Play* again to restart it.

Play All

Starts playing all open media files.

Play Forward

Plays your selected media forward at normal or increased speed.

Keyboard shortcut: L. Pressing "L" repeatedly increases the play speed up to 16x.

Stop

Stops forward or backward playing of your media. If you stop a file that is playing at reduced or increased speed, the file will play at normal speed when you play it again. Switch does not retain the speed playback setting.

Keyboard shortcut: K.

Play Backward

Plays your selected media backward at normal or increased speed.

Keyboard shortcut: J. Pressing "J" repeatedly increases the play-backward speed up to 16x.

When a media is playing at increased speed, the speed is displayed in the upper left corner of the window.

Note: *Play Backward*, *Stop*, and *Play Forward* are controlled by keyboard shortcuts J, K, and L (key presses), respectively.

Slow Motion Forward

Enables you to play video forward at one-half of normal speed.

Keyboard shortcut: command + L.

Slow Motion Backward

Enables you to backward play video at one-half of normal speed.

Keyboard shortcut: command + J.

Step Forward

Steps forward in the video, one frame at a time.

Keyboard shortcut: right-arrow.

Step Backward

Steps Backward in the video, one frame at a time.

Keyboard shortcut: left-arrow.

Skip Forward (1 sec)

Moves the video one second ahead.

Control + shift + Right Arrow.

Skip Backward (1 sec)

Moves the video one second backward.

Keyboard shortcut: Control + shift + Left Arrow.

Skip Forward (10 sec)

Moves the video ten seconds ahead.

Control + right-arrow.

Skip Backward (10 sec)

Moves the video ten seconds backward.

Control + left-arrow.

Next Chapter

Enables you to jump to the next chapter location.

Previous Chapter

Enables you to jump to the previous chapter location.

Chapters

Enables you to jump to a location by selecting a chapter title from the list.

Note: The *Chapter* menu items (*Next Chapter*, *Previous Chapter*, and *Chapter*) are only enabled if the video has chapter markers embedded in it. If no chapter markers are present, the menu items are grayed out. Chapter markers are sometimes embedded in longer movie clips to divide sections of the media topically or by edit points.

Jump to Mark In

Allows you to jump to a specified mark-in location in your media file.

Jump to Mark Out

Allows you to jump to a specified mark-out location in your media file.

Jump To End

Moves to the last frame. If the media is playing, it continues playing. If it is paused, it remains paused.

Jump To Start

Moves to the first frame. If the media is playing, it will continue playing. If it is paused, it will continue to be paused.

Jump To

Opens the *Jump To* dialog box. Enter a time value and click *Go*. The playhead moves to the location set in the dialog box. If the media is playing, it continues playing. If it is paused, it remains paused.

Next Flag

Move media to the next flag start location.

Previous Flag

Moves media to the previous flag end location.

Flags

Displays a list of flags. Select a flag in the list to go to its start location.

Loop

When selected, your video plays repeatedly and the movie will play again from the beginning whenever it reaches the end. You can select from two loop modes: *Entire Duration* or *Trimmed Segment*.

When checked (selected), media loops back to start when end is reached. You can choose to loop on the entire duration of the media or just a trimmed section as set by *Edit > Set Mark In* and *Edit > Set Mark Out* (or using the I and O keys).

Audio Menu

Increase Volume

Turns the media volume up.

Decrease Volume

Turns the media volume down.

Mute

Mutes the media audio.

Mute Inactive Windows

Mutes all inactive windows (active window remains unmuted).

Mute Files

Mutes all audio tracks in the selected file.

Mute Tracks

Displays a list of tracks. Select a track to mute.

Mute Channels

Displays a list of channels. Select a channel to mute.

Solo Files

Solos all audio tracks in the selected file.

Solo Tracks

Displays a list of tracks. Select a track to solo (all others are muted).

Solo Channels

Displays a list of channels. Select a channel to solo (all others are muted).

Loudness Type

Selects the loudness type: Gated or Ungated.

Peak Hold

Select *Infinite Hold* or *4s Hold*. *Infinite Hold* holds the audio peaks for an unlimited amount of time. This allows you to view the highest audio peak reached. *4s Hold* holds the audio peaks for only 4 seconds, and then resets the meter.

Destination

Selects the target for audio playback. The submenu contains the following options:

- *Internal Speakers* When an audio stream has Dolby E tracks in it and you select *Internal Speakers*, Switch mutes the Dolby tracks to prevent noise from the internal speakers.
- *External Device* When an audio stream has Dolby E tracks in it and you select *External Device*, you can unmute the Dolby E tracks. Switch lets the Dolby E tracks pass through via SDI.
- *Client Application*

To select an external device for audio playback you must also select an external device for video playback. Select *Prefer External Device* to set the target to *External Device* by default for all videos opened subsequently.

See *Audio* under [Preferences](#).

Note: Switch displays the *Client Application* option only if a Switch Engine API client is connected and receiving audio.

See [Controlling Audio Volume](#).

View Menu

Enter Full Screen

Cause the active media window to display full screen. To return to original window size, press the Escape key.

Half Size

Changes the size of the selected media to half of its actual size.

Actual Size

Changes the size of the selected media to its actual size.

Double Size

Changes the size of the selected media to twice its actual size.

Fit to Screen

Changes the size of the selected media to the max size of the screen.

Increase Size

Increases the size of the selected media.

Decrease Size

Decreases the size of the selected media.

Show Playback Statistics

Displays playback statistics such as playback frame rate, queue fill percentages, number of dropped frames, and AFD (Active Format Description) codes.

Show Frame Metadata

Displays a list of metadata attached to the currently displayed frame, including various types of timecode or captions.

Note: Some attached metadata may not be supported by Switch, and therefore will not be displayed.

Show Timeline

Displays and hides the Switch timeline.

Requires a Switch Pro license.

Time Display

Changes the time display on the selected media: Time, Frame Count, or Timecode. You can also use *Cycle Next* to toggle through time display modes and *Timecode Source* to select which timecode to view when your media file contains multiple timecodes.

You may also click on the timecode display to show the settings window. Enter new time data and click *Go*.

If you select *Frame Count*, enter a new frame count value and click *Go*.

If you select *Timecode*, enter a new timecode value and click *Go*. You can also select a timecode source from the drop-down menu (Switch, QuickTime, etc.).

Safe Areas

Enables you to show/Hide the boundaries of any of three safe areas: Action, Title, Caption, All or None. The Caption boundary is defined by a dotted line. The Title boundary is defined by a dashed line. The Action boundary is defined by a solid line.

You can also select an alternate aspect ratio (16:9 or 4:3) to define safe areas.

For example, if *Pillarbox 4:3, Horizontally Centered* is selected Switch displays a green rectangle defining the safe area.

The color of the safe area boundary can also be selected: *Light* or *Dark*. If you select *Light*, the Action, Title, and Caption boundaries will be displayed in white (else in black if *Dark* is selected). For the Alternate safe area boundary lines, *Light* displays them in green and *Dark* displays them in purple.

See [Switch: Safe Area Overlays](#).

Subtitles / Closed Captions

Displays or hides Subtitles / Closed Captioning.

Requires a Switch Plus license.

Subtitle / Closed Captions Source

Choose the source of the Subtitles or Closed Captions. These may be embedded in the video or a secondary subtitle file.

Subtitle / Closed Captions Channel

Choose from multiple channels within a source if present. For example, a video or secondary subtitle file may contain both 608 and 708 Captions. Channels include CEA-608 CC1 through CC4, CEA-708 Service 1 through Service 6, or Teletext Pages.

V-Chip & Extended Data Services

When selected, if V-Chip and/or other XDS data is present on the selected caption source and channel, it will be rendered in the top right corner of the video.

Enable/Disable External Preview

Enables or disables the selected External Preview device. When enabled, the menu item changes to *Disable*.

External Preview Device

Selects an External Preview device. Switch supports a variety of Blackmagic and AJA devices.

Note: Make sure AJA software driver version 16.0 or later is installed. Install a version that is compatible with your device. You can download drivers from the AJA website: <https://aja.com/products/aja-control-room#support>

The source video must match a format that is supported by the external preview device that you have selected or external preview will not occur. Users can refer to the device manufacturer's specifications for a list of supported formats for each device. External preview currently only works in Preview mode, not in Edit mode.

Note: External Preview requires a Switch Pro license.

Output VANC Data

Enables and disables the output of VANC data to the selected External Preview device. Enabled when checked. When you output via SDI, you have the option to output ancillary data along with the audio and video signal. This is metadata that pertains to the video being output. For example, Captions are one form of metadata that a you

may want to output in conjunction with your video. Like SDI out, this feature will remain on when enabled, and will output continuously whenever audio or video is being played back.

Show Alternate Media

Shows or hides *Alternate Media* comparison.

See [Comparing Alternate Media](#).

Alternate Media File

Opens a list of alternate media files. Cycle Previous and Next enables you to sequentially cycle through the Alternate media files listed.

See [Comparing Alternate Media](#).

Alternate Media Display

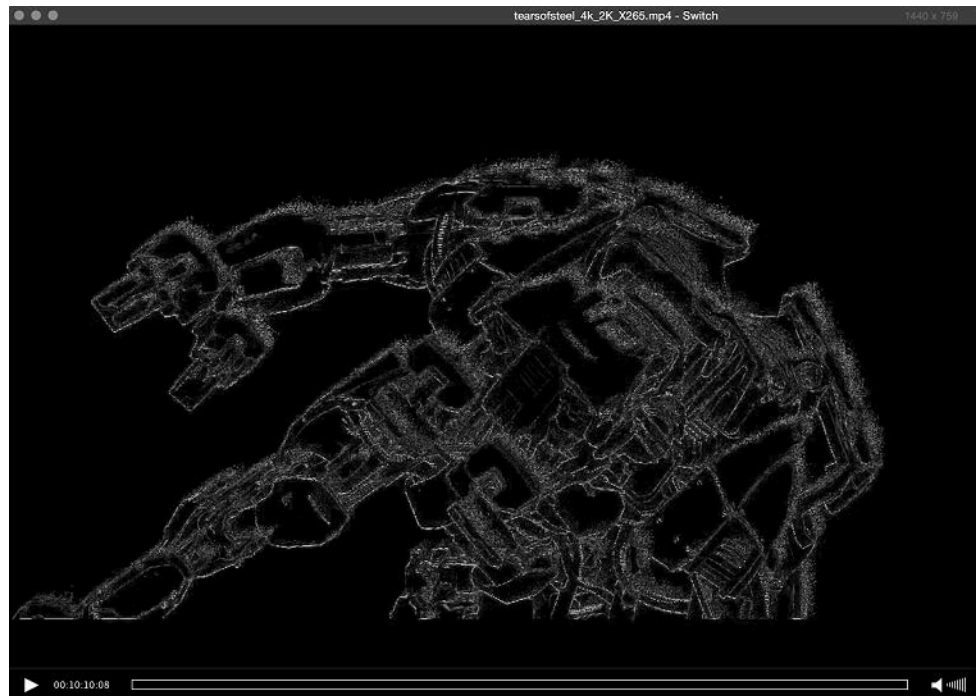
Enables you to choose how the selected alternate media file is compared.

- *Full View* displays the media file fully in the media window, enabling you to compare by sequencing through all the media files by selecting *View > Alternate Media Display > Cycle Next*, or by pressing the Control + Shift + S keys.
- *Split View* displays the selected alternate media file in a split, overlapping window. You can slide the middle divider left or right by clicking and dragging the move (<>) icon.



- *Difference View* displays the pixel difference between your primary media and the selected alternate media file. The videos are composited into a single black and

white signal. Differences between the two videos will appear as highlights on a black backdrop.



Video Scope

Select from available video scopes for use in quality control (QC) checks of your video media files. Show/Hide the video scope window from the [Window Menu](#).

- **Luma** Used for plotting histograms of brightness. Analyzes single-pixel horizontal slices of a video frame (ex. 1,920 pixels per slice for HD) and plots each vertical pixel according to its gray level (or luminance value). This allows you to quickly and visually locate bright and dark areas in your video. This scope makes it easier to spot things that might be hard for your eyes to notice, especially when using a monitor that may be inaccurate or poorly calibrated.
- **Vector** Used for plotting U-V brightness distribution. Analyzes and displays hue and saturation of colors in your video. The colors displayed are red, magenta, blue, cyan green, and yellow. The further away from the center each color is, the more saturated it is. The location of each color on the graph indicates its specific hue and which hues are the most saturated in the image.
- **Component Parade** (default) Used for plotting three component brightness distributions. Analyzes and displays saturation levels of red, green, and blue in your video.
- **Cycle Next** Cycle through available scopes.
- **Actual Size** Sets scope to size of scope image.

Note: To ensure the accuracy of the scopes, verify that your files are tagged with the correct colorspace and video range. This can be done in the video tab of the Inspector window (see [Window Menu](#)). For example, the vectorscope graticules are colored squares which represent the locations of the color primaries at 100% for the larger rectangles and at 75% for the smaller rectangles. These locations are dependent on the colorspace of the video file. Another example would be the Luma scope, where the graticules and scope image will vary based on whether the video is full range or narrow (studio) range.

Note: Creating the video scope output images requires significant CPU processing. If your system has difficulty with scope display, as would be evident by dropped frames, it is best to leave the video scopes window closed, so that none of this additional processing is performed. The amount of required processing also increases based on the dimensions of the video and the frame rate. Higher resolution videos, such as 4K, and/or higher frame rates, such as 60fps, will take more processing power than smaller SD videos with lower frame rates such as 30fps. If video scopes are required, try stepping/jumping through frames rather than using continuous playback.

Interlacing

Determines how to display interlaced video frames on your progressive computer monitor. Select which method to use: Weave Fields (default), Blend Fields, Split Fields, Field 1, or Field 2. The *Cycle Next* menu item chooses the next method in the list.

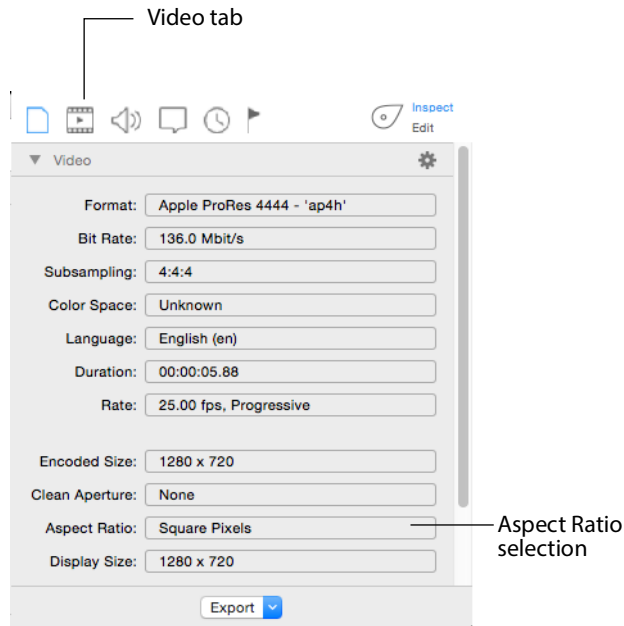
Note: Switch disables the Split Fields option when you enable the *Show Gutters* option.

Show/Hide Gutters

Displays or hides (toggle action) the gutters on the active media window.

Pixel Aspect Ratio

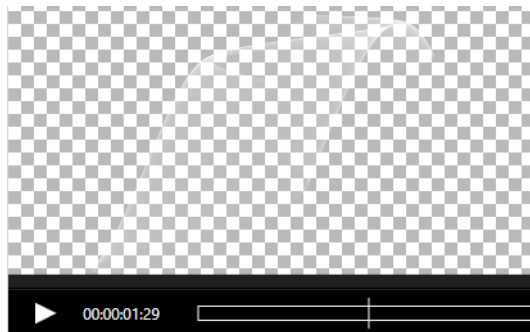
When checked, uses the Aspect Ratio selected on the video tab in the Media Inspector window. Otherwise the aspect ratio is 1:1.



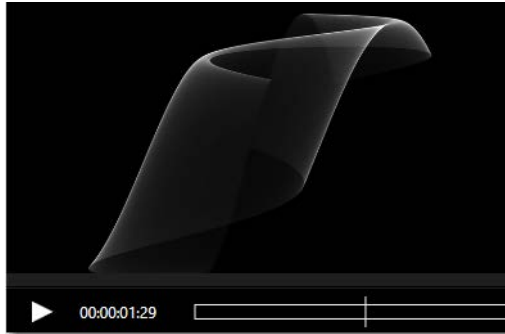
Alpha Channel

Shows/Hides checked transparency background.

With Alpha Channel on, a transparent image may be very hard to see due to the checkered background:



With Alpha Channel off, the same image is easily viewed:



Occasionally, when scaling down a video that has white text on a black background and an alpha-mask that removes the background, unwanted artifacts can appear. There are several possible workarounds:

- Turn off high quality scaling while working with videos like this.
- View the video at its actual size to avoid scaling altogether. Currently, Switch does not allow you to exceed the boundaries of the monitor. If you're video is too big to fit on your monitor, you would have to get a bigger monitor.
- Don't use a black background. If you use white text on a white background and mask out the background, the Lanczos scaling will look much better.

Export Menu

Movie

Exports media file as a movie.

iTunes Store Package

Exports media file as an iTunes package.

Current Video Frame

Exports currently selected frame as a picture.

Flags

Exports your flags to a file that can be saved and reopened as needed.

See [Exporting Flags](#).

Inspector Info

Exports your inspector info in TXT or JSON formats.

Window Menu

Minimize

Minimizes the front-most window.

Zoom

Maximizes the front-most window.

Show/Hide Inspector

Shows and hides the Media Inspector window.

Show/Hide Video Scopes

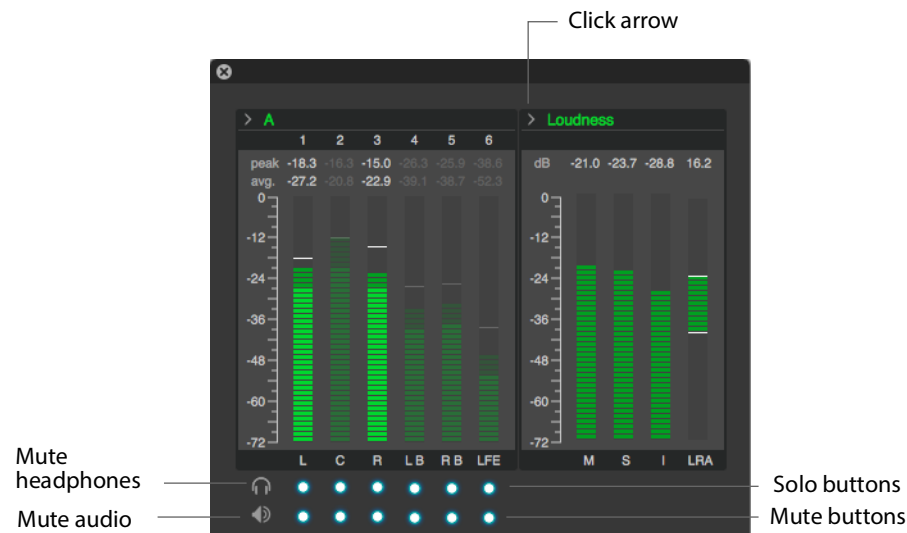
Shows and hides the *Video Scopes* window. Video Scopes are selected in the [View Menu](#).

Show/Hide Audio Meters

Shows and hides the Audio Meters with a scale and levels. If you have a Pro license, when you click the arrow, Switch also displays Loudness. There are four loudness level displays: Momentary, Short-term, Integrated, and Loudness Range.

- To mute headphones or audio, click the mute headphones (monitor) button, or the mute audio button, at the bottom of any track.
- To turn on or turn off one or more level bars in a track, click the Solo or Mute buttons at the bottom of the relevant level bar.

When a level bar solo button is first selected, all other levels are muted. You can then add any or all other level bars by clicking the solo button of each. This works the same way for the Mute buttons, except the action is muting rather than soloing (turning off rather than on). When a level bar is muted, its peak meter display is dimmed but it continues to update with the value it would have were it audible.



Show/Hide Progress Window

Displays the Export Progress window. .

Show/Hide Welcome Screen

Displays or hides the Switch *Welcome* screen.

Available Windows

All open windows are listed at the bottom of this menu. Selecting a listed window makes it the active window.

Help Menu

Search

Enables you to search the help system for any topic or key word.

Switch Help

Opens the online help version of the Switch User Guide.

Switch User Guide

Opens the PDF version of the Switch User Guide.

Buy

Enables you to purchase Switch online.

Report A Problem File

Opens a reporting dialog window. Click *Report* to send a report of your file to the Telestream support team. Click *Cancel* to abort.

Gather Support Information

Gathers support information and enables you to save a file with this information to your Mac desktop. A unique filename is generated. Sending this file to Telestream enables the support team to diagnose any problems you have reported. Click *Reveal* when finished.

Contact Support

Opens the Switch Support page on the Telestream website.

View Switch Website

Opens the Switch Product page on the Telestream website.

Acknowledgments

Opens the Acknowledgments page on the Telestream website.

Windows in Switch

You can control most of the Switch features through the windows in the Switch user interface.

Topics

- [Welcome Screen 72](#)
- [Media Inspector 73](#)
- [Container Tab 74](#)
- [Video Tab 75](#)
- [Audio Tab 77](#)
- [Subtitle Tab 80](#)
- [Time Tab 81](#)
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Welcome Screen

By default, when you launch Switch, Switch opens the *Welcome* screen. Descriptions of the buttons and fields in the *Welcome* screen follow:

Watch Video Introduction

When clicked, Switch opens a video introduction to Switch.

View User Guide

When clicked, Switch opens the Switch User Guide.

Visit Website

When clicked, Switch opens the Switch product page on the Telestream website.

Show welcome screen when all media is closed

When checked, Switch opens the *Welcome* screen at launch, when media files are closed.

Recent Media field

Displays a list of media files opened in Switch most recently.

Clear

When clicked, Switch clears the list of recently-opened media files.

Open Other...

When clicked, Switch opens a browser for finding media files to open.

Cancel

When clicked, Switch cancels the clearing of the *Recent Media* field.

Open

When clicked, Switch opens the selected media file.

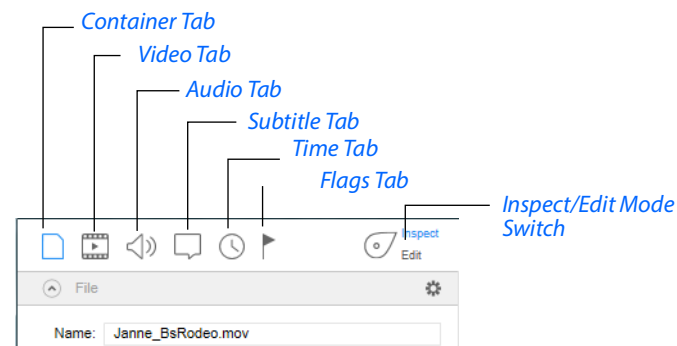
See [Launching Switch](#).

Media Inspector

The *Media Inspector* window enables you to inspect or edit your media files.

See [Opening the Media Player](#)

The *Media Inspector* window has six tabs: *Container*, *Video*, *Audio*, *Subtitles*, *Time*, and *Flags*. There is also a switch that enables you to select either *Inspect* or *Edit* mode.



Common to all six tabs is an *Export* menu at the bottom of the *Media Inspector*. This Export menu has the same menu items as the Switch main export menu.

See [Export Menu](#).

Inspect/Edit Mode Switch

The *Inspect/Edit* mode switch enables you to select either *Inspect* or *Edit* mode. When the switch is in the *Inspect* position, you can view the settings. Also, you can add or edit information such as speaker labels, chapters, and flags; but you can't edit the settings. When the switch is in *Edit* mode, you can edit the settings. You can export your media in either mode.

Container Tab

The *Container* tab provides a way to inspect and edit the container for your media including information such as: name, location, size, type.

See [Opening the Container Tab](#).

File Pane

Name

Displays the filename in the source file of your media, and is not editable. (You can change the name of the file when exporting.)

Directory

Displays the location of your media file, and is not editable.

Size

Displays the size of the media file, and is not editable.

Type

Select the container type by clicking on the double arrow and selecting a type from the menu: MXF, MOV, MP4, TS, MPEG, TIFO, and WMV.

Duration

Displays the duration of the media file (when known).

Created

Displays the date when your media file was created.

Modified

Displays the date when your media file was last modified.

Metadata and Secondary Audio/Subtitles Pane

Plus (+) icon

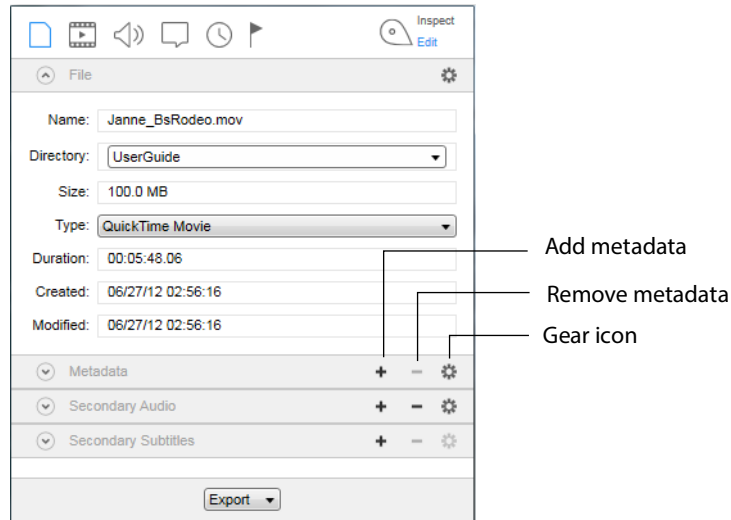
Adds available metadata (Album, Artist, Director, Year, etc).

Minus (-) icon

Removes available metadata (Album, Artist, Director, Year, etc).

Gear icon

Opens the metadata URL to display the metadata in HTML or XML format.



See [Adding Metadata and Secondary Audio/Subtitles](#).

Video Tab

The *Video* tab provides controls for the video portion of your media. This includes video format, size, and rate.

Video Pane

Format

Displays the current video format used. When in transcode mode you can change the format by making a selection from the drop-down menu: H.264, H.262, WMV and ProRes.

Bit Rate

Displays the video bit rate (when available).

Bit Depth

Displays the video bit depth (when available).

Chroma Subsampling

Displays the chrominance sub-sampling ratio.

Color Space

Select a color space from the *Color Space* drop-down menu. Then click the arrow to open the color space controls. Your choice of color space automatically populates *Color Primaries*, *Matrix Coefficients*, and *Transfer Characteristics*. However, you can set these manually using pull-down menus.

Note: If you change any of the control settings so that they do not match a known color space, Switch changes the *Color Space* display type to *Unknown*.

Range

Displays the range value.

Alpha Channel

Displays *Yes* if the media file contains an alpha channel, and *No* if it doesn't.

Language

Select a language to use in metadata from the drop-down menu.

Duration

Displays the time duration of the video.

Rate

Displays the video rate in FPS (frames per second).

Note: Frame rate changes (beyond those supported as part of deinterlacing) should be made outside of Switch.

Encoded Size

Displays the encoded media file and the pixel dimensions of the video in the file.

Clean Aperture

To set Clean Aperture, click the down arrow on the Clean Aperture menu. Enter the desired size in the *Size* fields, or enter *Left*, *Right*, *Top*, and *Bottom* aperture settings.

Aspect Ratio

Click the down arrow to open the *Aspect Ratio* control panel. Select the aspect ratio type (PAR or DAR) from the *Type* menu. Select also an aspect ratio from the *Aspect Ratio* menu list.

Display Size

Displays the size (resolution) of the video after crop, resize, etc. are applied.

Contradictory-Data Alerts in the Video Pane

Sometimes video files store the same data in multiple places, and sometimes the data in one place doesn't agree with the data in the other. For example, the Alpha Channel data in the container might say that the video has no alpha channel, while the data in the video essence says the video does have an alpha channel. In such cases, Switch

flags the relevant data field in the Inspector Video tab with an alert icon .

See [Viewing Contradictory-Data Details](#).

Video Properties Pane

ProRes Encoder

Displays the name of the ProRes encoder.

Alpha Channel

Displays *true* if the asset has an alpha channel, and *false* if it doesn't

MPEG-4 Compressor Name

Displays the name of the MPEG-4 compressor.

dimension

Displays the width and height of the asset, in pixels.

See [Opening the Video Tab](#).

Export Drop-Down Menu

When clicked Switch opens a menu of possible assets to export, including Movie, iTunes Store Package, Current Video Frame, Flags, and Inspector Info.

Audio Tab

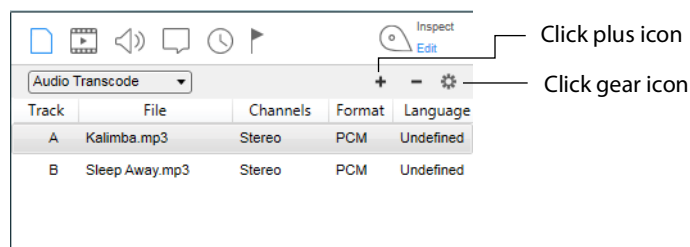
The *Audio* tab enables you to inspect and edit the audio portion of your media. This includes channel, format, bitrate, and duration. To access the *Audio* tab, open the *Media Inspector* by selecting *Window > Show Inspector*, then click the *Audio* tab. Alternatively, you can select *Inspect > Audio*.

Audio Transcode/Audio Pass-Through

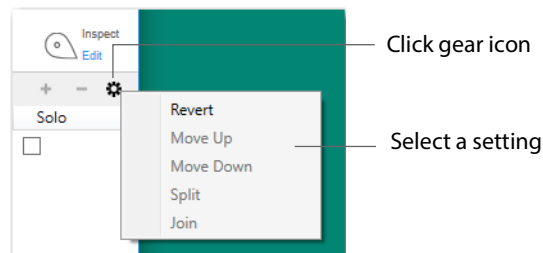
You can select *Audio Transcode* (use transcoder) or *Audio Pass-Through* (do not use transcoder) by selecting one of these from the pull-down menu.

Note: When exporting to an iTunes Store Package, if you have selected *Feature* for the Asset Type, secondary audio files are included in the exported iTunes package. If *Preview* is selected as the Asset Type, the audio files are not included in the exported iTunes package.

Click the plus icon to add a track. (Click minus icon to delete a selected track.)



Click the gear icon to display the settings menu.



Revert

Reverts audio settings to their original values. This action cannot be undone.

Move Up/Down

After selecting an audio track, you can move it up or down in the list.

Note: The order of audio tracks in the list reflect the order of the tracks in the source file when in *inspect* mode, and the order of the tracks in any export files when in *Edit* mode.

Split/Join

Selecting *Split* divides a multi-channel track into multiple audio tracks, each containing a single channel of audio. Highlighting multiple tracks, then selecting *Join*, merges them into a single track containing all of the selected channels.

Note: When creating a *Feature* iTunes package using *Audio Pass-Through*, the secondary audio files will be added separately from the primary asset. When creating a *Preview* iTunes package, secondary audio files will be ignored when using *Audio Pass-Through* mode.

Click a track to edit its settings.

Program

Select a type of audio configuration from the *Program* pull-down menu. Click also the down arrow on the right to display channel settings. For some channel selections, you can also change the speaker name. To do this, click on the current speaker name and then select a new name from the displayed list.

Format

Select an audio codec from the pull-down menu: Linear PCM (LPCM), AAC-LC, MPEG Layer 2, or Windows Media Audio (WMA).

Click the down arrow on the right of the drop-down menu, and select the format type. Also select *Big* or *Small Endian*.

Bit Rate

Displays the audio bit rate.

Sample Rate

Select a sample audio rate from the Sample Rate menu: 44.1Khz or 48Khz.

Language

Select the language to use in metadata.

Duration

Displays the time duration of the audio.

Audio Track Display

The Switch audio track display shows as many as 64 audio tracks. Switch displays the channels in the order in which they appear in the file or bitstream. This may differ from the channel order displayed by other applications or Windows.

Program

Displays the type of audio program, for example, *stereo*. When clicked, the down arrow to the right of the *Program* field opens a pane of the fields described as follows:

Format

Displays audio codec used.

Bit Rate

Displays the audio bit rate.

Sample Rate

Displays the sample audio rate.

Language

Displays the language used in on-screen test, such as text in graphics, lower-thirds, credits, and burned-in subtitles.

Duration

Displays the time duration of the audio.

Note: The order of audio tracks in the list reflect the order of the tracks in the source file when in *inspect* mode, and the order of the tracks in any export files when in *Edit* mode.

See [Setting Audio Track Options](#).

Subtitle Tab

The *Subtitle* tab enables you to inspect and edit the subtitling in your media.

Add *Subtitle* files by opening them from the *File > Open Secondary Subtitle File* menu. Once opened it is associated with the currently open primary video file. When the subtitle file displays in the subtitle tab list, select it to display its controls.

To access the *Subtitle* tab, open the *Media Inspector* by selecting *Window > Show Inspector*, then click the *Subtitle* tab. Alternatively, you can select *Inspect > Subtitles*.

Format

Displays the type of subtitling used in your media.

Language

Select which language the subtitles are written in from the Language drop-down menu.

Timecode Format

To interpret the display time of the subtitles, select a timecode format from the menu. You can change the timecode format only for SCC, SRT, LambdaCAP, or VTT files.

Start

Displays the start time of SCC subtitles. This field allows you to re-synchronize some subtitles with the video by adjusting the start timecode. You can re-synchronize the following file types: PAC, MCC, STL, TTML, and DFXP.

Duration

Displays the time duration of the subtitles.

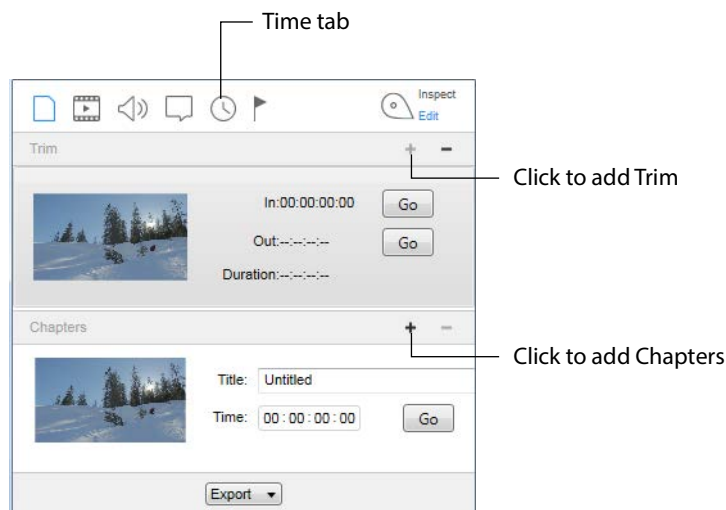
Other

Displays metadata.

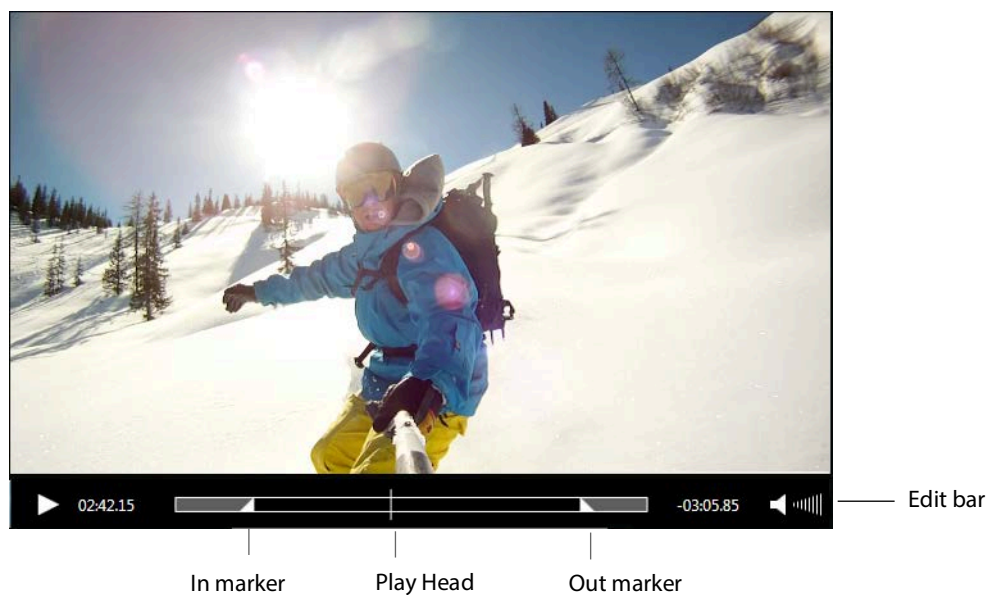
See [Opening the Subtitle Tab](#) and [Opening a Subtitle File](#).

Time Tab

The *Time* tab provides controls for setting the trimming and chapter markers. This includes timing controls (In, Out, and Length) and chapter controls.

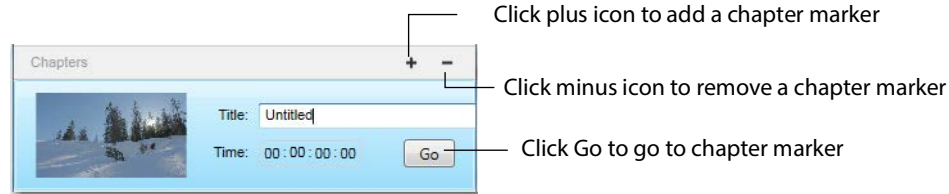


Trim Lets you choose where a video clip begins and ends by setting trim points. The time format is: hours, minutes, seconds, fractional seconds (hh:mm:ss:fs).



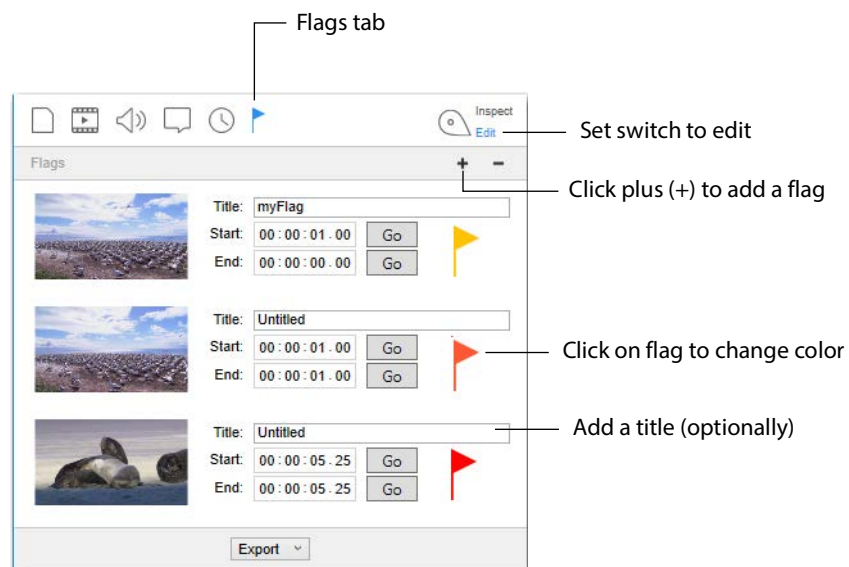
Note: *Cut, Copy, Paste, Delete, and Select All* can be used to edit fields in *Edit* boxes.

Chapters Enables you to create entry points (chapters) in your media.



Flags Tab

The *Flags* tab enables you to edit the flags stored in FLAGS files.



Flags

Lets you flag start and end points in your video for the placement of captions. Switch displays the flag time in any of these formats: frame count, timecode, or HH:MM:SS:FS (fractional seconds).

- To set the start or end point of the flagged section of your video, enter the time and click the *Go* button. Alternatively, you can title a flag by entering a title into the *Title* field.

Details

This field is for a description of the flag longer than can fit in the *Title* field.

See [Opening the Flags Tab](#).

Acknowledgments

Portions of this software may use copyrighted material, the use of which is hereby acknowledged:

Matt Gemmell Includes MAAttachedWindow code by Matt Gemmell.

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