



USING STITCH AND TRIM WITH VANTAGE

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Synopsis

File stitching in Vantage is a powerful, interactive option which provides an easy way to submit a job with multiple input files to a workflow which produces a single output file – effectively, *stitching* multiple files together into a single file. Alternatively, the same task can be accomplished by providing an XML file to Vantage.

Stitching enables an operator to review each clip and optionally select mark-in and mark-out points, creating a list of media segments which can be stitched together, then output in the same or completely different format, all in a single automated job process.

Stitching can only be performed on files of the following file format:

- VOD/MPEG2 Transport Stream
- MPEG2 Program Stream
- MXF OP1A with Mpeg2 video essences (SD and HD, I-Frame and Long GOP) & PCM audio
- MXF OP1A with DV essences (SD only) and PCM audio

Note: *The above two MXF formats will be available in the near future. Contact your Telestream representative for availability.*

Stitching operates, effectively, only on input media with the these characteristics:

- The same frame size
- The same frame rate
- The same number of audio channels

Note: *If your input files are in different formats you can use additional encoders in your workflow to make them all compliant.*

Stitching is ideal for removing black sections, extracting sub-clips, stitching program segments together, or adding sponsorship in the middle of a clip. You can use stitching for adding bumpers or trailers (or both) without resorting to a non-linear editor (NLE). A typical application is to create a thirty-minute program with a bumper, three segments with ads, and a trailer, by submitting them to a workflow that combines them and produces an MPEG2 production output file. There are many other applications, as well.

The actual stitching occurs during a transcode. When stitching files, Vantage supports either essence re-wrapping, or full transcoding; both require using an Encode action in the Vantage workflow.

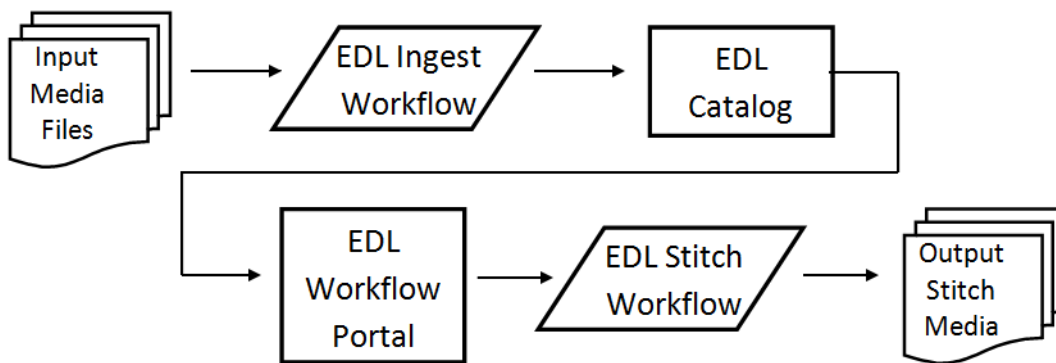
With essence re-wrapping, Vantage does not decode the original video essence but, instead, only preserves frames necessary to create the output file. With long-GOP material, Vantage automatically creates new GOPs if any of the original GOPs were broken, otherwise the original video essences are stitched without re-encoding. This is an extremely fast operation that does not degrade video quality. To accomplish this, the stitching instructions are passed to a Vantage Encode using a Direct Convert MPEG-2 option. For example, three SD MPEG-2 files can be stitched with their original video essences entirely preserved, with new frames encoded only at stitch points as needed to repair broken GOPs.

Alternatively, Vantage can stitch the input files and use the result as an input to a full transcode. This allows you to create any output format supported by Vantage by passing the stitching instructions directly to an Encode action. The instructions are effectively treated like any other media file and are transcoded accordingly. For example, three SD MPEG-2 files can be stitched, and the result directly encoded to a Windows Media output format.

Vantage provides two methods of stitching files together. One method uses Workflow Portal, a client application that provides operators with a portal to Vantage workflows. The other method directly submits EDL formatted XML files, triggering a fully automated stitching process. Both of these methods are presented in this app note.

Workflow Portal Method

Using the Workflow Portal to do file stitching requires you to create two workflows: one to ingest the input media files, the other to stitch these files together. The stitching process is controlled through the Workflow Portal where an operator obtains media clips from an EDL catalog (created using the Vantage Management Console), trims the clips as required, and forwards the resulting EDL to the Stitch workflow:



XML File Method

EDL's can also be submitted directly to be automatically processed without an operator. This is accomplished by creating an EDL formatted XML file with an extension type of `.tsedl`. This XML file is submitted as an input media file to a folder monitored by a Vantage EDL stitching workflow:



Note: This app note assumes that you know how to create and configure workflows in Vantage and that you know how to submit jobs. If you don't know how to configure workflows or manually submit jobs, please review the *Vantage User's Guide* for details.

Regarding Timecodes

The *.tsedl* file format enables you to set the starting timecode by placing a timecode block in the *.tsedl* file (see [Stitching Files Using the XML File Method on page 14](#)). This starting timecode is used to override any timecode in the source files. The start timecode value is used and then incremented throughout the file.

If a timecode is not overridden, the EDL decoder passes the timecode from the source files to the output. This means that discontinuities are most likely exist. If gaps are present in the output file, the start timecode of each gap section is set at 00:00:00:00.

If the target output format does not support timecode discontinuities, then the first file starting timecode is used as the starting timecode for the output file.

Regarding VBI, VANC and Captions.

VBI, VANC and Captions are passed through from the source files to the output files.

Gaps are spaces between files that should be specified in the *.tsedl* file. During a gap, the EDL decoder generates black video frames, silent audio data, and some form of blanking data: timecodes, captions, VANC, and VBI atoms.

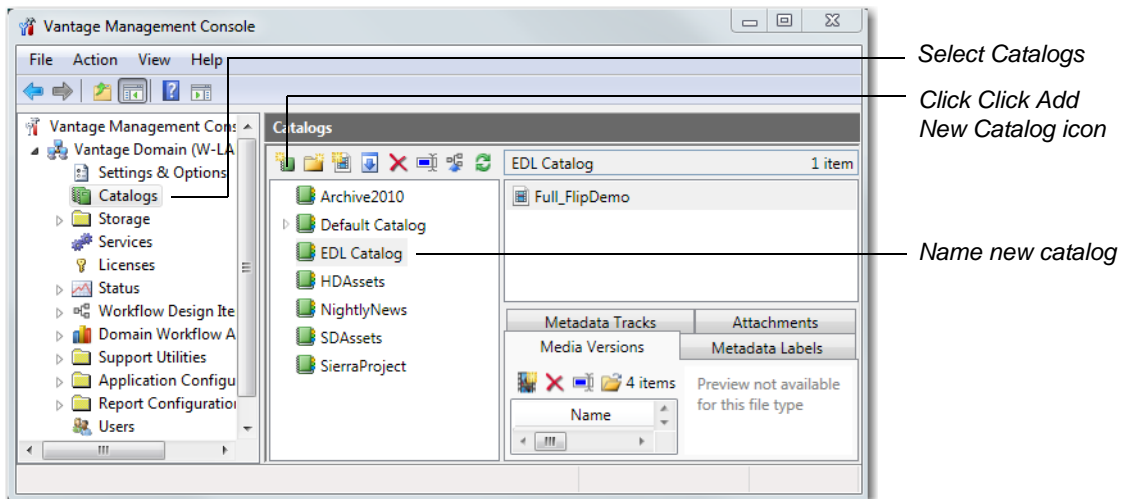
During gaps in the EDL an empty VANC payload is passed down the graph. If the format is NTSC, a NULL caption packet is also produced. If the source has VBI lines (SD material only) blank or black VBI data is produced. If the sources are NTSC, NULL closed caption lines are synthesized on to line 21 in field 1 and field 2.

Stitching Files Using the Workflow Portal Method

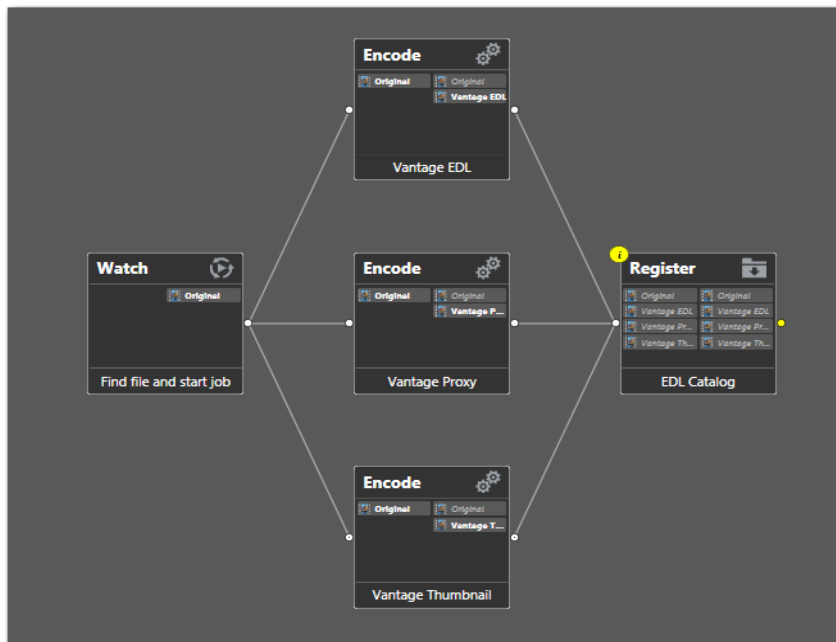
1. Create an EDL Ingest Workflow

To create and configure workflows that ingest, encode, and register EDL files, follow these steps:

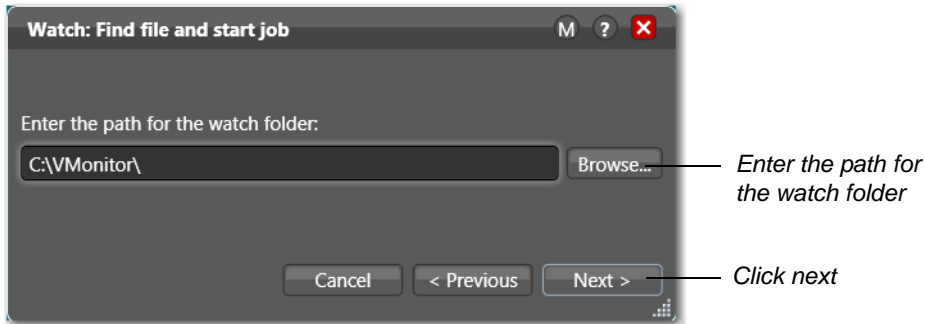
1. Open the Vantage Management Console, select Catalogs, and click the Add New Catalog icon. Name the new catalog EDL Catalog. This creates a new catalog where the Register action can store the workflow output:



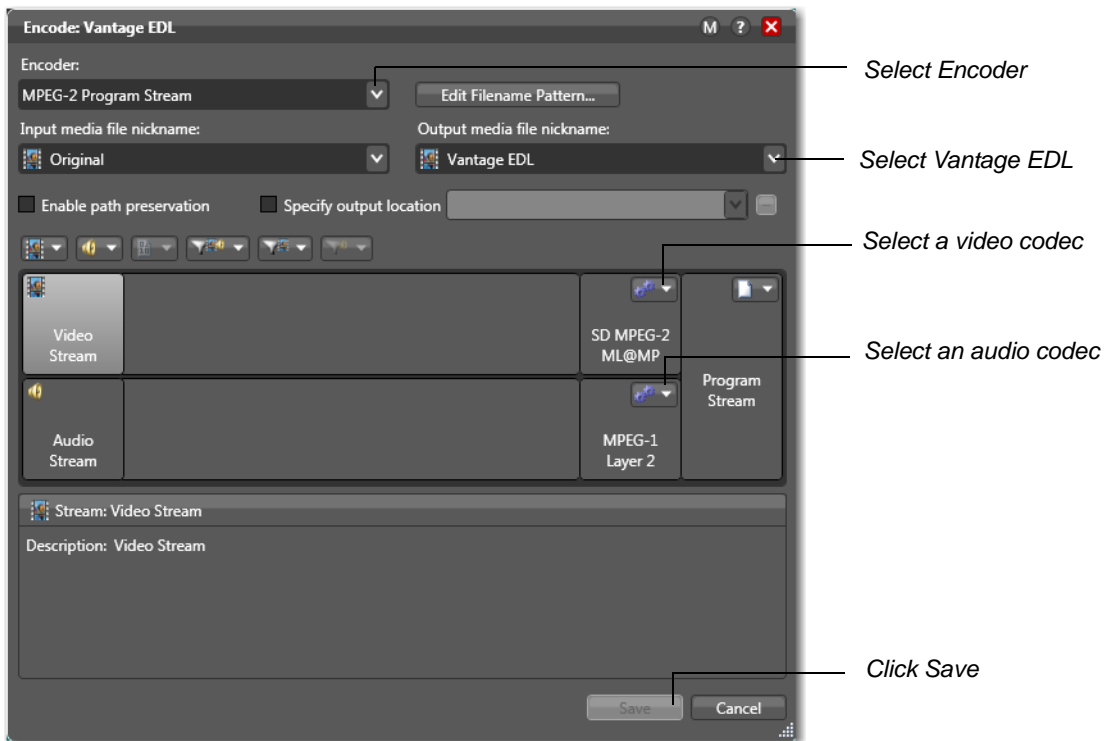
2. Create a Vantage workflow with five actions: Watch, three Encodes, and Register. The Watch action enables automatic submission of input files and submits a job. The three Encode actions create three different types of output files, all required to perform stitch and trim functionality. The Register action registers the content in the EDL catalog:



- To configure the Watch action, double-click it to open its inspector. Navigate through the inspector panels to select *Any Media* and *Windows File System*, then enter the path for the watch folder and click Next:

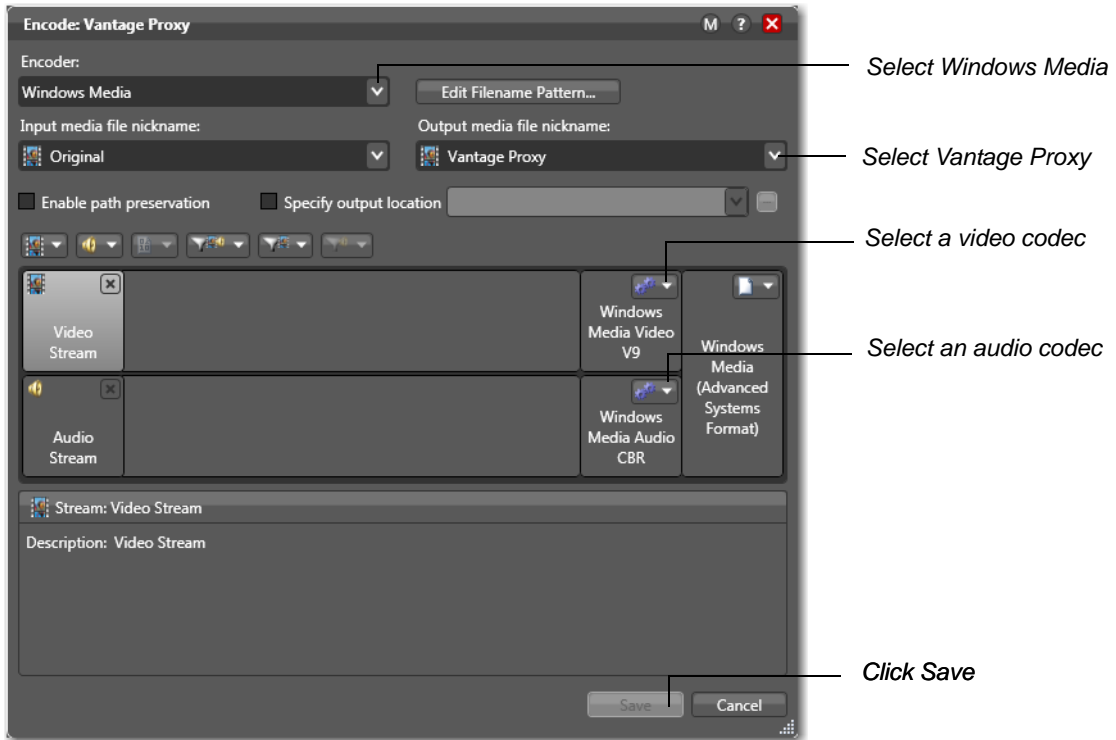


- The first Encode action ensures that content to be stitched is in a compatible format. To configure this encoder, double-click it to open its inspector. There are two source formats supported by the EDL decoder: *MPEG-2 Program Stream* and *VOD / MPEG-2 Transport Stream*. Select one of these two formats from the Encoder drop-down menu. Select *Vantage EDL* for the output media file nickname. Select a video codec (or Direct Convert) and an audio codec, then configure each as required. Click Save to save your settings:

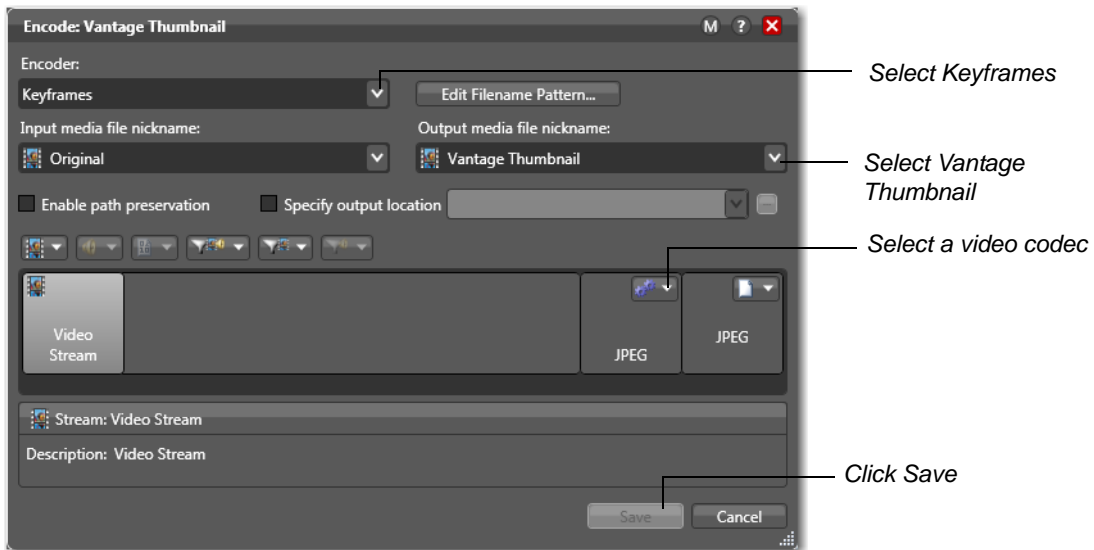


Note: If the input media files do not need to be transcoded (they are already in an acceptable format), you can use a Copy action in place of this encode action. If your input files are already supported for Stitching, you do not need to encode them, just set their nickname to Vantage EDL. However, you should also perform an Identify of Media Properties on those files prior to registering them in the catalog. This adds a summary of the media to the binder, so that the Workflow Portal knows the frame size and frame rate of the media. It is best if you create a proxy and a thumbnail in your workflow.

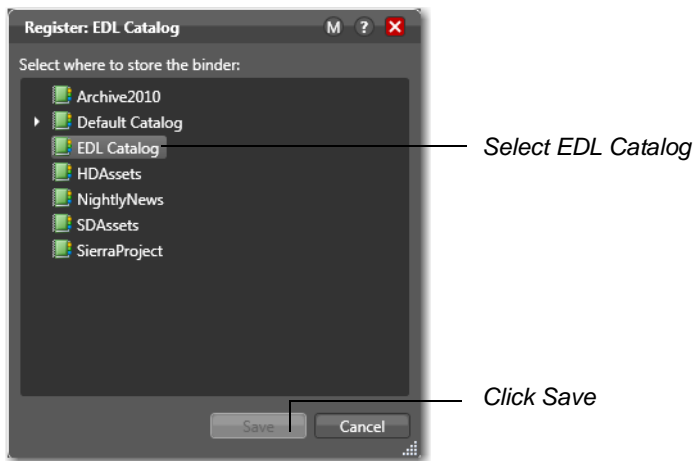
- The second Encode action creates a proxy for the Workflow Portal to preview. To configure this encoder, double-click it to open its inspector. The Workflow Portal uses this proxy preview to create mark-in and mark-out points for the EDL decoder in the stitch workflow. Select *Windows Media* from the Encoder drop-down menu and select *Vantage Proxy* as the output media file nickname. Select video and audio codecs as required. Ensure that the video framerate matches the framerate of the Vantage EDL file. Click Save to save your settings:



- The third Encode action generates a thumbnail for the Workflow Portal catalog. To configure this encoder, double-click it to open its inspector. Select *Keyframes* from the Encoder drop-down menu, select *Vantage Thumbnail* for the output media file nickname, and select a video codec as required. Click Save to save your settings:



7. The Register action converges the outputs of all three encoders into a catalog which holds a reference to the location of the files where the Workflow Portal can then direct them to the stitch workflow. To configure the Register action, double-click it to open its inspector. Select *EDL Catalog* from the list of catalogs. Click Save to save your settings:

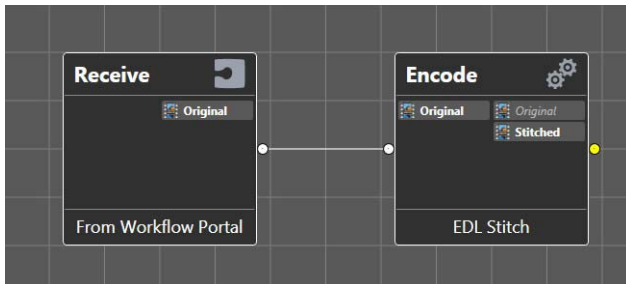


8. submit input media files and activate this workflow to make its out available for use by the Workflow Portal.

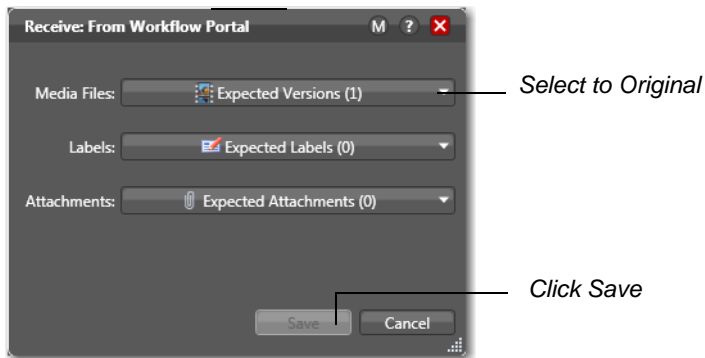
2. Create an EDL Stitch Workflow

To create and configure workflows that stitch files together, follow these steps:

1. Create a Vantage workflow with two actions: Receive and Encode. The Receive action receives the EDL forwarded from the Workflow Portal. The Encode action performs the file stitching:

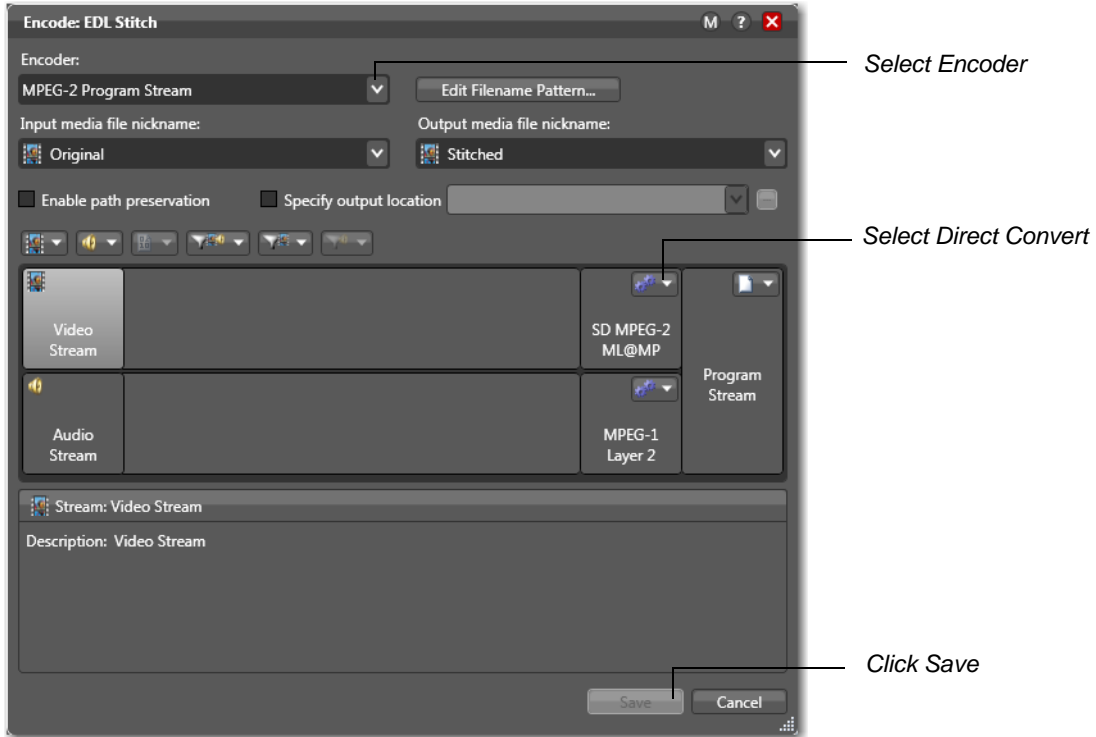


2. To configure the Receive action, double-click it to open its inspector and select *Original* from the Media Files drop-down menu. The Click Save to save your settings:



Note: Though *Original* is selected from the Media Files drop-down menu, Expected Versions (1) is displayed indicating that all expected nickname files are received.

- The Encode action stitches the clips listed in the EDL file forwarded from the Workflow Portal. To configure this encoder, double-click it to open its inspector. Select an encoder from the Encoder drop-down menu. For a full transcode stitch, any encoder can be used. For a direct convert stitch (essence re-wrapping), use *MPEG-2 Program Stream* or *VOD / MPEG-2 Transport Stream* and set the profile to *Direct Convert*.

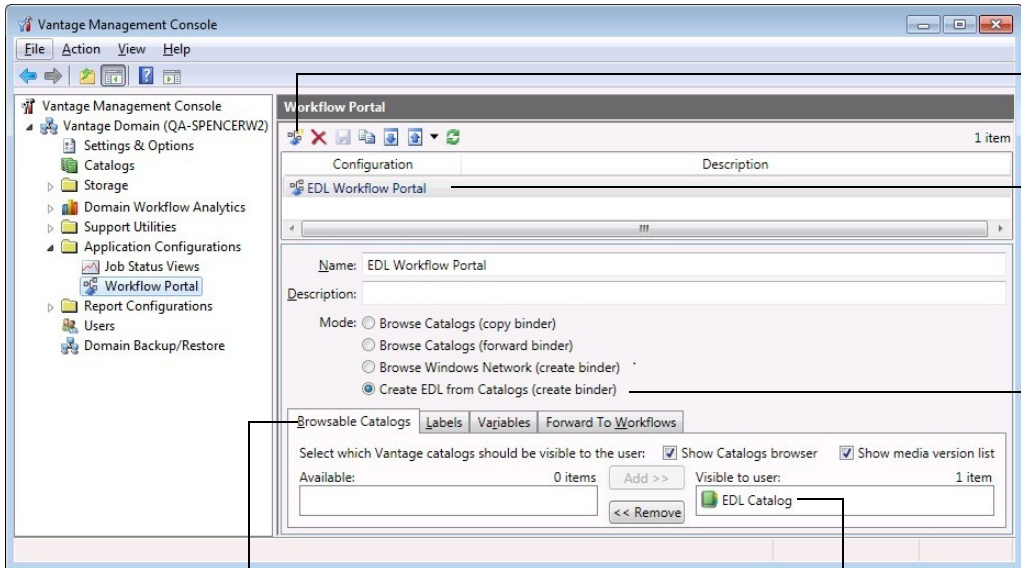


- Activate this workflow to make it available for use by the Workflow Portal during a stitch operation.

3. Create an EDL Workflow Portal Configuration

To create an EDL Workflow Portal configuration, follow these steps:

1. Open Vantage Management Console. Select *Application Configurations > Workflow Portal*. Click the *Create New Configuration* button and name the configuration *EDL Workflow Portal*. Select *Create EDL from Catalogs*. Select the *Browsable Catalogs* tab and add *EDL Catalog* to the *Visible To User* list:



Click *Create New* button

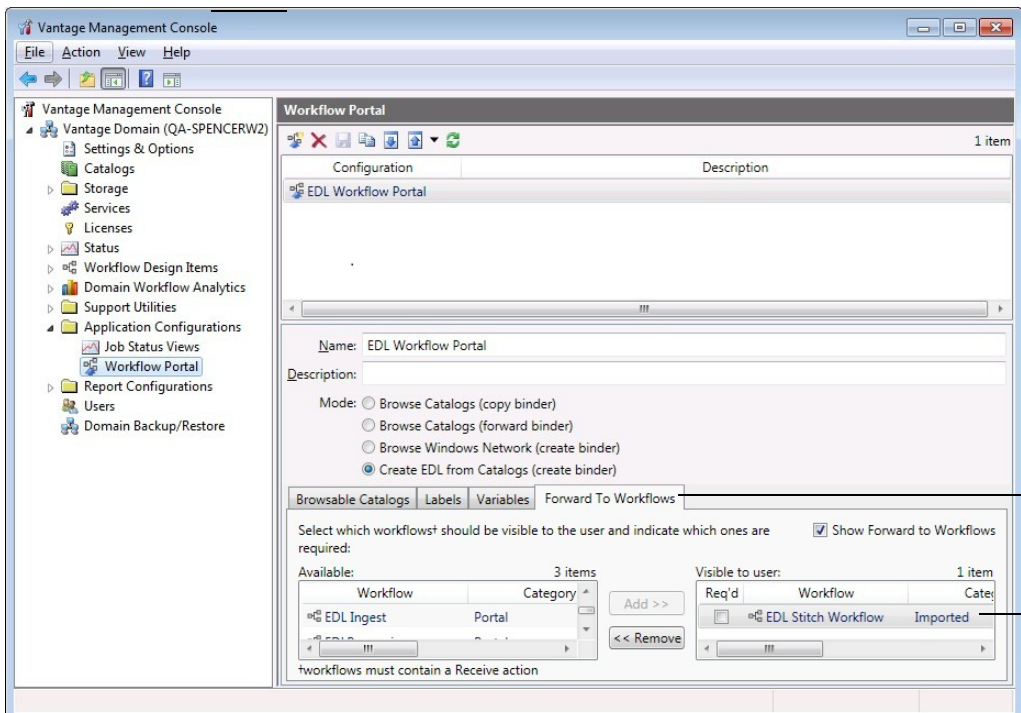
Rename configuration

Select *Create EDL From Catalog*

Select the *Browsable Catalogs* tab

Add the *EDL catalog*

2. Click the *Forward To Workflows* tab and add the *EDL Stitch Workflow* to the *Visible To User* list. Click the *Save* icon at the top of the window to save settings:



Click *Forward To Workflows*

Add *EDL Stitch Workflow*

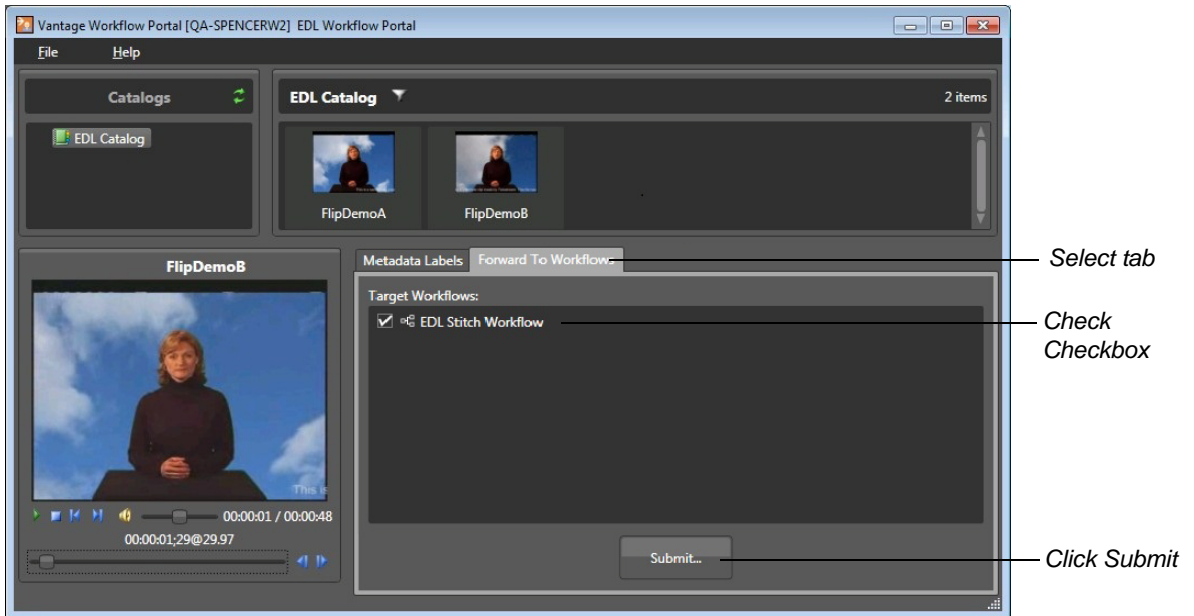
4. Create an EDL File in Workflow Portal

To create an EDL in Workflow Portal, follow these steps:

1. Open Vantage Workflow Portal using the *EDL Workflow Portal* configuration created above.
2. . Select *EDL Catalog* from the Catalogs list. Select the *Create EDL* tab and use the plus (+) button to add clips from the EDL Catalog display. Optionally, create *Mark In* and *Mark Out* points in each clip. The preview display on the left side of the window can also be used to create mark in and out points. This is accomplished by finding a desired in/out point on the time-line and clicking the appropriate *Mark* button:



- When you have finished creating the EDL, click the *Forward To Workflows* tab. Check the *EDL Stitch Workflow* check-box and click the *Submit* button:



Once submitted, the Workflow Portal forwards the EDL to the activated Stitch Workflow where the files are stitched into one output file.

Stitching Files Using the XML File Method

Alternative to using the Workflow Portal to manually create stitching instructions, an XML file can be submitted directly to a Vantage workflow as a *.tsedl* file type. This XML file is formatted as an EDL and submitted as an input media file to the Vantage stitching workflow.

Note: *The EDL format uses the mark-in and mark-out frame number values to stitch the files together. The time codes are for reference only.*

Listed below is an example EDL XML file. Note the use of mark-in and mark-out frame number values (underlined) that are used to determine stitching locations in the media files. The timecode start time is double-underlined:

```
<?xml version="1.0" encoding="utf-8"?>
<VantagePlayList>
  <Name>Basketball_Highlight_Clip</Name>
    <File uuid="b54173d5-e491-4332-8141-c6a5c43348ee"
      path="C:\program files\telestream\vantage\Store\5743f968-b2d3-4499-b884-
      a8231dca14eb\Basketball_Highlight_Clip.SD.mpg" />
    <File uuid="157a61ff-f318-4979-9405-a57b4bab40e3"
      path="C:\program files\telestream\vantage\Store\2f16e941-b368-4cb3-9ea-
      2c6e3426997b\NBT Textless Open H.264.mpg" />
    <File uuid="17e1e292-4d88-4aac-91ff-7c9af865f7cc"
      path="C:\program files\telestream\vantage\Store\b9decd63-e1fd-4a5c-9005-
      30f39497c23b\UPBJ3010-VELA-422-425.SD.mpg" />
  <EDL>
    <Timecode name="Start Timecode Override" type="time">00:31:24:09</Timecode>
    <Edit type="file" sequence="0"
      timecode_in="00:00:00;00@29.97" timecode_out="00:00:12;06@29.97"
      markin="0" markout="366" file="b54173d5-e491-4332-8141-c6a5c43348ee" />
    <Edit type="file" sequence="1"
      timecode_in="00:00:00;00@29.97" timecode_out="00:00:12;06@29.97"
      markin="0" markout="366" file="157a61ff-f318-4979-9405-a57b4bab40e3" />
    <Edit type="file" sequence="2"
      timecode_in="00:00:00;00@29.97" timecode_out="00:00:34;27@29.97"
      markin="0" markout="1047" file="17e1e292-4d88-4aac-91ff-7c9af865f7cc" />
  </EDL>
</VantagePlayList>
```

To use an XML EDL file, create a stitching workflow in Vantage (see [Creating an EDL Stitch Workflow on page 8](#)) and submit the EDL XML file as an input media file. The workflow produces a stitched file according to the mark in and out points determined in the XML EDL input file.

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