



Tempo  
User Guide



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## Tempo User Guide

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For Vantage 8.0 + UP1 + Tempo ComponentPac 8.0.1

For Vantage Cloud Port + Tempo Update Patch 8.0.345.23



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# Introduction to Tempo

This guide provides an overview of Tempo, implemented in Vantage. Use this guide to learn how to install and configure Tempo and create Tempo ingest and publication workflows. You'll also learn how to use Tempo Portal to select and segment an asset and configure it for re-timing, then submit it to a Tempo publication workflow for processing.

## Topics

- [What Is Tempo?](#)
- [How Does Tempo Work?](#)

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**Note:** This guide is written for video professionals who are familiar with Vantage. To use Tempo effectively, you should know how to create workflows and submit jobs in Vantage, and you should be familiar with the basic operation of Workflow Portal. If you aren't familiar with Vantage, we suggest that you read the Vantage User Guide and Vantage Domain Management Guide. If you aren't familiar with Workflow Portal, please read the Using Workflow Portal chapter in the Vantage User Guide.

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## What Is Tempo?

Vantage™ Tempo™ is a software solution designed specifically for re-timing video assets—intelligently decreasing or increasing their running time. Tempo can shorten or lengthen an asset's running time up to ten percent, without noticeable loss of video or audio quality.

Using sophisticated time compression algorithms, Tempo can re-time an entire asset or specific segments you identify—to deliver superior quality and faster turn-around times. Instead of throwing away frames as other technologies do, Tempo intelligently interpolates the time change over the content duration, resulting in pristine output with no noticeable visible or audible artifacts.

Tempo is implemented using the Telestream Media Framework in Vantage. Tempo connects seamlessly to other Vantage or third-party systems to create a powerful automated re-timing application—all under unified system control.

# How Does Tempo Work?

The following topics describe briefly how Tempo works. This information gives you the background you need to understand Tempo workflows and to use the Tempo Portal.

## Topics

- [Tempo Workflows](#)
- [Tempo Portal](#)
- [Video Processing Details](#)
- [Audio Processing](#)
- [Captions Processing](#)
- [Video Format Support](#)

## Tempo Workflows

Tempo is an operator-intervention application. The simplest Tempo applications use two media re-timing workflows: an ingest workflow, and a publication workflow.

The ingest workflow ingests source media, processes it to extract metadata as needed for Tempo processing requirements, produces a proxy file and a metadata label, and registers all of these resources in a binder in the Vantage catalog for later use. The ingest workflow can optionally analyze the source for black and slate/spot/color bars segments, as well as scene changes, reducing operator effort by automatically creating those segments.

For each source being re-timed, an operator uses Tempo Portal (described below) to scrub the proxy and create or adjust segments, review and edit metadata, configure how Tempo should process the asset, and submit it to a publishing workflow for processing.

The publishing workflow ingests Tempo processing requirements specified by the operator for this asset along with metadata, and adjusts and transcodes the source media into a production-ready, re-timed asset for VOD or broadcast.

Alternatively, the Tempo Two Pass feature allows you to process media in multiple passes through two workflow stages to achieve very high quality re-timing results. The first stage workflow identifies segments that may not respond well to re-timing. You can then modify your processing choices for those segments and put the media through the second stage publishing workflow. This produces the best possible quality in the final output.

## Tempo Portal

In Tempo Portal, an operator selects a binder of media to process, from a catalog of assets that have been processed through the ingest workflow. The operator scrubs the proxy and creates segments (optionally starting with automatically generated

segments) for re-timing; setting segment details and other re-timing options; reviews and updates metadata and graphic settings.

As the operator works, behind the scenes a Composition file is created and updated to capture each segment and its processing instructions. Then, the operator forwards the asset and processing requirements (via the composition file) to a publishing workflow for re-timing during production transcoding.

## Video Processing Details

The Composition file auto-generated by Tempo Portal (or programmed externally) describes the segmentation of the source program and specifies the re-timing parameters to apply to each segment, along with all other required specifications. When submitted to a Tempo workflow, the source asset file (also identified in the Composition) is processed according to these specifications.

Video re-timing is performed by the Tempo action. In Workflow Designer, the Tempo action is part of the Edit group, executed by the Vantage Edit service, which is an optional, licensed feature of Vantage.

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**Note:** In Vantage 8.0 UP1 with Tempo ComponentPac 8.0.1 and Vantage 8.0 Tempo Update Patch 8.0.345.23, the Tempo action is implemented in Telestream Cloud. Refer to the *Vantage Cloud Port User Guide* for details about using the Tempo action and other Vantage actions in Telestream Cloud.

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The Tempo action's processing of a given source asset is guided by the Composition that was submitted, along with the Tempo action settings. It transcodes the source media from one format to another, re-timing the asset simultaneously, and supplies the streams to the Output component.

During audio transcoding, various processing may be applied. Audio may be re-sampled, or channels may be remapped. For video, filters can also be applied as it is being transcoded. The Tempo action includes several common video and audio codecs selected using the Transcoder menu.

The Output component you select in the Tempo action specifies the types of media files that can be generated

Tempo begins the re-timing process by analyzing each frame or interpolated frame and predicting which can be adjusted for time compensation. Then it applies the re-timing over the duration of the content, or to the segments you identify for re-timing. Since the entire file (or segment) is analyzed to determine the best candidate frames for adjustment, the desired time compression is applied longitudinally rather than at random intervals.

The source media file can include one video track and up to 32 audio tracks.

Timecode propagation is supported in TIFO and QuickTime containers, but not in Program Stream or MP4 containers. If you plan to use the general purpose Flip action in your workflow, the TIFO format is recommended.

Tempo also supports closed captioning, content advisory, Active Format Description, and copy generation management (CGMS-A).

The re-timed output video file may be ready for distribution or you can further process it with a Flip, Flip64, Multiscreen, or IPTV VOD action for further transcoding and packaging into another format prior to distribution. Supported audio and video input and output formats are listed on the Tempo data sheet, available on the Telestream web site.

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**Note:** Tempo can't change the fundamental metrics of the video such as frame size or frame rate. To do that, create an additional workflow (or transcoding action in the same workflow) to convert the re-timed media to your final specifications.

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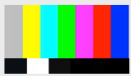





## How Segmentation Works

Tempo changes are applied to either the entire duration of an asset or to individual segments within the asset, which you can specify. The asset is re-timed according to your instructions to create the output file. By default the asset consists of a single segment spanning the entire duration of the source. Optionally, black and slate/spot/color bars segments may be generated automatically, via the segment analysis report.

Operators scrub the proxy, adding new segments and validating auto-generated ones.

Segmentation identifies sections of the file that are eligible or ineligible for changing the tempo. A section may be considered ineligible if any of these criteria apply:

- A tempo change is not required (for example, bars, slate, etc.)
- A tempo change is not permissible (for example, barter spots).
- A tempo change would introduce unacceptable artifacts.

					
Leader 00:58:00:00	Act1 01:00:00:00	Open 01:01:11:00	Act2 01:06:38:00	Act3 01:14:37:00	Close 01:19:59:00

Segmentation allows the target file to contain a subset of the source file. This capability allows a segment to be excluded (for example, to remove an existing commercial) or inserted (such as to replace a texted shot with a textless version).

Segmentation also identifies which sections of the file contribute to the source program duration. Tempo changes are then applied to each eligible segment in order to achieve the target program duration. Re-timing target percentages can be specified separately for specific segments and for the total file. This allows you to limit re-timing on sensitive segments or apply greater re-timing to non-crucial segments.

The target program duration may be specified as either an absolute value (such as 00:30:00:00) or a value relative to the source duration (such as +/- 00:01:00).

## Audio Processing

Tempo performs compression operations on audio with equivalent timing for the video. Pitch correction, which is enabled by default, is applied using a special synchronous technique that preserves the original sound pitch. You can turn off pitch correction for an entire job or segment by segment.

## Captions Processing

Caption data (608 and 708) is redistributed to maintain the original presentation times without exceeding bandwidth limitations. Tempo also supports captioning in SCC and STL files.

## Video Format Support

Tempo supports many input and output formats and wrappers. For a list, consult the Vantage Transcode [encode](#) and [decode](#) format sheets on the [Telestream.net](https://www.telestream.net) web site.



# Configuring Tempo Resources

This chapter explains how to configure a Vantage domain to implement a Tempo-based re-timing application.

Complete these tasks to get Tempo up and running:

- [Installing Tempo](#)
- [Licensing Tempo](#)
- [Configuring Tempo](#)
- [Creating Tempo Portal Configurations](#)
- [Deploying Portals on Client Workstations](#)

When you've completed these tasks, create at least two Tempo workflows: an ingest workflow and a publication workflow. See [Tempo Workflows](#) for examples and guidance.

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**Note:** This chapter guides you through the process of creating and configuring the required Vantage resources yourself.

Alternatively, you can download an example set of Tempo resources from the Telestream web site. All example workflows are on the Vantage Download page under the Workflow Examples tab. Import them into your Vantage domain using the Vantage Management Console and customize them to meet your requirements.

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# Installing Tempo

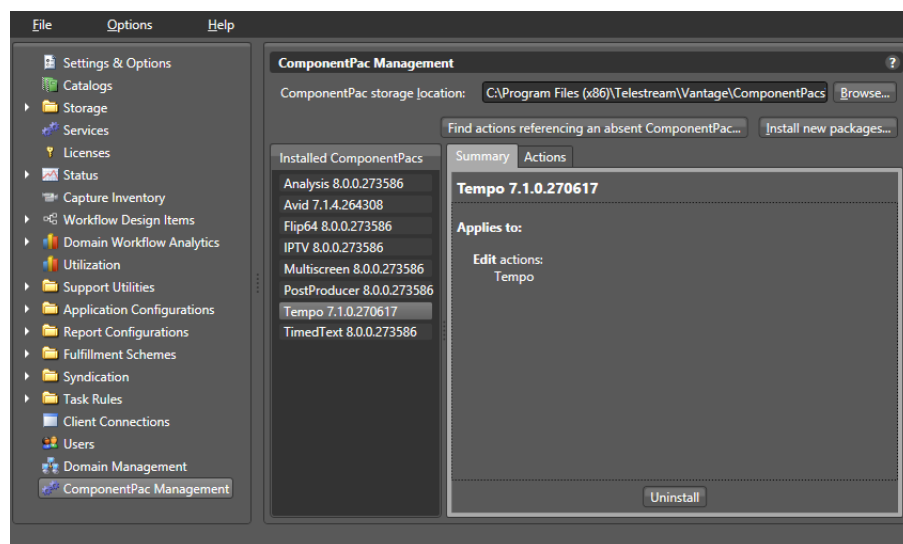
Tempo is an optional Vantage feature that can run on Lightspeed servers or other servers on which Vantage is installed. For best performance, Telestream recommends running Tempo on a Lightspeed K80 server.

To install Tempo on your Vantage domain server, follow the steps below.

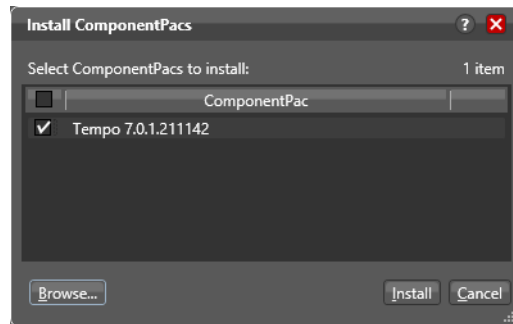
1. Choose a server that meets the [minimum Vantage server specifications](#) listed on [telestream.net](#).
2. Install Vantage and any update packs, as described in the [Vantage Domain Management/Installation Guide](#).
3. Install the latest Tempo ComponentPac (if any) from Telestream:
  - a. Download the latest Tempo package from the Telestream web site: <http://www.telestream.net/telestream-support/tempo/support.htm>.
  - b. Unzip and copy the ComponentPac file from the package to any local folder for single-node domains or a shared folder (using a UNC path or SAN drive letter) for Vantage arrays.

Each Vantage service must be configured with credentials to access shared folders either by adding credentials in the Vantage Management Console > Settings & Options > Authorization tab > Settings & Options—or by using *Windows Services* to configure each Vantage service's Log On property with a specified account. Be sure to restart each service or restart the server when configuration is complete.

- c. In the Vantage Management Console left column, click *ComponentPac Management*. Installed ComponentPacs display in the Installed ComponentPacs list on the right.
- d. Use the Browse button to set the *ComponentPac Storage Location* field to the local or shared folder where you copied the Tempo ComponentPac previously.



- e. Click *Install New Packages*. The Install ComponentPacs dialog displays.



- f. Enable the Tempo ComponentPac you want and click *Install*.

When installation completes, the Tempo package displays in the Installed ComponentPacs list (as shown in the earlier screen shot).

4. When using Tempo with Vantage Cloud Port, install the latest Tempo Update Patch (if any) from Telestream.
5. Locate the Tempo patch Vantage\_8\_0\_Tempo\_Update\_Patch\_Setup(8.0.345.23) and run it to update Vantage with the latest Tempo changes.
6. Restart the Tempo service in Management Console > Services panel or restart the server.

## Licensing Tempo

If you are adding the Tempo option to an existing Vantage system, obtain the Tempo license from Telestream Sales at [enterprisesales@telestream.net](mailto:enterprisesales@telestream.net) or call 530-470-1300, and install the license as explained below.

To install a Tempo license, follow these steps summarized from the [Vantage Domain Management Guide](#):

1. Place a copy of the license file in a location accessible to the Tempo Server.
2. Start the Vantage Management Console by double-clicking its desktop icon.
3. In the Vantage Management Console left panel, select *Licenses*.
4. In the right panel, click the *Add License* button to display the Add/Update License dialog.
5. Navigate to the license location, select the license, and click *Open*.  
If this computer has an Internet connection, Vantage prompts you to accept the license agreement. If an error message appears, see *Troubleshooting License Installation Problems* in the [Vantage Domain Management Guide](#) to activate the license without an Internet connection.
6. Click *I Accept...* if you agree to the license terms, and click *OK*.
7. Read the Licensing Changed dialog and click *OK*. This completes license installation.
8. Next, in the Vantage Management Console, click *Services* in the left column.
9. Select all services that are in Maintenance mode for which you have a license (Ctrl- or Shift-click to select multiples).
10. Click *Exit Maintenance Mode* (in the tool bar) to restart all the selected services to return them to their normal, operational state. All licensed services should now be in the green (Online) state, and Tempo should be enabled.

# Configuring Tempo

Configuring Tempo is essentially a subset of the tasks required to set up a Vantage domain generally, including creating stores, catalogs, Tempo Portal configurations, workflows, and deploying the Vantage Workflow Portal program on client computers.

If you are familiar with these tasks, you may be able to skip the detailed steps presented below and simply skim each topic for any special details before performing the task. If you are not familiar with these tasks, detailed steps are provided to guide you.

The following topics describe the required configuration tasks:

- [Ensuring Maximum Server Performance](#)
- [Adding Vantage Users](#)
- [Enabling Open Workflows](#)
- [Creating Vantage Stores](#)
- [Setting the Edit Service's Session Limit](#)
- [Creating Catalogs](#)

## Ensuring Maximum Server Performance

To ensure maximum server performance, set the Control Panel Power Options to High Performance with Sleep disabled:

1. Navigate to Start > Control Panel > Power Options.
2. Select the *High Performance* plan.
3. Set Sleep mode to *Never* (never sleep).
4. Select *Change advanced power settings*, and set all critical functions so that they are always ON (this usually means setting them to *Never* turn OFF).

Also disable any real-time processes that may interfere with performance, such as virus scanning of media files as they are being captured, automatic real-time software updates, and real-time file indexing.

## Adding Vantage Users

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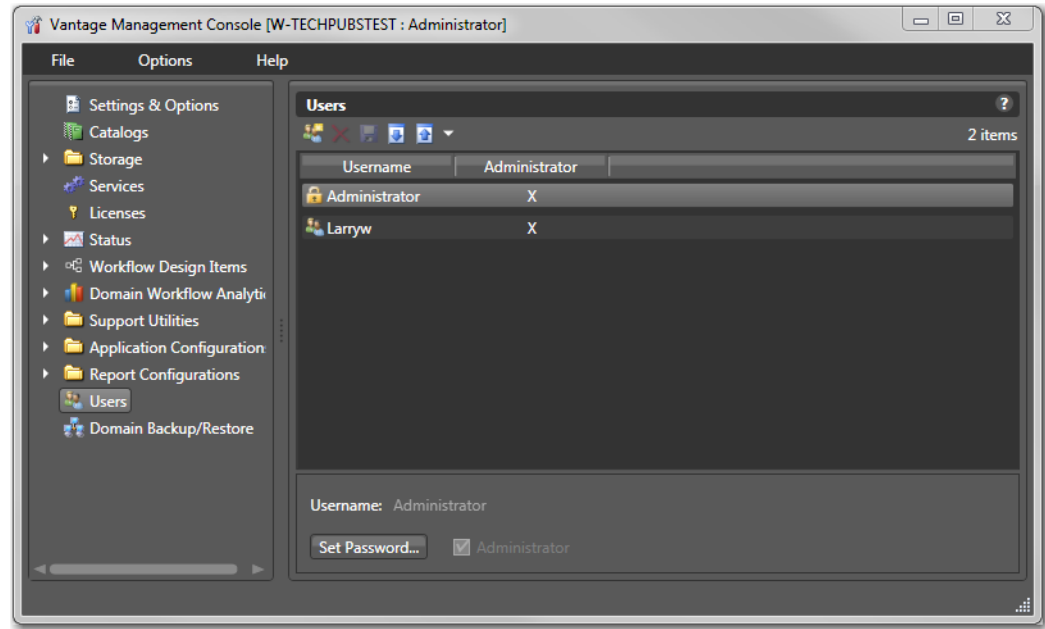
**Note:** Adding users is optional, depending on whether your Vantage domain has User Administration enabled. You can use Tempo without enabling User Administration—skip this topic if that is the case.

---

Before anyone can use a Vantage Tempo system with User Administration enabled, you must add them as users in the Vantage Management Console. You can create users

directly in Vantage or you can also select *Use Windows Active Directory for Users* to allow logging in using Windows accounts.

For details on creating users in Vantage, see the Vantage Domain Management Guide.





## Adding Users

The procedure to add users differs slightly depending on whether you use Windows Active Directory or not.


### Adding Users Without Windows Active Directory

To add a new user without using Windows Active Directory, follow these steps:

1. Click the *New User* button  or right-click and select *New User*.
2. Enter the username and password (and confirm the password) in the dialog box.
3. Check the *Administrator* check box if you want the new user to be an administrator.
4. Click *OK* to add the user, and then click *Save*  to save your changes.


### Adding Users With Windows Active Directory

The Vantage Active Directory feature allows you to create users and groups in Windows Active Directory and add them as users with or without administrator privileges:


1. Click the *New User* button  or right-click in the empty user list and select *New User*.
2. Enter part or all of the user name in the blank field and click *Find Now* to search for and list users whose names match the text you entered.

The drop-down menu lets you select a filter for your search, and the Users and Groups check boxes allow searching for users, groups, or both (default).


3. Select a user in the displayed list.

4. Check the *Administrator* check box if you want the new user to be an administrator.
5. Click *Add* to add the user, and then click *Save*  to save your changes.



## Setting Passwords

To set the password of a user, click the Set Password button (or right-click the user in the list and click Set Password). When the dialog box displays, enter the password (and confirm the password) of the user. Click *OK* to close the dialog box, then click the Save button  to save your changes.

## Removing Users

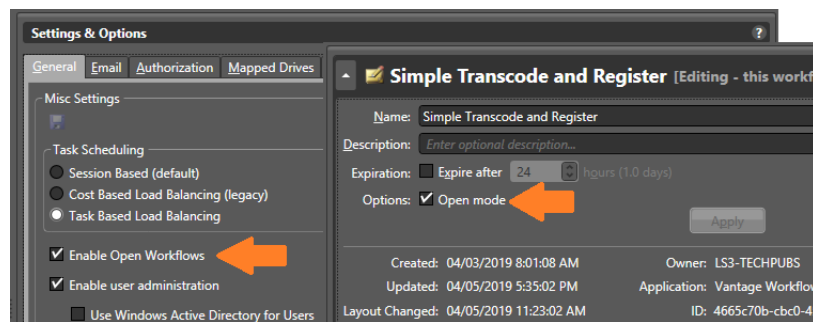
Remove users by selecting the user in the Users list and clicking the Delete button  at the top of the User Management panel (or right-click the user and select Delete).

## Importing and Exporting Users

User lists can be imported and exported. To import a list of users, click the Import button , navigate to the XML file containing a list of users, and click the Open button. To export a list of users, click the Export button  (or right-click the list and select Export), enter an XML filename for the list of users, and click the Save button.

## Enabling Open Workflows

You may enable Open Workflows in Vantage when using the Tempo Two Pass feature to help your workflows operate more quickly, but it is not required. In the Vantage Management Console, access Settings & Options, General tab, and check the Enable Open Workflows option. Also, enable Open Workflows at the top of the Workflow Designer and in each action.



## Creating Vantage Stores

Before you can begin configuring Tempo, you must have a fully-operational Vantage domain with Vantage Stores (folders) for holding interim results of Vantage and Tempo workflow processing. The stores are where Tempo will place temporary output media and other files that it produces before you use other workflows to move them to their final destination, such as a media or broadcast server.

If you have not already done so in the Management Console, create Vantage stores as needed (skip this topic if your stores are already configured). For additional details about stores, See *Managing Vantage Stores* in the [Vantage Domain Management Guide](#).

## Setting the Edit Service's Session Limit

The session limit for each Vantage service determines the maximum number of concurrent sessions (actions that can execute) for a given service. This value is displayed in the Vantage Management Console > Services > Session Limit column. The default Edit/Tempo limit is 4 and the recommended limit is 2. To change the session limit:

1. Open the Vantage Management Console and display the Services panel.
2. Right-click the Edit service, and select Enter Maintenance Mode.
3. Select the Setup tab at the bottom of the window.
4. Click the Service Limits Configuration Item, and set the Session Limit to 2.
5. Click Apply.
6. Right-click the Edit service again, and select Exit Maintenance Mode.

---

**Note:** Changing the Edit service session limit affects all Edit actions, including, for example, the number of Conform jobs you can run. Specify Run On rules to dedicate a given Edit service to Tempo actions and avoid unnecessarily affecting other actions.

---

## Creating Catalogs

The starting point for organizing assets for re-timing is the catalog. Operators access media in the Tempo Portal by browsing catalogs and then selecting a binder (media files with metadata and variables) that has been ingested and pre-processed and registered in the catalog to re-time.

You need to create at least one catalog to hold binders generated from each asset processed in a Tempo ingest workflow. For the Tempo Two Pass feature, it is convenient to create a single Tempo catalog with two catalog folders: Pass 1 and Pass 2.

The Pass 1 catalog folder should be the target of the ingest workflow. The Pass 2 catalog folder should be the target of the first pass Tempo workflow.

If you have not already done so, use the Vantage Domain Console to create Vantage catalogs as needed (skip this topic if your stores are already configured). For additional details about catalogs, See *Managing Vantage Catalogs* in the [Vantage Domain Management Guide](#).



# Creating Tempo Portal Configurations

Before you can use Tempo, you will need to create a Workflow Portal configuration for Tempo Portal and configure it to meet your application's requirements.

---


**Note:** When an operator loads the Tempo Portal configuration into Workflow Portal to use it for processing assets with Tempo, Workflow Portal is commonly referred to simply as *Tempo Portal*, rather than the formal *Workflow Portal Tempo Configuration*.

---

Workflow Portal configurations are created, configured, and managed in the Management Console. As you make configuration selections, you are customizing the features, functionality, and user interface of Workflow Portal's panels and labels.

All of the configuration options are grouped in tabs to make the task easier. Some tabs are specific to Tempo Portal; others are general, and are present in many (or all) Workflow Portal configuration types.

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**Note:** After you've created a configuration, select it to configure it. Or, when you want to modify an existing configuration, select it to make changes. Always click the *Save* button  to update the configuration.

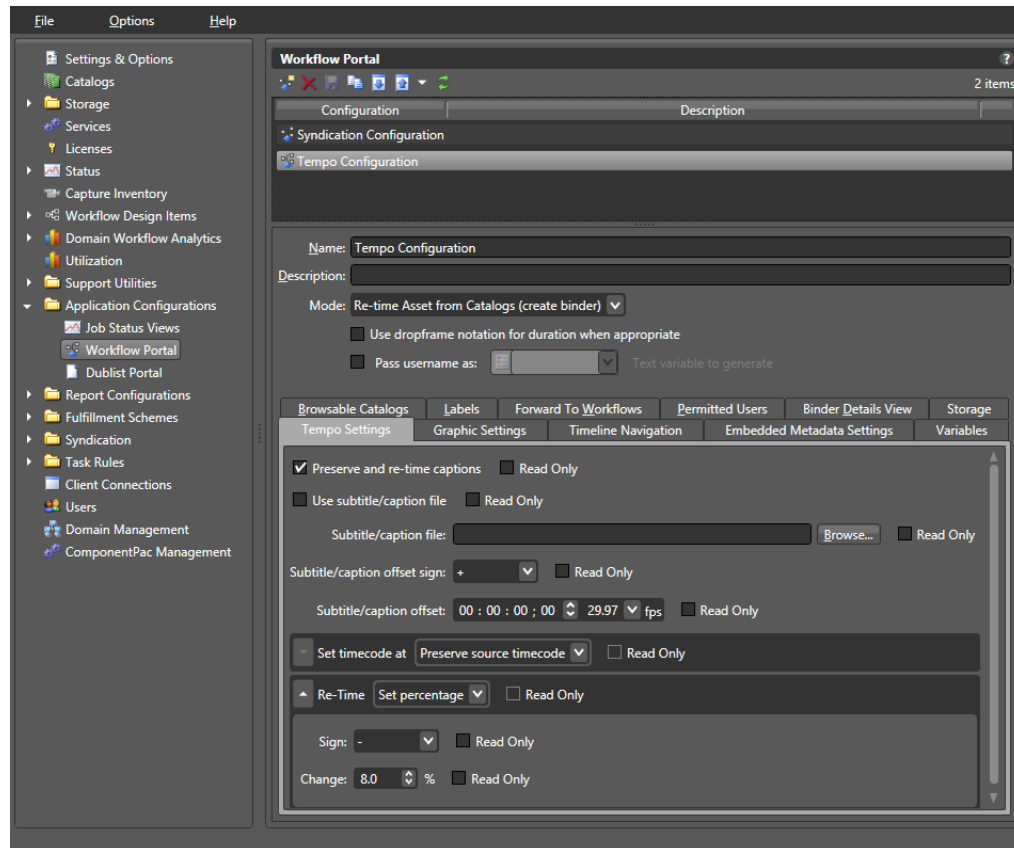
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- [Creating a Workflow Portal Tempo Configuration](#)
- [Configuring Tempo Settings](#)
- [Specifying Access to Catalogs](#)
- [Configuring the Binder Details View](#)
- [Adding and Configuring Metadata Labels](#)
- [Adding Rating Systems Variables](#)
- [Configuring Graphic Settings](#)
- [Configuring Embedded Metadata Settings](#)
- [Specifying Workflow Submission](#)
- [Configuring Storage Utilization](#)
- [Setting Permitted Users](#)
- [Managing Configurations](#)
- [Creating Two Pass Portal Configurations](#)

## Creating a Workflow Portal Tempo Configuration

To create a Workflow Portal configuration for Tempo Portal, follow these steps:

1. Start the Vantage Management Console and connect to your Vantage domain.
2. Select Application Configurations > Workflow Portal to display this panel:



3. Click the *Create* configuration button .
4. Update the following general settings per your requirements:
  - a. **Name:** Enter the name of the new configuration as appropriate.
  - b. **Description:** (Optional) enter a description of the new configuration as appropriate.
  - c. **Mode:** Select *Re-time Asset from Catalog (create binder)* from the *Mode* drop-down menu to create a Tempo Portal configuration.
  - d. **Use Dropframe Notation:** When checked, displays duration timecodes in dropframe notation when in and out points are specified in dropframe notation.
  - e. **Pass username as:** When checked, allows you to set the username of the portal operator as a variable that you can use in workflows. This can be helpful, for example, to address a message to an operator based on the results of a workflow.
5. Click the *Save* button  to save your new Tempo Portal configuration.

## Configuring Tempo Settings

The Tempo Settings tab allows you to specify standard settings to use for increasing or decreasing media duration and handling subtitles and captions:

1. Select the Tempo Settings tab, as shown above.
2. Select the caption's re-timing features to enable and controls that you want to display in Tempo Portal's Tempo Settings tab.

**Read Only:** Each of these controls has a Read Only control, which you can check to disallow changing the setting directly in Workflow Portal. When checked, the setting is displayed in a read-only view. Uncheck to allow Workflow Portal operators to change the setting.

- **Preserve and re-time captions:** Selects whether to include and re-time captions together with the re-timed media. Applies to embedded captions and caption files.
- **Use subtitle/caption file:** Allows the operator to enter a path or browse and select an SCC (.scc) or STL (.stl) caption/subtitle file for inclusion with the media output. Telestream's CaptionMaker software lets you create captions and save them in SCC or STL files if you need an application to do that.
- **Subtitle/caption file:** When Use subtitle/caption file is enabled, the operator must enter a path or browse and select an SCC or an STL caption/subtitle file (with file extensions *scc* or *stl*) for inclusion with the media output.
- **Subtitle/caption offset sign:** Allows the operator to set the start time of captions forward (+) for a later start or backward (-) for an earlier start relative to the specified starting timecode in the SCC/STL or STL file. Use the *Subtitle/caption offset* described below to set the amount of offset.
- **Subtitle/caption offset:** Sets the amount of start time adjustment to apply to captions or subtitles relative to the start time specified in the caption or subtitle file. Use the +/- sign described above to set caption start time earlier or later.
- **Set timecode at:** Determines where to start or end timecode in the re-timed output. You can preserve existing source timecode, start timecode at the first

frame or end it on the last frame of the program, or start it on the first frame or end it on the last frame of the output file.

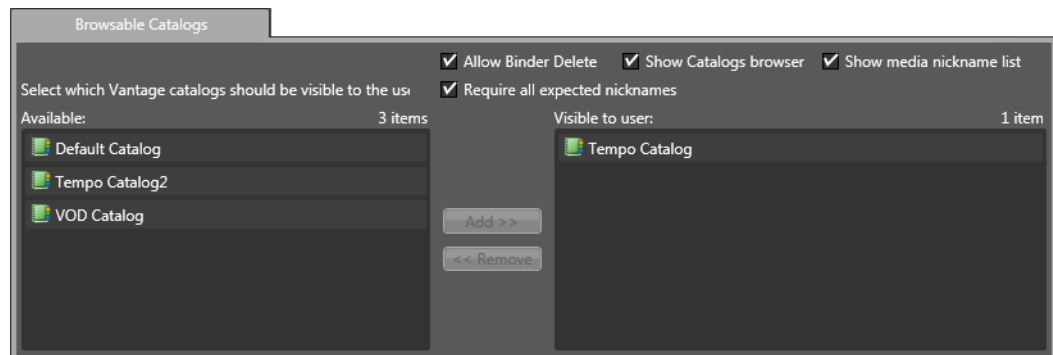
- **Re-time:** Determines what type of re-timing operation to perform:
- *Set Total Duration:* Re-time the asset to adjust the time to a total set amount, specified in the Amount field.
- *Set Percent:* Re-time the asset to adjust the time up or down to a specified percentage of the total, specified in Sign and Change fields.
- *Increase Duration by:* Re-time the asset to increase the time by a set amount, specified in the Amount field.
- *Decrease Duration by:* Re-time the asset to reduce the time by a set amount, specified in the Amount field.


When Set Total Duration | Increase Duration | Decrease Duration are selected, specify the amount of time to use. When Set Percent is selected, specify negative (-) or positive (+) to decrease or increase the amount of time and supply the percent.

3. Click the Save button  to save your changes.

## Specifying Access to Catalogs

Tempo allows you to specify which catalogs (and their binders) are accessible to Tempo Portal operators:



1. Select the Browsable Catalogs tab (shown in the previous figure).
2. To make a catalog visible, select the catalog in the *Available* list in the left panel, and click *Add*. This moves the catalog to the *Visible to user* list on the right.
3. To remove a catalog from the *Visible to user* list, select the catalog and click *Remove*.
4. Click the Save button  to save your changes.

Only catalogs (and their binders) in the *Visible to user* list on the right can be seen by Tempo Portal users.

---

**Note:** If you don't put any catalogs in the Visible to User list (you leave it empty), then all catalogs (both existing, and newly created ones) will be displayed in this list.

---

## Selecting the Show Media Nicknames List Option

The media list displays the media files for a binder that you select. For example, the media list includes the original media submitted to a workflow and the output media from that workflow. Typically, it will also display the proxy file. When the media list is visible, operators can play the media or view the contents of the folder that contains the media.

To display the media list, check the *Show media nickname list* check box in the Browsable Catalogs panel.

Click the Save button  to save your changes.

## Selecting the Require All Expected Nicknames Option

For Tempo configurations, you typically check Require All Expected Nicknames. The publishing workflow's required nicknames identify each resource associated with an asset that is required for processing. These resources must be present in the binder. Otherwise, the Receive action will fail, and so will the workflow.

Click the Save button  to save your changes.

## Enabling and Disabling Binder Deletions

By checking the *Allow Binder Delete* check box, you are allowing operators to remove binders from the catalog after they've been process and submitted, leaving only binders that have not yet been processed. This effectively makes the catalog a manually-managed drop-box that operators can control at their discretion.

If you prefer to save binders and do not want operators to delete them, uncheck the Allow Binder Delete check box.

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**Note:** Binder deletion is also controlled by expiration times defined in the workflow Register action or catalog configuration.

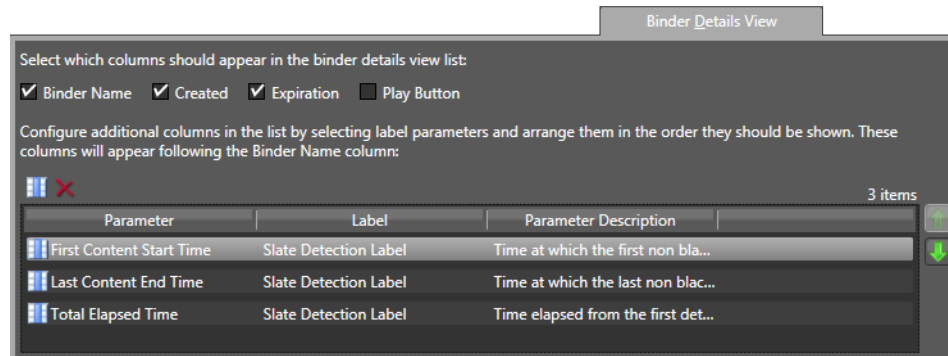
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Click the Save button  to save your changes.

For more information about how binders are handled, see *Understanding Binders* in the [Vantage Domain Management Guide](#).

## Configuring the Binder Details View






Vantage allows you to control the columns and metadata label parameters displayed in the binder list by making selections in the Binder Details View panel, as shown here:



1. Select the *Binder Details View* tab in the Tempo Portal Configuration.
2. Select each check box to display the item or clear the check box to hide it:
  - **Binder name:** Displays the name assigned to the binder when it was created.
  - **Created:** Displays the date and time the binder was created.
  - **Expiration:** Displays the date and time the binder expires.
  - **Play button:** Displays a button the operator can use to play the selected jobs proxy video.

**Notes:** Vantage allows you to hide *all* columns in the binder list, producing an empty list. Configure at least one column to display so that the binders display in the list.

The play button operates only when the workflow has generated and registered a proxy file (see the *Using Workflow Portal* topic in the [Vantage User Guide](#)), which is a requirement for Tempo configurations.

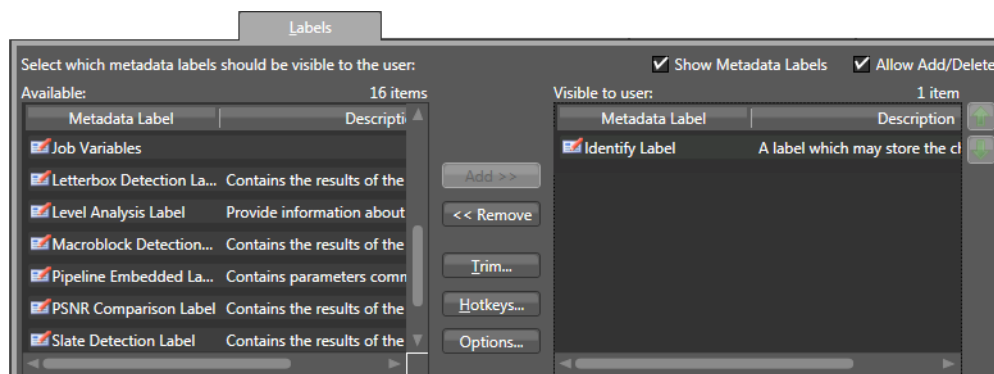
1. Click the Column button .
2. For each metadata label parameter you want to display in a column:
  - a. Select a metadata label in the *Labels* panel.
  - b. Select the check box for the metadata label parameter in the *Parameters* panel.
  - c. When you are done making changes, click OK.
3. For each metadata label parameter you want to remove from the binder view:
  - a. Select the parameter you want to delete in the parameter list.
  - b. Click the Delete button  and confirm the deletion.
4. To change the displayed order of parameters:
  - a. Select a parameter in the list (Ctrl-click or Shift-click for multiple selections)
  - b. Use the green up  and down arrow  buttons to move the variables.
5. Click the Save button  to save your changes.

## Adding and Configuring Metadata Labels

Vantage allows operators to view and modify values in metadata labels when they submit jobs to a workflow. They are used by the workflow to control media processing.

**Note:** Before a metadata label can be made available to users, it must be defined using the Vantage Management Console. See *Creating Metadata Labels* and also *Understanding Metadata Labels* in the [Vantage Domain Management Guide](#).

Only labels that are visible are those that are specified as such in the portal configuration. Typically, at a minimum you'll select the Identify label which holds values about the source asset specified in the ingest workflow:



1. Select the Labels tab (see above) in the Tempo Portal Configuration.
2. To enable visibility of metadata labels, check the *Show Metadata Labels* check box.
3. To allow operators to add and delete metadata labels for a given submission, check the *Allow Add/Delete* check box. Typically, this is unchecked in Tempo applications.
4. To make specific metadata labels available to operators, select labels in the *Available* panel. (Ctrl-click or Shift-click to select multiples) and click Add to move them to the Visible to Users list.
5. To change label order, select labels in the *Visible to user* list (Ctrl-click or Shift-click to select multiples) and use the green up and down arrows to re-arrange the labels.
6. Click each label and use the center buttons (between the two lists) to set optional parameters: trim group in, out, and duration time codes, and hot keys for transferring trim group time codes to labels.
7. Click the Save button to save your changes.

## Adding Rating Systems Variables

You can set up specific variables as needed if you are using the Content Advisory feature, for example.

---

**Note:** For an introduction to Vantage variables, see *Understanding Variables* in the [Vantage Domain Management Guide](#).

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The screenshot shows the 'Variables' tab in the Tempo Portal Configuration interface. It contains a list of variables with checkboxes and drop-down menus. The variables are: 'Rating System' (checked, 'Rating System' selected, 'Text variable to generate'), 'Rating' (checked, 'Rating' selected, 'Text variable to generate'), 'U.S. TV Sexually Suggestive Dialog (D):' (unchecked, empty, 'True/False variable to generate'), 'U.S. TV Adult Language (L):' (unchecked, empty, 'True/False variable to generate'), 'U.S. TV Sexual Situations (S):' (unchecked, empty, 'True/False variable to generate'), and 'U.S. TV Violence/Fantasy Violence (V/FV):' (unchecked, empty, 'True/False variable to generate').


To enable operator to use these variables, follow these steps:

1. Select the Variables tab (shown here) in the Tempo Portal Configuration.

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**Note:** Before a variable can be made available to an operator, it must be defined as described in *Creating Variables* in the [Vantage Domain Management Guide](#).

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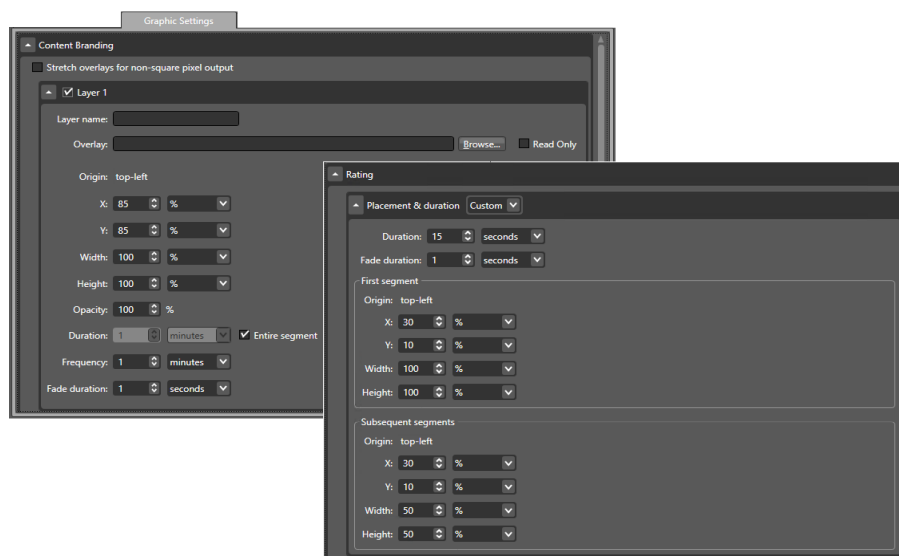
2. To make a variable available, select its check box.
3. Select the variable to use from the drop-down menu.
4. Click the Save button  to save your changes.

## Configuring Graphic Settings

The Graphic Settings tab allows you to select and set the display parameters for a station branding logo (bug) and for a content rating image. The Content Branding logo can be composited from up to five graphic layers and added to a segment in the Tempo



Portal by checking the *Branding during segment* check box for that segment. The rating image is displayed by checking the *Rating graphic at start* check box for that segment.



## Content Branding Logo or Rating Image Configuration

To configure the Content Branding logo or Rating image, follow these steps:

1. Click the *Content Branding* or *Rating* drop-down menu to access the settings.
2. Click *Browse* to specify the path to the branding logo, or click *Placement & duration* and select *Custom* to change settings for the Rating image. (Note that not all settings listed below for the logo are available for the Rating and vice versa.)
3. Modify the graphic layering, positioning, and appearance settings:  
Logos and images can be added as layered overlay images. The origin or default starting point for the logo or image is in the top left corner.
  - **Layer name, Overlay:** Enter a name for the layer, and browse for the graphic. Select *Read Only* to prevent operators from changing the settings.
  - **X, Y:** Enter x and y coordinates for the graphic location. Select units in percentage or pixels from the drop-down menu.
  - **Width, Height:** Enter graphic dimensions. Select units in percentage or pixels.
  - **Opacity:** Enter the percentage of logo opacity.
  - **Duration:** Enter the length of time that the graphic will appear in the segment in minutes, seconds, or frames. Check *Entire segment* if you want the logo on throughout the segment.
  - **Frequency:** Enter how often the logo will appear in minutes, seconds, or frames.
  - **Fade duration:** Enter graphic fade in and fade out duration in seconds or frames.

## Configuring Embedded Metadata Settings

The Embedded Metadata Settings tab allows you to configure default content ratings that you want to show up in the Embedded Metadata panel:

The screenshot shows the 'Embedded Metadata Settings' tab. At the top, there is a 'Rating' dropdown menu set to 'U.S. TV Parental Guidelines' and a 'Read Only' checkbox. Below this, there is a 'Rating:' dropdown menu set to 'TV-14' and another 'Read Only' checkbox. Underneath, there are five checkboxes for content descriptions: 'Sexually Suggestive Dialog (D)', 'Adult Language (L)', 'Sexual Situations (S)', and 'Violence/Fantasy Violence (V/FV)'. Each of these has a corresponding 'Read Only' checkbox to its right.

- Select the default *Rating* system (MPA, US TV, Canadian English, Canadian French)
- Select the default *Rating*.
- Check the content descriptions you want checked by default.

Select *Read Only* to prevent Tempo Portal operators from changing settings.

## Setting Timeline Settings

The Timeline Navigation tab includes settings for the Silence buttons on the Preview panel timeline.

*Silence level threshold*—Sets the level for detecting silence. Default: -40db.

*Silence duration minimum*—Sets the minimum number of frames defining a period of silence. Default: 1 frame.

*Artifact Quality Threshold*—Sets the default Artifact quality threshold that displays in the Tempo Portal Timeline tab. Default: 100%.

The screenshot shows the 'Timeline Navigation' tab. At the top, there is a 'Name:' field with 'Tempo Portal Configuration' and a 'Description:' field. Below these is a 'Mode:' dropdown menu set to 'Re-time Asset from Catalogs (create binder)' and a 'Use dropframe notation for duration when appropriate' checkbox. A tabbed interface is shown with tabs for 'Browsable Catalogs', 'Labels', 'Forward To Workflows', 'Binder Details View', and 'Storage'. Below these are 'Tempo Settings', 'Graphic Settings', 'Timeline Navigation' (which is active), 'Embedded Metadata Settings', and 'Variables'. The 'Timeline Navigation' tab contains three settings: 'Silence level threshold' set to '-40.0 dB', 'Silence duration minimum' set to '1 frames', and 'Artifact quality threshold' set to '100' with a range of '0-100'.

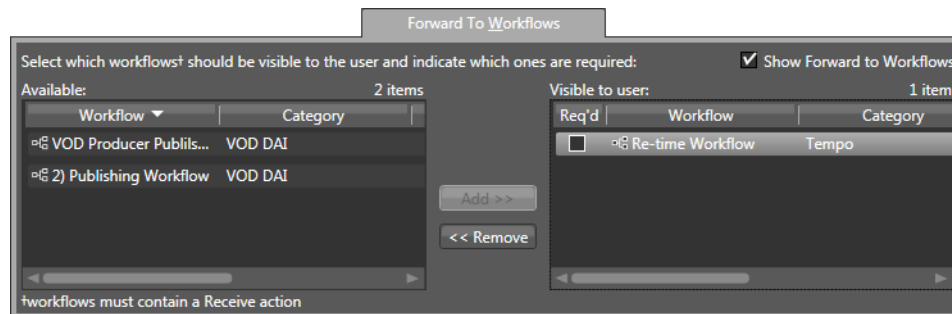
## Specifying Workflow Submission

Tempo Portal operators complete the re-timing process by forwarding the re-timing composition file to a publishing (Tempo re-timing) workflow where the re-timing process occurs.

Operators can forward the composition to any visible target workflow by selecting the workflow on the Forward to Workflows Portal tab and clicking Submit. If a target workflow is required, it is automatically selected on the Forward to Workflows tab and the binder is forwarded to the required workflow when the operator clicks Submit.

For Tempo Two Pass, binders in a Pass 1 catalog folder should be forwarded to a first pass Tempo workflow. Binders in a Pass 2 catalog folder should be forwarded to either a second pass Tempo workflow or a direct convert workflow.

For workflows to be visible to the operator, they must be added to the *Visible to user* column in the Forward to Workflows tab.



1. Select the Forward to Workflows tab (shown here).
2. To enable operator viewing of target workflows, select the *Show Forward to Workflows* check box.

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**Note:** If all target workflows are required (indicated by the checked Req'd control), then you can uncheck the Show Forward to Workflows check-box to reduce the number of clicks for the operator.


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3. To make target workflows available to operators, select one or more workflow names in the *Available* panel and click *Add*.

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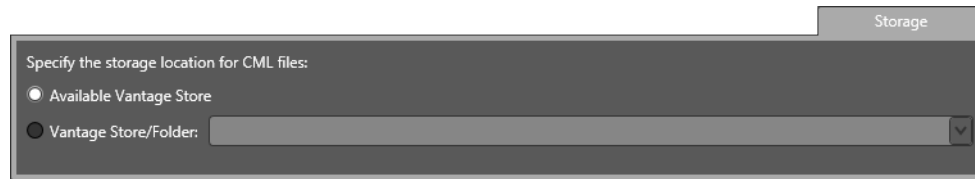
**Note:** To accept forwarded binders, the target workflow must start with a Receive action. The *Available* panel only displays workflows with a Receive action.

---

4. To specify whether a target workflow is required for forwarding or optional, check the *Req'd* check box next to the workflow in the *Visible to user* panel.
5. Click the Save button  to save your changes.

## Configuring Storage Utilization


The composition files created by the Tempo Portal can be stored in any Vantage store or folder. The Storage tab lets you select the storage location.



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**Note:** The Microsoft User Account Control (UAC) feature may deny access to Vantage stores or folders that are placed in protected locations. If Vantage users report that access to a Vantage store or folder is denied, do one of the following:

1. Place the store or folder in a directory that is not protected by UAC.
  2. Use the procedure below to specify a different store or folder.
- 

1. Select the *Storage* tab.
2. Choose an option:
  - a. To store files in any available Vantage store, select *Available Vantage Store*.
  - b. To store the files in a specific Vantage store or folder, select *Vantage Store/Folder*, and choose a Vantage store or folder from the drop down list.
3. Click the Save button  to save your changes.

## Setting Permitted Users

The Permitted Users panel defaults to the *Everyone* check box so that all Vantage users have access to the Tempo Portal configuration.

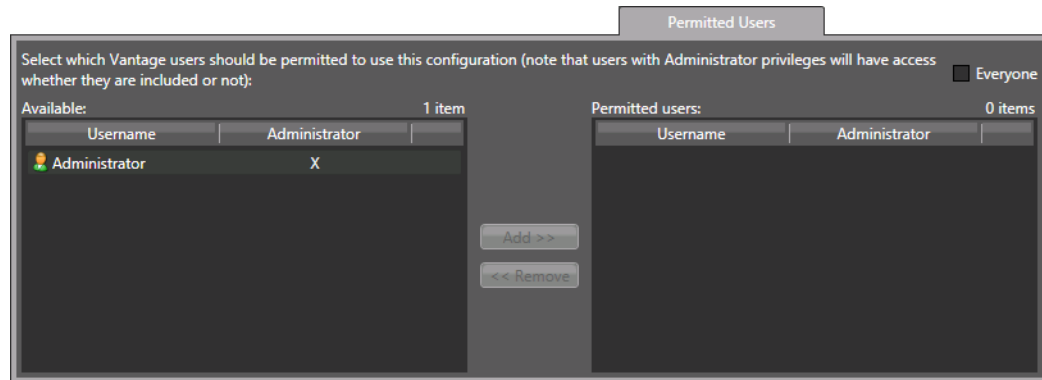
---

**Note:** The Permitted Users tab only displays when User Administration is enabled in your Vantage Domain.

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

To grant access to selected users only, uncheck *Everyone*. Then click names in the left column and use the *Add* button to move the names you want to have access into the

Permitted users column on the right. To remove users from access, click their names in the right column, and click *Remove*.



## Managing Configurations

Once your Portal configuration is complete, you can manage it in these ways by selecting the configuration and using the following toolbar buttons:

- Click the Refresh button  to refresh the configuration list.
- Click the Delete button  to delete the configuration.
- Click the Duplicate button  to create a copy of a configuration.
- Click the Export button  to export a single configuration as an XML file, or select *Export all* from the Export button drop down menu to export all configurations.
- Click the Import button  to import a previously exported configuration XML file.
- Click the Save button  to save configuration changes.

You can also right-click on a configuration or in the blank area below the configurations to open a context menu providing access to the same tools described above.

## Creating Two Pass Portal Configurations

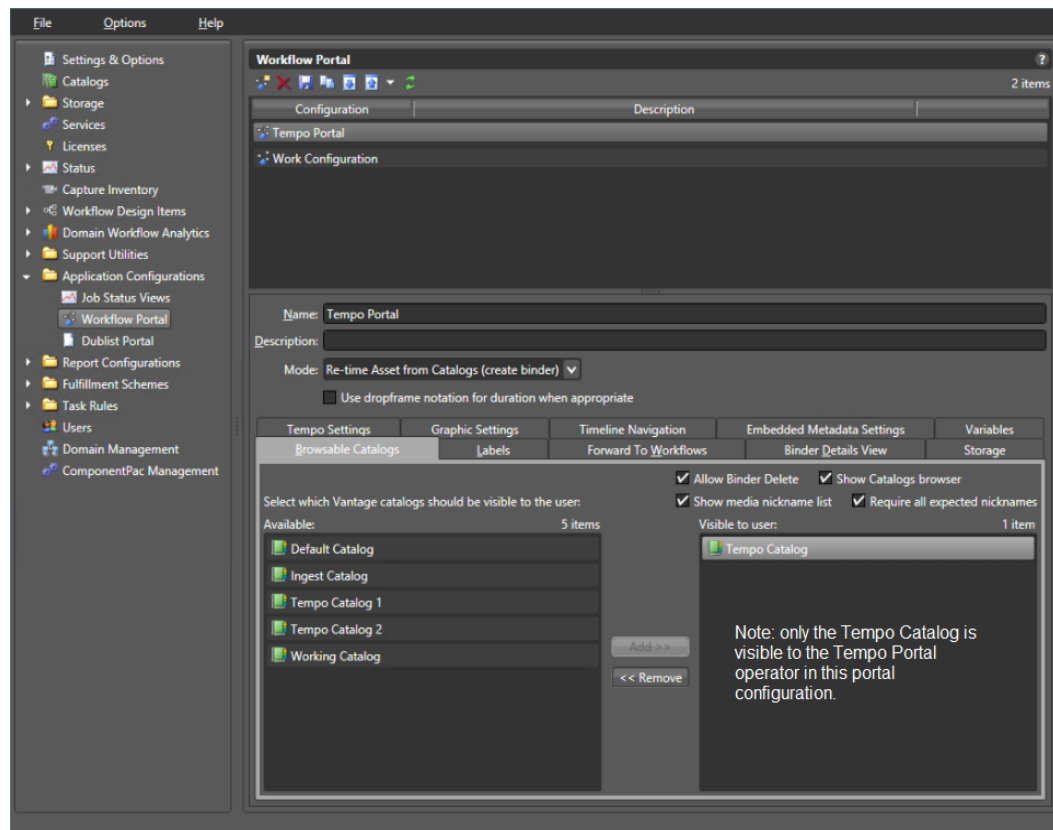
Using a single portal configuration works best for Tempo Two Pass. This allows both Pass 1 and Pass 2 catalog folders to be seen and used in the same configuration. A suggested configuration is described below. (For details about the associated workflows, see the *Tempo Workflows* chapter in this guide.)

The Tempo portal configuration provides a portal operator access the Tempo catalog, which allows the operator to selectively submit to any of the following workflows:

- Tempo Ingest
- Tempo Pass 1
- Tempo Pass 2
- Tempo Direct Convert

The setup of the Tempo configuration is displayed below.

**Note:** Only the relevant sections of the configuration are presented here (in particular the catalog access and the available workflows.)



# Deploying Portals on Client Workstations

As a Vantage domain administrator, you can make it easier for operators to start using the Tempo Portal by doing the following:

1. Install the Vantage client programs on operator workstations.
  - a. Log on to the target workstation with a local administrator account, and make sure that virus-checking software and Windows Firewall is off.
  - b. Copy the *Vantage 8.0 Client Application.msi* installer or the *Vantage\_8.0\_Setup.exe* installer to the workstation, or make the installer available on a network share.
  - c. Run the *Vantage 8.0 Client Application.msi* installer or the *Vantage\_8.0\_Setup.exe* installer, and select the Vantage Workflow Portal and any other desired clients for installation.
2. Launch and configure the Vantage Workflow Portal for the first time:
  - a. Select the Vantage domain (*File > Change Vantage Domain*).
  - b. Choose the Tempo Portal when you are offered a choice of configurations, or if there is only one configuration available, it is opened automatically.  
(You can also manually select and load a Tempo Portal configuration after the Portal starts by selecting *File > Change/Reload Application Configuration*.)
  - c. Select the Tempo catalog, which will display the binders available for selection and processing by the operator.

Tempo is now ready for use. The next steps are to import or create Tempo workflows as explained in the [Tempo Workflows](#) chapter and to begin using the Tempo Portal as explained in the [Using Tempo to Re-time Media](#) chapter.





# Using Tempo to Re-time Media

Tempo provides a Tempo Portal which you use to select a clip (asset) and create segments, scrub a proxy of the source media which you want to re-time, mark segments to include or exclude from re-timing, and specify how much time expansion or compression to apply.

Clips can be automatically segmented by use of slate/bars/black detection with the Analyze action in an ingest workflow. Tempo Portal can be used to adjust the auto-segmentation report from the Analyze action's Scene Change Analysis filter, or the Portal can simply be used to manually apply segmentation.

When clip segmentation and other related tasks (metadata, branding graphics, etc.) are complete, Tempo Portal (behind the scenes) generates a composition file to describe re-timing requirements for the asset. You as the operator forward the asset to a Tempo publishing workflow to process the source media—the Tempo action in the workflow re-times the video during transcoding.

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**Note:** If you haven't yet set up Tempo in Vantage, you need to configure your Tempo Vantage domain to meet your requirements. Use the [Tempo Quick Start](#) to set up Tempo in your environment and learn how to re-time media through the two workflows, utilizing Tempo Portal. For full details on any set-up task, you can refer to [Configuring Tempo Resources](#).

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## Topics

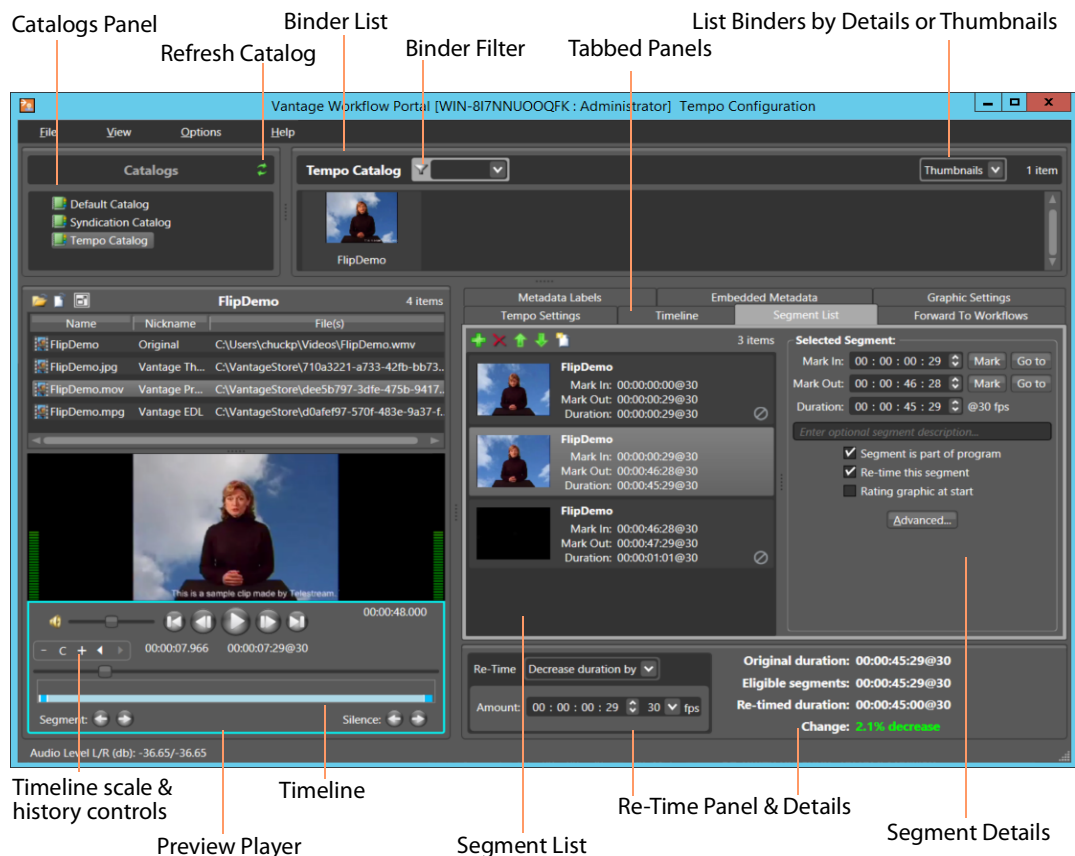
- [Overview of Tempo Portal](#)
- [Tempo Quick Start](#)
- [Using Tempo Portal](#)
- [Tempo Portal Menus](#)

## Overview of Tempo Portal

Tempo includes a specially-designed Workflow Portal template for re-timing media assets. Tempo Portal configurations are created from the Tempo template in the Vantage Management Console > Workflow Portal Configurations panel.

Tempo Portal includes these panels (see the *Tempo Portal Main Panels* figure below):

- **Catalogs Panel:** Lists catalogs available in the Tempo configuration.
- **Binder List:** Shows media binders of each asset or clip processed in a Tempo ingest workflow in the catalog, available for re-timing.
- **Preview Player:** Plays the proxy in the selected binder. Includes standard player controls. Segment start points, scene changes, and Two Pass quality issues are marked on the timeline with white, green, and orange tick marks. The player can also seek the next or previous silence segment (not shown with tick marks). Any overlapping segments are highlighted in red and should be re-marked to eliminate overlaps. Timeline scale and history controls allow expanding and navigating the timeline. A button above the player allows maximizing the panel area.
- **Tabbed Panels:** Includes a Segment List for configuring segment re-timing, and other tabs: Metadata Labels, Embedded Metadata, Graphic Settings, Tempo Settings, Timeline, and Forward to Workflows.
- **Re-time Panel:** Sets the type and duration or re-timing amount for the entire asset.

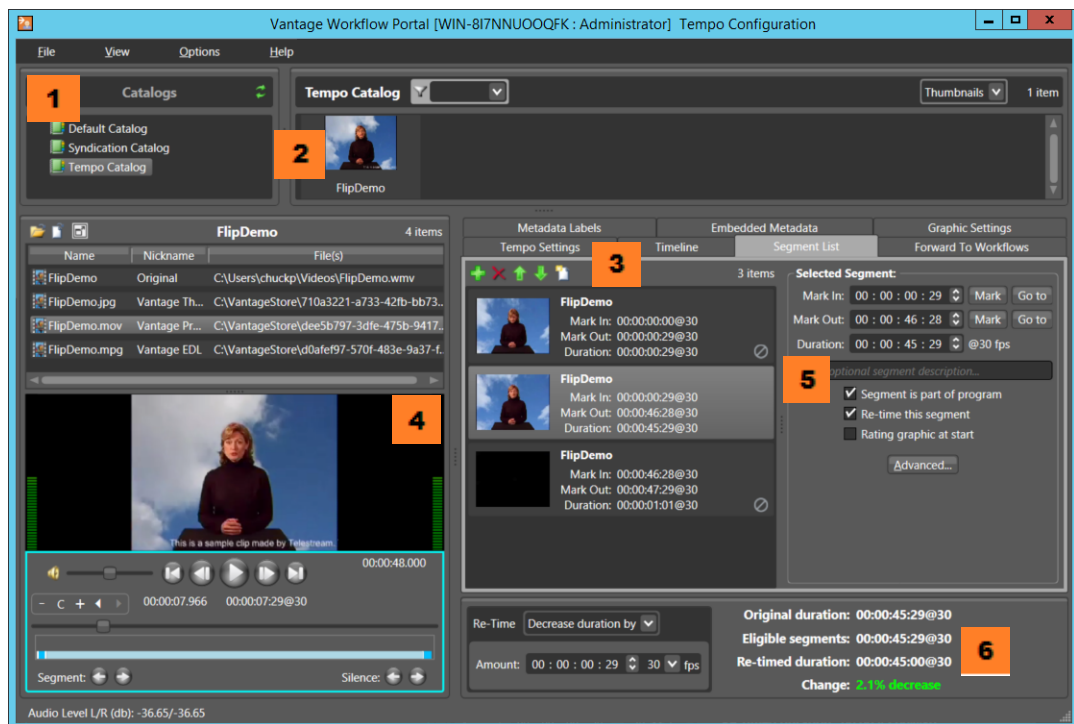


Tempo Portal includes these capabilities:

- Browse binders in the selected Vantage catalog
- Drag a binder into the segment list, automatically creating segments identified during analysis in the ingest workflow
- Preview the proxy to create clip segments and set Mark In/Out to identify them
- Select options to include a segment in program, re-time the segment, include graphic overlay (bug), and include rating graphic
- Set re-timed total duration or increase/decrease the total time.

This image illustrates the general process an operator uses to set up a job for a particular file of media and submit it for re-timing.

1. Select a catalog.
2. Select clips from the catalog.
3. Drag clips from the catalog to the segment list.
4. Preview segments.
5. Mark the segment in/out points & check options.
6. Set the amount of re-timing.



## Tempo Quick Start

This topic describes the entire Tempo operational process from start to finish in just a few pages. If you follow the steps as you read them, you'll have set up and configured Tempo for use, and re-timed your first asset in Tempo when you reach the last step.

You can create as many catalogs, workflows and Tempo Workflow Portal configurations as needed to implement various re-timing applications in your environment.

This topic generally describes *what to do*; for *how* to do each tasks, refer to details elsewhere in the guide:

- [Configuring Tempo Resources](#)—setup tasks described in detail
- [Creating Tempo Portal Configurations](#)—details about setting up Tempo Portal configurations to meet your operational requirements
- [Tempo Workflows](#)—for details about creating and configuring Tempo workflows

## Steps to Set Up Tempo

To initially set up Tempo in Vantage, follow this sequence of tasks:

### Tempo Setup Topics

- [Enable Open Workflows](#)
- [Create Tempo Catalogs](#)
- [Create an Ingest Analysis Workflow](#)
- [Create a Tempo Re-Timing \(Publishing\) Workflow](#)
- [Configure a Tempo Portal Configuration](#)

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**Note:** Other initial setup tasks may be required, including licensing, Vantage user management, Vantage stores, setting Edit Service session limits, and Workflow Portal deployment. For details, refer to [Configuring Tempo Resources](#).

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## Enable Open Workflows

You may optionally enable Open Workflows in Vantage when using the Tempo Two Pass feature. In the Vantage Management Console, access Settings & Options, General tab, and check the Enable Open Workflows option.

Also enable Open Workflows at the top of the Workflow Designer and in each action.

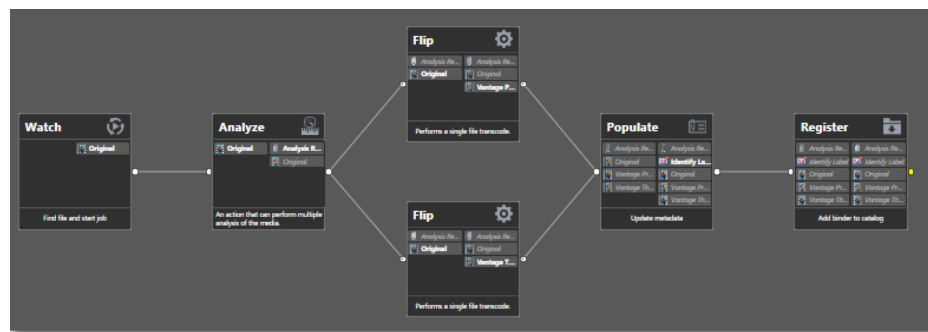
## Create Tempo Catalogs

Your media files must be processed by an ingest workflow and all assets registered in a Vantage catalog for access in Tempo Portal. For a single-pass re-timing, a single catalog will work. For two-pass re-timing, you may want to use two catalogs, or a single catalog with two target folders for Pass 1 and Pass 2. Use the Vantage Management Console Catalogs panel to create catalogs. For details, see [Creating Catalogs](#) in the [Configuring Tempo Resources](#) chapter.

## Create an Ingest Analysis Workflow

Create a Vantage ingest workflow to perform these tasks:

- Watch a hot folder for incoming media and submit a job
- Analyze the media you want to re-time for fundamental characteristics
- Create a proxy of the original file for scrubbing
- Optionally, create a thumbnail of a scene to represent the media in the portal
- Populate a metadata label, such as the Identify Label, with details such as frame rate, resolution, and scan type from the Analysis action.
- Register the asset and all associated resources (original, proxy, thumbnail, etc.) in a Vantage catalog

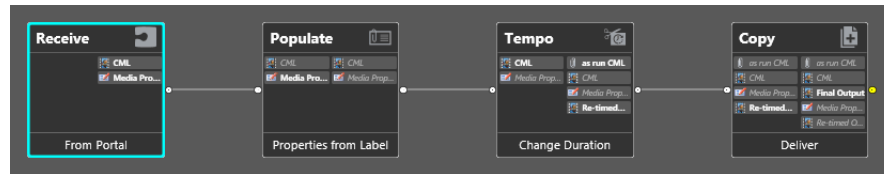


Use this ingest workflow to process all of the media you plan to re-time to create the proxy and optional thumbnail, and register the job results in a Tempo catalog.

A typical [Tempo Ingest Workflow](#) is presented in detail in the [Tempo Workflows](#) chapter.

## Create a Tempo Re-Timing (Publishing) Workflow

Create a re-timing workflow using the Tempo action. This is the workflow to which you will forward re-timing instructions from the Tempo Portal. The workflow will then process and output the re-timed media file.



The minimum workflow contains a Receive action configured to receive the CML (XML) composition file (Expected Nicknames = *CML*) from the Tempo Portal and a Tempo action configured to do the re-timing. For an example [Tempo Re-Timing Workflow](#), see the [Tempo Workflows](#) chapter.

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**Note:** Beginning with Vantage 8.0 UP1 with Tempo ComponentPac 8.0.1, the Tempo action is available in the Telestream Cloud. Refer to the *Vantage Cloud Port User Guide* for details about using the Tempo action and other Vantage actions in the Cloud.

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## Configure a Tempo Portal Configuration

Before you can use Tempo Portal, use the Vantage Management Console to create and configure a Re-time Asset from Catalogs (Create Binder) Workflow Portal configuration. This type of configuration makes the Workflow Portal into a Tempo Portal.

For complete instructions, refer to the [Configuring Tempo Resources](#) chapter.

## Steps to Re-Time Video in Tempo

To re-time media files using Tempo, you follow a sequence of operations employing workflows and using the Tempo Portal to prepare and submit jobs. The overall process follows the order of these topics:

### Tempo Operational Topics

- [Pre-process Media through the Ingest Workflow](#)
- [Load a Tempo Configuration into Workflow Portal](#)
- [Create and Configure Segments for Re-timing](#)
- [Merging Segments](#)
- [Forward the Job to the Tempo Re-Timing Workflow](#)

### Pre-process Media through the Ingest Workflow

After completing the preparatory steps, you can submit media to the ingest workflow to extract metadata, create a proxy, and register it as a binder in a catalog.

1. Activate the ingest workflow you plan to use.
2. Submit one or more media files that you want to re-time to the ingest workflow.
3. When each job has completed successfully, proceed.

## Load a Tempo Configuration into Workflow Portal

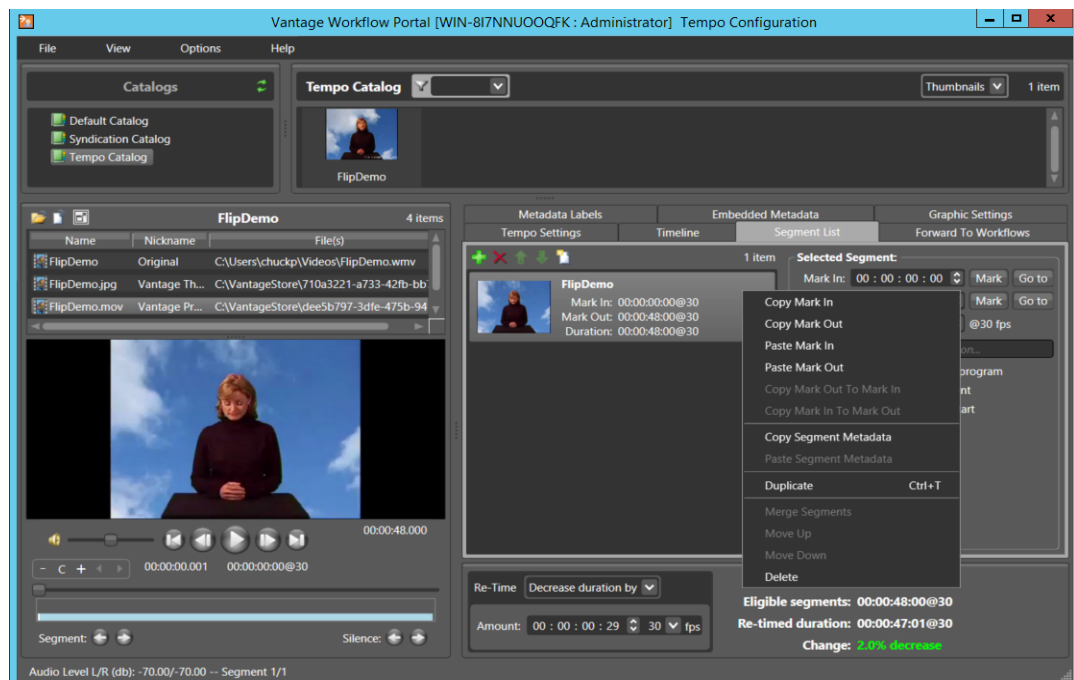
With your media now in the catalog, you can use Tempo Portal to select, segment, and process media.

1. Launch Workflow Portal by double-clicking the desktop icon.
2. Observe the Vantage domain at the top of the window. If required, select *File > Change Domain* to change your Vantage domain.
3. Select *File > Change/Reload Application Configuration* and select the Tempo configuration you created in the Vantage Management Console.

(Workflow Portal remembers the domain and configuration you last used.)

## Create and Configure Segments for Re-timing

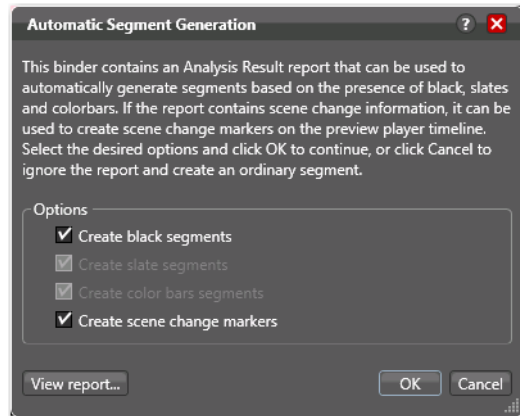
Use the Tempo Portal for scrubbing your media files to re-time them:



1. Select the catalog in the Catalogs list. The catalog's binders display as clip icons or a detailed list in the binder panel, to the right of the catalog list.
2. Click the Segment List tab in the lower right quadrant of Tempo Portal.

3. Click and drag the binder you want to segment from the binder list into the Segment List (or click the + (plus) button in the Segment List to add the selected binder to the list).

If a segment analysis report was generated in the ingest workflow, the identified segments and scene change markers can optionally be added to the list:



You can also view the (XML) segment analysis report via the View Report button or by right-clicking the binder clip in the top clip list and selecting View Analysis Report.

---

**Note:** Segment markers display in white on the media player timeline and the segments themselves display in blue. Scene change markers display in green. To display or hide these markers, select Options > Display Segment Markers | Display Scene Change Markers. Or, right-click on the scrubber and select the same options from the context menu. To jump to segment markers, press the Alt+ Left | Right Arrow keys. To jump to scene change markers, press the Shift-Alt+ Left | Right Arrow keys

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4. Click OK to automatically add the selected types of segments and scene change markers (or Cancel if you plan to add markers manually).

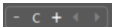
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**Note:** When you click OK to add auto-segmentation, the Segment List spans the entire source file via one or more segments. Creating additional segments is not allowed, but you can review the automatically generated segments and adjust their mark in and mark out points as explained in the next steps.

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5. Select each segment to verify its settings and configure it for processing as appropriate. To adjust segments, click and move the segment markers in the preview player.

If you are entering segments manually, use the *Mark In* and *Mark Out* buttons to enter segment start and end points. You can also enter the timecode directly.

For longer programs where you need to see the timeline in greater detail, use the player timeline scale controls  to expand the timeline.

For more information about segment marking options, see [Managing and Merging Segments](#) later in this chapter.



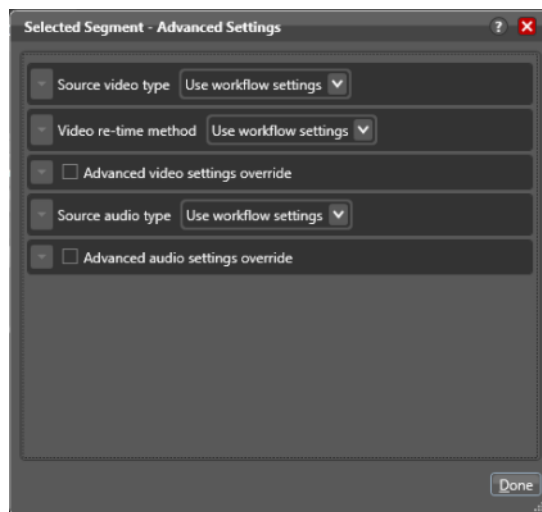
6. Check the desired functions at the bottom of the *Selected Segment* panel.
  - a. Select *Segment is part of program* if you want to include the marked segment in the re-timed program's duration. Uncheck this option to exclude the segment from the program.

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**Note:** If unchecked, a segment is included in the output but is not included in the original duration for segments to be re-timed. This is typically used for content such as bars and tone to be included in the output but not included in the broadcast content.

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- b. Select *Re-time this segment* if you want to include it in re-timing. Uncheck this option to leave its duration unchanged. If unchecked, a segment is still included in the original duration shown to the right of the *Re-Time* parameter.
  - c. Select *Rating graphic at start* to insert a maturity rating graphic in the segment. This graphic is defined in the Management Console > Application Configurations > Workflow Portal > Tempo Configuration > Graphic Settings.
7. Click Advanced to override these Tempo action settings for this segment:



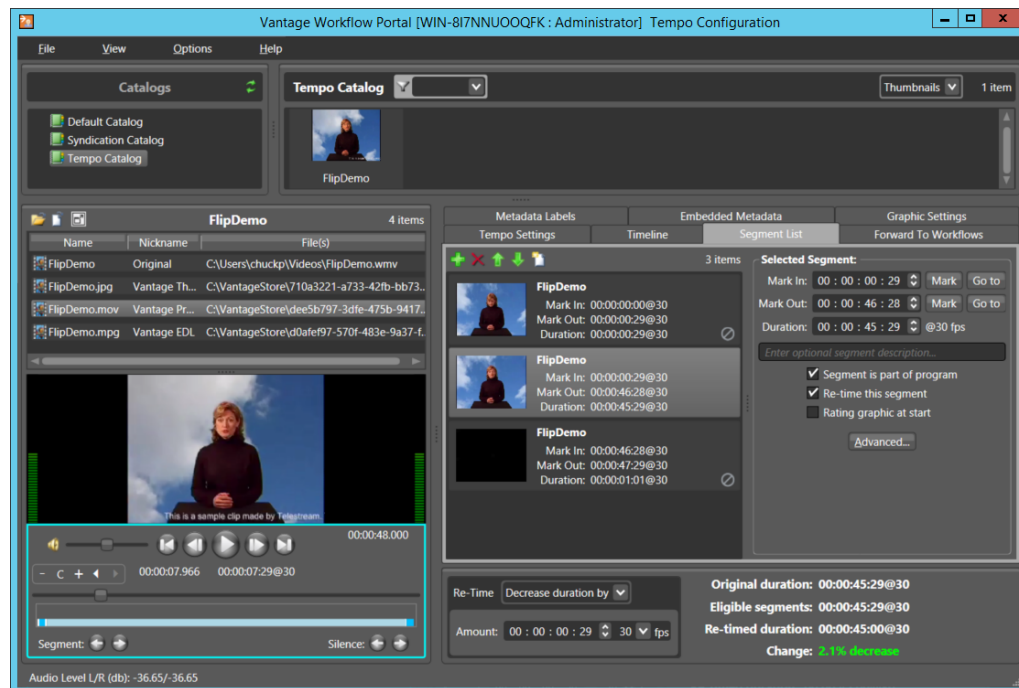
See [Applying Advanced Tempo Settings](#) for control details.

8. If you are marking segments manually, right-click the segment, and select *Duplicate* (Ctrl-t) to create the next segment with *Mark In* timecode starting where the previous segment ends.
9. Repeat the preceding steps to configure the next segment and to create and configure additional segments.

When finished, you should have divided the entire asset or clip into segments and marked them for inclusion/exclusion and re-timing.

**Note:** Sometimes the segmentation process—especially automatic segmentation—may result in gaps or overlaps between segments. See [Merging Segments](#) to learn how to fix this problem.

10. Select the type of re-timing (longer or shorter, using integers or real numbers) at the bottom of the window, and set the duration or percent of change. More change is likely to reduce quality on a sliding scale, of course.



As you modify the duration, the percentage is automatically re-calculated, and the text color may change to indicate the feasibility/quality of the proposed re-timing. These are the methods:

- *Set Total Duration*—re-times the overall program duration to match the new duration for the program you specify.
- *Set Percentage*—re-times the overall program duration by the percentage you specify. Specify the percentage as + or - to lengthen or shorten the program by the specified percentage. You can't manually enter a percentage greater than 10.
- *Increase Duration by*—increases the overall program duration by the amount specified.
- *Decrease Duration by*—decreases the overall program duration by the amount specified.

The *Change* line displays the re-timing you have specified. Green indicates an amount (up to 9%) that is likely to yield higher quality results. Yellow indicates a 9% or greater change, signaling a likely material reduction in quality, and red indicates a change percentage of 10% or greater. If the Change line is red, you must alter the re-timing values to specify a valid percentage before submitting the job.

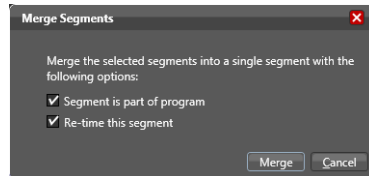
When altering re-timing in a two-pass configuration, select the first pass workflow.

## Merging Segments

Segment creation may result in extra segments that need to be manually removed. This process can cause gaps, overlaps, or redundant partitioning. The *Merge Segments* feature provides a simple way to merge multiple segments into a single segment.

Merging will result in a new segment with Mark In set to the Mark In point of the first selected segment, and Mark Out set to the Mark Out of the last selected segment.

1. Ctrl-click or Shift-click to select multiple segments for merging.
2. Right-click the selected segments, and select *Merge Segments*.
3. Make selections in the Merge Segments dialog:



- To re-time all selected segments, check both options.
- To ignore all select segments, check *Segment is Part of Program* and uncheck *Re-time this Segment*.
- If none of the selected segments are of the program, uncheck both options.
- If selected segments are of different types (retimed, un-retimed, not included), check both options.

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**Note:** When merging into a retimed segment, Tempo preserves the Advanced settings. If several segments to be retimed are selected, and their Advanced settings do not match, Tempo reports an error and cancels merging.

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## Forward the Job to the Tempo Re-Timing Workflow

After you configure your media for re-timing, submit the job to the Tempo re-timing workflow:

1. Activate the Tempo re-timing workflow you created earlier.
2. Select the Forward to Workflow tab in the Tempo Portal.
3. Check the Tempo re-timing workflow that you want to use, and click *Submit*. (When altering re-timing in a two-pass configuration, select the first pass workflow.)

This completes the re-timing process. When the workflow completes, your re-timed media will be stored in the Vantage Store or location you specified.

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**Note:** The Tempo Two Pass Feature requires additional steps. For details, see [Using the Two Pass Feature](#) later in this chapter.

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## Using Tempo Portal

This topic describes the Tempo Portal panels and features in detail:

- [Using the Catalogs Panel](#)
- [Using the Preview Player](#)
- [Viewing Metadata Labels](#)
- [Viewing and Updating Embedded Metadata](#)
- [Specifying and Applying Branding Graphics Files](#)
- [Specifying Tempo Settings](#)
- [Configuring the Segment List](#)
- [Adjusting Total Re-timing](#)
- [Forwarding to Workflows](#)
- [Using the Two Pass Feature](#)

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**Note:** If you are not familiar with using Workflow Portal's panels and general features to process and submit media, please read the Using Workflow Portal chapter in the Vantage User Guide.

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## Using the Catalogs Panel

The Catalogs and binders panel runs across the top of the Tempo Portal and allows you to select the catalog and binder containing the media you want to work with.

### Catalogs

When you first open the Tempo Portal, you are asked to select an application configuration, or you can manually select File > Change/Reload Application Configuration. This function loads the Tempo Portal configuration you created in the Vantage Management Console, and the configuration specifies which catalogs you will be able to see in the portal.

### Refreshing Catalogs

To begin using the Catalogs panel, click the Refresh button (two green arrows) to show the latest catalogs.

### Selecting a Catalog

Next, click a catalog in the upper left corner, and notice that thumbnails or lists of binders appear along the top of the portal. Binders are registered into the catalogs when you run Tempo ingest workflows.

You can filter the binder list (if there are multiples) by entering a text term in the drop-down filter menu, and you can display by thumbnails or details list using the drop-down menu on the right. The displayed binders contain the media clips that were added to them using ingest workflows—both an original clip and a proxy.

### Selecting a Binder

Click a binder in order to work on re-timing its clips. The selected binder contents are listed above the preview player, and the proxy contained in the binder is automatically selected in the list and displayed in the player window.

To work on re-timing the media contained in a binder, click and drag that binder from the binder list into the Segment List panel, where you can begin setting up re-timing.

Controls	Functions
Catalogs	Lists available Tempo catalogs. Click a catalog to select it.
Refresh	Click the green arrows to refresh the catalog list.
Binder list	Lists binders in the selected catalog.
Binder filter	Filters the binder list. Enter text to filter on a name.
Thumbnails/Details	Toggles between thumbnail and text binder list.

## Using the Preview Player

The Tempo preview player plays media in the selected binder. A list above the video displays which files are available in the selected binder. Clicking on a media file in the list displays that file in the player window.

The player includes standard player forward, pause, and reverse controls, audio controls, and a timeline scrubber, as well as indicators and controls for segment, scene, and artifact start points. The player can also seek the next or previous silence segment (not shown with markers). Any overlapping segments are highlighted in red and should be re-marked to eliminate overlaps.

Buttons above the player allow opening the folder containing the currently playing media, opening the selected media in a default application, and maximizing or restoring the size of the image.

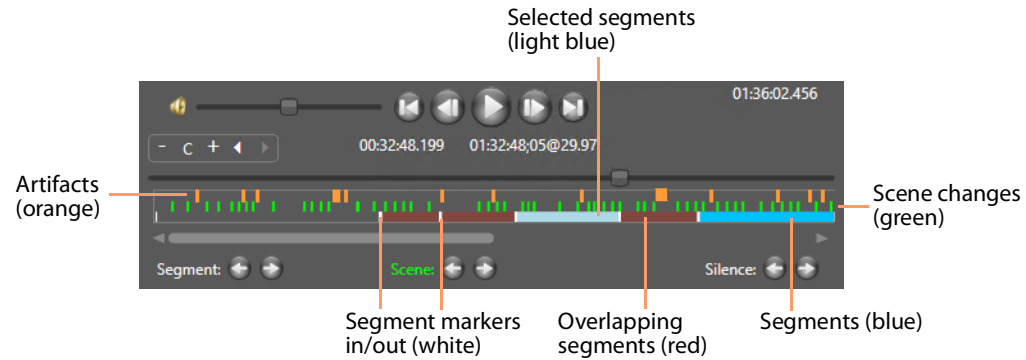


A table describing the player controls is presented below.

Controls	Functions
Open Containing Folder	Opens the folder containing the currently selected file.
Open with default program	Opens the currently selected file in the default program.
Maximize/Restore Video Preview	Toggles between the maximum and normal image size.
Binder File List	Lists files in the selected binder. Clicking a file plays it.
Play/Pause	Toggles between play and pause.
Bump Reverse	Bumps video backward one frame.
Bump Forward	Bumps video forward one frame.
Go to End	Moves the scrubber to the last frame.
Go to Start	Moves the scrubber to the first frame.
Audio Volume/Mute	Toggles between sound and mute; slider sets volume. Audio bars at video sides provide audio metering.
Timeline Scrubber	Slider sets video position on the timeline as indicated by the time position and timecode displays. Segments are indicated by white markers on the timeline.
Timeline Scaling Controls	The timeline scale controls enable expanding (+) and contracting (-) the timeline scale and jumping backward and forward in timeline history (< >). The C centers the timeline slider, which you can slide to see hidden parts of the timeline. These controls are helpful for viewing long projects where you need to see greater detail.
Segment	Segment forward/back buttons jump to next/previous segment when you are marking segments for re-timing.
Scene	Scene forward/back buttons jump to the next/previous scene (timeline green markers). Scene changes are provided to the Portal by the Scene Change Analysis filter in the ingest workflow's Analyze action.
Artifact	Artifact forward/back buttons jump to next/previous artifact (timeline orange markers). Artifacts are only present when a Tempo Quality Report detects media artifacts where the Quality Threshold is not met after an initial re-timing pass.
Silence	The silence buttons detect the next/previous silent period from the current location. Level threshold and duration are specified in the Timeline settings tab.

## Timeline Markers

The timeline markers appear in different colors depending on a marker's meaning. The markers are called out in the figure and explained in the table below.

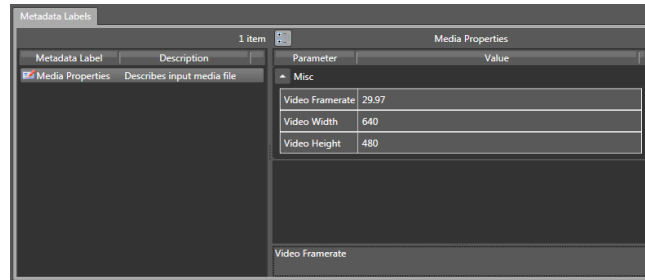


Controls	Functions
Segment markers	Segment markers are white and correspond to the mark in and mark out points for the segment.
Scene changes	Green markers indicate scene changes. Scene changes are provided to the Portal by the Scene Change Analysis filter in the ingest workflow's Analyze action.
Artifacts	Artifact markers are orange and are only present when a Tempo Quality Report detects that the Quality Threshold is not met after an initial re-timing pass.
Segments	Segments appear as medium blue bars.
Selected segments	A selected segment appears as a light blue bar.
Overlapping segments	Overlapping segments are dark red. You must fix overlapping segments so they do not overlap.



## Viewing Metadata Labels

When the configuration permits it, you can view metadata labels forwarded by a workflow. The label information can be helpful during configuration. For example, the Media Properties label can show the video frame rate, width, and height. The metadata displayed changes depending on the label.



When you submit a clip to a workflow for processing, all metadata labels are included, so that the workflow can access the metadata and use it as necessary.

## Viewing and Updating Embedded Metadata

When enabled in a configuration, you can view and update the default Embedded Metadata defined by the Tempo Portal Configuration (in the Management Console). Your configuration may also allow viewing but not changing.

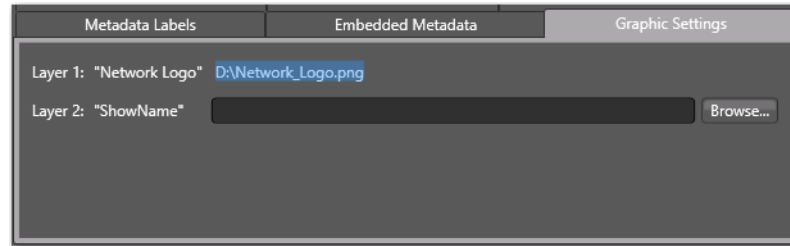


This table describes the Embedded Metadata Rating panel. This panel allows you to select the content rating system from a drop-down menu, the specific Rating from another drop-down menu, and check the rating text to display.

Controls	Functions
Rating (system)	Selects the rating system to use: <ul style="list-style-type: none"> <li>- Not Set</li> <li>- MPA</li> <li>- US TV Parental Guidelines</li> <li>- Canadian English Language Rating</li> <li>- Canadian French Language Rating</li> </ul>
Rating (for this program)	Selects the rating to apply to this program. The ratings available change with the rating system.

## Specifying and Applying Branding Graphics Files

If you are responsible for selecting branding files on a per-job basis, your Tempo Portal configuration Graphic Settings tab will be configured to allow you to browse and select these files. (The graphic tab is configured in the Management Console > Application Configurations > Workflow Portal > Graphic Settings.)



Up to 5 branding layers are allowed; the configuration can be configured to allow operator selection of any or all layers.

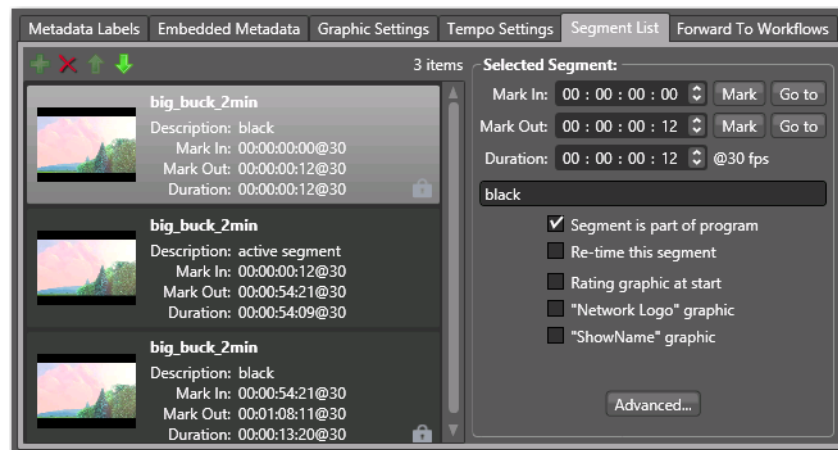
In this example, note that layers have logical names, may or may not be assigned a default graphic file, and may or may not permit the operator to select a file on a job-by-job basis.

## Applying Branding Graphics

To add branding to a segment, display the Segment List tab.

Select the segment and check the graphics layers you want to add.

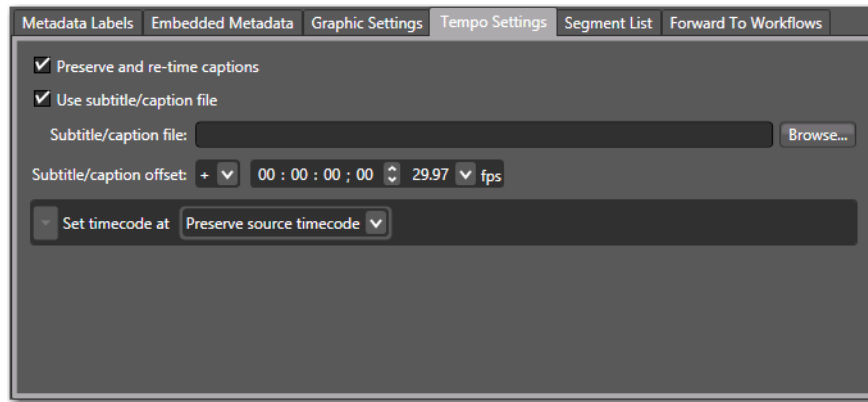
Up to 5 layers can be added, as specified in the Tempo Portal configuration. You can apply this branding to any segment or segments you choose.



You can also apply branding logos or specifications automatically, by setting up a pre-ingest workflow and use Post Producer to burn in your branding as required.

## Specifying Tempo Settings

The Tempo Settings panel (with features described in the table below) allows you to set options related to caption processing and timecode in the re-timed output file.



Controls may be modifiable or read-only, depending on the configuration. Some controls may not display at all, if the configuration has been set to disable that feature.

The options and settings are described in the following table.

Controls	Functions
Preserve and re-time captions	Selects whether to include and re-time captions together with the re-timed media. Applies to embedded captions and caption files.
Use subtitle/caption file	Check Use subtitle/caption file to include a caption (.SCC) or subtitle (.STL) file that plays with the re-timed output media file instead of pulling captions from the source.  <b>Note:</b> The start timecode in the caption/subtitle file must match the start timecode of the media file.
Subtitle/Caption file	When using a subtitle/caption file, enter the fully-qualified path or click Browse to select the file.

Controls	Functions
Subtitle/caption offset sign	Adjusts the start time of captions forward (+) or backward (-) relative to the specified starting timecode in the SCC or STL file. Use the offset feature described below to set the offset amount.
Subtitle/caption offset	<p>To adjust caption/subtitle file timecode start, select <i>Subtitle/caption offset</i>, enter the amount of offset in timecode, and set <i>Subtitle/caption offset sign</i> (+ or -) to adjust the offset forward or backward.</p> <p>Sets the amount of start time adjustment to apply to captions or subtitles relative to the start time specified in the caption or subtitle file.</p>
Set timecode at	<p>Sets the starting or ending point of timecode in the re-timed media output file:</p> <ul style="list-style-type: none"><li>• Preserve source timecode (default): Use the timecode in the source media (first frame timecode in the output will match first frame timecode in the source). If no timecode is present in the source, zero start timecode is used.</li><li>• First frame of program: Start timecode at the first frame of the program (first frame of first segment marked "Segment is part of program").</li><li>• Last frame of program: End timecode at the last frame of the program (last frame of last segment marked "Segment is part of program").</li><li>• First frame of output file: Start timecode at the first frame of the media output file.</li><li>• Last frame of output file: End timecode at the last frame of the media output file.</li></ul> <p>When you select first or last frame, timecode settings open to let you set the timecode value.</p>

## Configuring Timeline Settings

The Timeline tab provides settings to control the functionality of the Silence buttons on the Preview panel timeline.

*Silence level threshold*—Sets the level for detecting silence. Default: -40db.

*Silence duration minimum*—Sets the minimum number of frames defining a period of silence. Default: 1 frame.

*Artifact Quality Threshold*—Sets the threshold for detecting artifacts and inclusion of artifact markers in the timeline. Default: 100%. If this value is set higher than the maximum specified in the quality report, the value in the quality report prevails and this value is ignored.

Metadata Labels	Embedded Metadata	Graphic Settings
Tempo Settings	Timeline	Segment List
Forward To Workflows		

Silence level threshold:	-40.0	dB
Silence duration minimum:	1	frames
Artifact quality threshold:	100	0-100

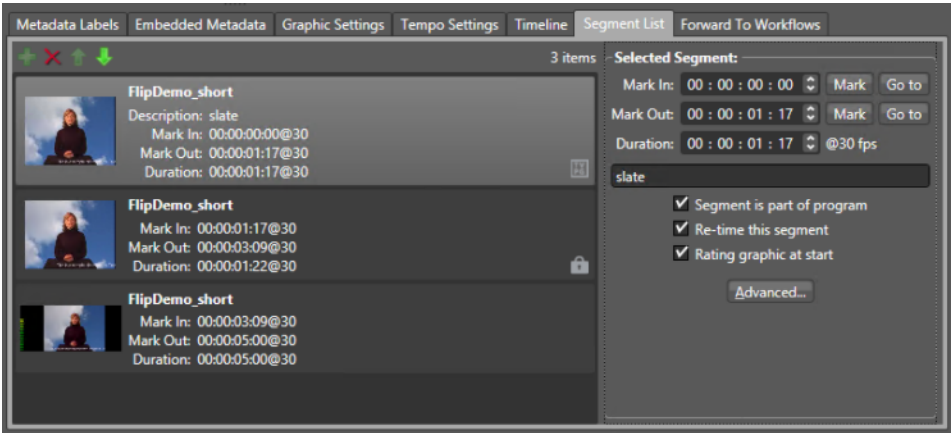
## Configuring the Segment List

As segments are created, view them in the player and mark their in and out points to assemble a complete program. To locate in and out points, use the player scrubber. The in/out timecode displays for the selected segment update automatically as you scrub.

- [Segment List Overview](#)
- [Applying Advanced Tempo Settings](#)

### Segment List Overview

The Segment List provides the palette for assembling your re-timed program. You drag the binder into the Segment List tray and duplicate it (right-click Duplicate) to divide it into multiple segments.



The segment list features are described in the table following.





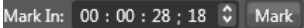
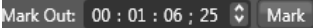

**Note:** If you used an Analyze action with Black Detection, Scene Change Analysis, and Slate/Spot Analysis to generate a segment analysis report, the report is processed when you drag the binder into the segment list. For each segment in the report, a new segment is created, reducing operator workload.

The *Segment is part of program* check box allows you to include or exclude a segment from the total running time calculation of the clip. New excluded segments are added to the end of the segment list by default. To reorder segments, right-click the segment list and select Sort List by Mark In. This places listed segments in order by Mark In time.

Use the *Re-time this segment* control to include or exclude the segment from re-timing.

Use the *Rating Graphic at Start* control to include or exclude a rating graphic at the start of this segment.

The *Advanced* button displays a dialog with advanced settings (see [Applying Advanced Tempo Settings](#)) that override the Tempo action settings in the publishing workflow.

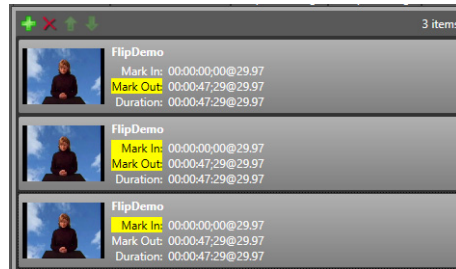
Controls	Functions
Add segment (+) 	Click + to copy the selected binder from the Catalog to the Segment List. You can also drag and drop. When marking segments on the timeline, scrub to the desired position for a new segment, and click + to add a new segment marker to the timeline. This also adds a matching segment to the list with Mark In set to the position of the new segment marker.
Delete (X) 	Click to delete the selected segment.
Up arrow 	Click to move the selected segment up in the list.
Down arrow 	Click to move the selected segment down in the list.
Mark In 	Mark the in point in the selected segment by direct entry, by using the arrows, or by scrubbing in the player, and pressing Mark.
Mark Out 	Mark the out point in the selected segment by direct entry, by using the arrows, or by scrubbing in the player, and pressing Mark.
Go to 	Click to set the player position of the selected segment to the current Mark In or Mark Out point (shown in the timecode display).
Duration	Set the duration of the selected segment by direct entry. Automatically displays duration as Mark In and Mark Out are changed.
Segment description	Enter a text description of the segment (optional).
Segment is part of program	Check to include the selected segment(s) in the re-timed program.
Re-time this segment	Check to re-time the selected segment(s).
Rating graphic at start	Check to display the rating graphic during the selected segment. The rating is set up in the Management Console portal configuration.
Branding Graphics (one per enabled layer)	When up to 5 content branding layers and their branding graphic are specified and configured in the Tempo configuration, they display here. Check to display a specific branding graphic during the selected segment.
Use Subtitle/Caption File	When Preserve and Re-time Captions is specified and configured in the Tempo configuration, this option displays here. Check to use the specified caption file during the selected segment.



## Managing and Merging Segments

Automatic segment creation often results in extra segments that need to be manually deleted. However, deleting segments causes gaps or overlaps in the timecode of the remaining segments.

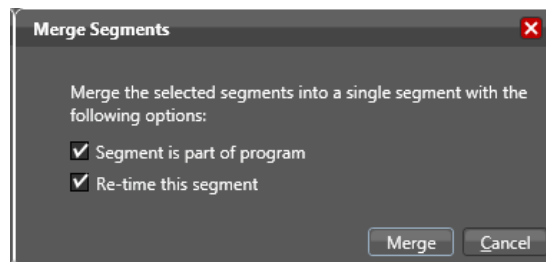
Gaps and overlaps in adjacent segments are indicated by yellow warning highlights of the Mark In/Out labels, and an explanatory tooltip appears when you hover over the labels. For excluded segments, only overlapping timecodes generate this warning.



One way to resolve gaps and overlaps is by re-marking the in and out point of each affected segment. This will clear the yellow highlights, but it's time-consuming.

Alternatively, you can merge multiple segments into a single segment. When merged, the segment timecode Mark In is set to the first selected segment Mark-In, and Mark-Out is set to the last selected segment Mark-Out.

To merge segments, use Ctrl/Shift-click to select multiple segments, and right-click on *Merge Segments*. The following dialog opens.



Check boxes allow you to specify handling of program inclusion/exclusion and re-timing:

- Segment is part of Program—check to include the merged segment in the program.
- Re-time this segment—check to re-time the merged segment.

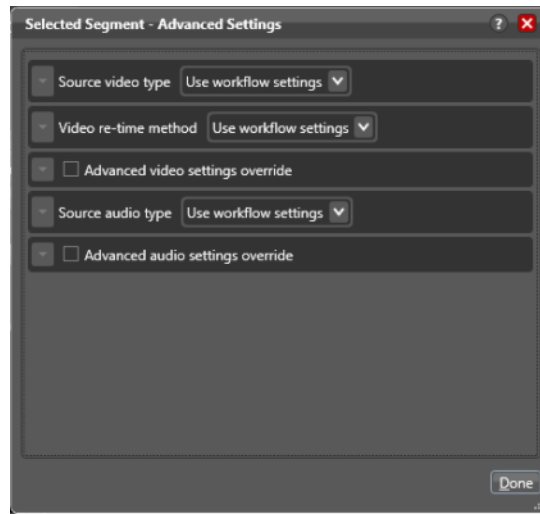
Note that excluded segments cannot be merged.

When you finish re-marking or merging all segments affected by gaps or overlaps, the yellow warning indicators on the mark labels will be eliminated.

## Applying Advanced Tempo Settings

Advanced Tempo Settings (*Advanced* button in Selected Segment panel) allow the operator to override the target workflow's Tempo action advanced source video and audio settings, and re-timing methods on a per-segment basis.

These settings are the same as the Tempo Settings in the Tempo action, except for a few missing controls that are not applicable here. Refer to [Configuring Tempo Settings](#) in the Tempo Workflows chapter later in this guide for details.



## Adjusting Total Re-timing

Use the Re-time panel to specify how to re-time a program, and by what amount.

The screenshot shows the 'Re-Time' panel. On the left, there is a dropdown menu set to 'Decrease duration by' and an 'Amount' field showing '00 : 00 : 10 : 00' with a timecode display showing '29.97' and 'fps'. On the right, there are four lines of text: 'Original duration: 00:03:55:13@29.97', 'Eligible segments: 00:02:47:17@29.97', 'Re-timed duration: 00:03:45:13@29.97', and 'Change: 8.0% decrease'.

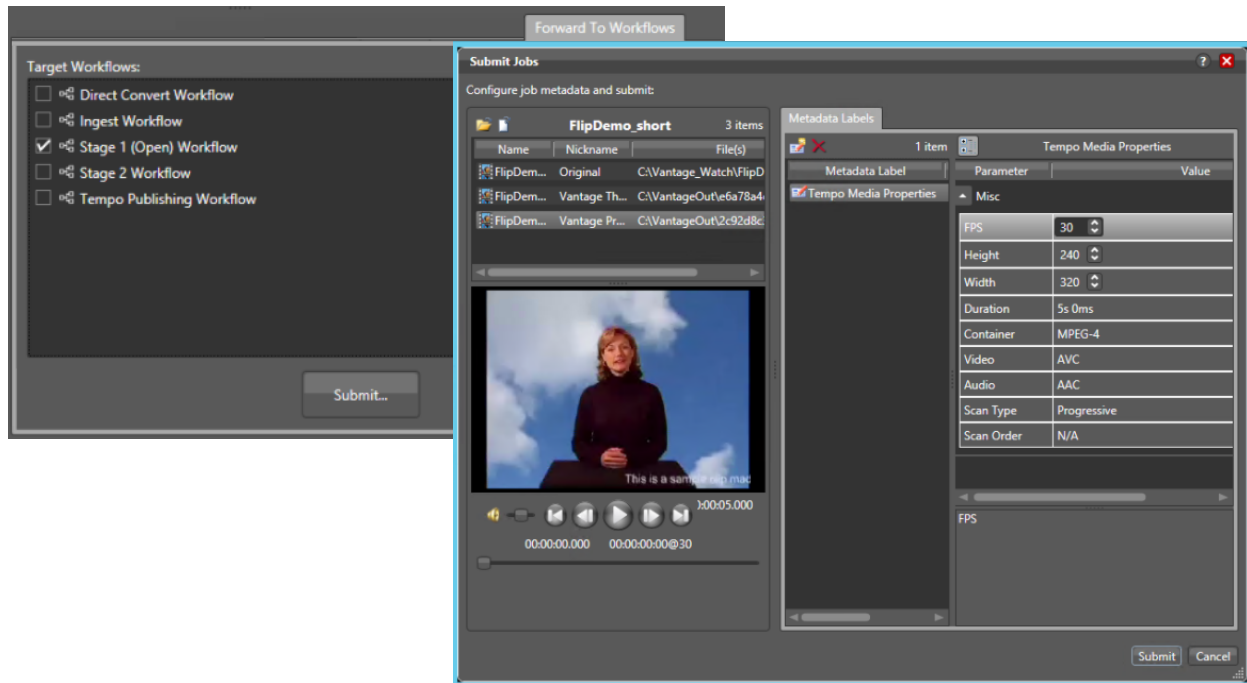
After setting up the overall program by marking segments, select whether to re-time by changing the total program duration to a specified new duration or by increasing or decreasing the duration by an amount of time. Then enter the new duration or the amount of change by direct entry in the timecode display.

If the Change value is green or yellow after you set the duration/amount, your program is ready for re-timing. If the Change line is red, you must alter the duration/amount within allowed limits.

Controls	Functions
Re-time	<p>Select how to re-time:</p> <p><i>Set total duration:</i> Re-times a clip to match the duration specified in Amount.</p> <p><i>Set percentage:</i> Re-time the clip by the percentage specified.</p> <p><i>Increase duration by:</i> Increase by the Amount specified.</p> <p><i>Decrease duration by:</i> Decrease by the Amount specified.</p>
Duration/Amount/Change	Specify the overall duration or the amount of duration change by timecode direct entry, or set overall percentage change.
Timecode displays	<p><i>Original duration:</i> Original clip total duration. (Not including segments that have <i>Segment is part of program</i> unchecked.)</p> <p><i>Eligible segments:</i> Total duration of segments being re-timed.</p> <p><i>Re-timed duration:</i> Projected total duration of segments selected for re-timing after re-timing is done.</p> <p><i>Change:</i> Percentage of duration increase or decrease. Green (&lt;9%) and yellow (&gt;9%) indicates an acceptable percentage. Red indicates 10% or higher, which exceeds the limit. Change the re-timing duration/amount.</p>

## Forwarding to Workflows





The Forward to Workflows tab and panel (described in the table following) lets you select re-timing workflows to which you can submit your finished re-timing project.



This panel is not displayed if *Show Forward to Workflows* is unchecked in the Management Console Tempo configuration. In that case, the Submit button is on the main panel.

1. Check the workflows to which you want to submit media for re-timing, and press the *Submit* button. In a two-pass configuration, select the first pass or second pass workflow, as appropriate.
2. Make any Metadata Label changes in the Submit Jobs window.
3. Press *Submit* in the Submit Jobs window.

The workflows must be activated and ready to process, and they must include Receive and Tempo actions as described in the [Tempo Workflows](#) chapter. Otherwise, an error message indicates that the workflow is not running or doesn't exist.

Controls	Functions
Add Metadata Label 	Allows labels to be added to the binder, if permitted by the Workflow Portal configuration. Click Browse to select the label to add.
Delete (X) 	Select a label from the list and click Delete to delete a label.
List and Parameters	Added labels appear in a list on the left, and their parameters appear on the right.
Categorize 	Click to expand categories in the label parameters list. Click again to close.
Submit 	Submits the project to the selected workflows.

## Using the Two Pass Feature

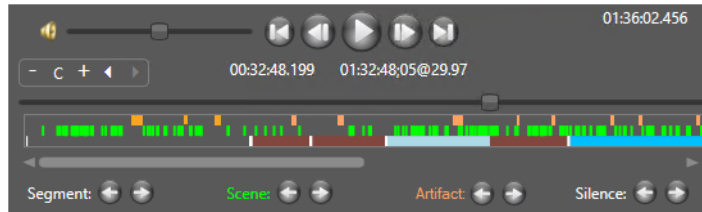
The Tempo Two Pass feature enables you to re-time media in two passes through two different workflow stages to achieve very high-quality re-timing results. These are the general steps for performing Two Pass re-timing:

1. Before the two re-timing passes can be performed, you must run an ingest workflow that registers the media, proxy, and thumbnail in a Pass 1 catalog. The catalog can be named anything, but using the "Pass 1" name serves as a reminder that this catalog is used for the first re-timing pass.
2. In the Tempo Portal, review the Pass 1 catalog binder, and mark segments for re-timing in the same way as for single-pass re-timing projects described earlier in this chapter.
3. Submit the media you have marked in the portal to the first pass (ingest) workflow using Forward to Workflows. For convenience, you might call this workflow *Pass 1*. The Pass 1 workflow includes a Tempo action that is set to Multi Pass/1st Pass. This action performs initial re-timing and outputs a re-timed Tempo Intermediary TIFO file. The action also produces a Tempo Quality Report that identifies segments that may display quality artifacts resulting from re-timing.

Additionally, this workflow can include an Analysis action to perform Scene Change Analysis and feed it to the second pass workflow so that scene changes can be automatically detected and displayed on the preview player timeline. Files produced by the Pass 1 workflow, including the re-timed media, proxy, Tempo Quality Report, the original CML, and scene Analysis Result attachment are stored in a Pass 2 catalog for review by the Tempo Portal Operator and use in the second pass.

4. In the Tempo Portal, create a New Project to clear your first pass selections, and then view the Pass 2 catalog which includes the first-pass re-timed media and files. The scene changes and quality artifacts in the first-pass are shown on the timeline. Additionally, the Segment List will have changed names to an Exclusion Segment List that lists all segments containing re-timing artifacts where the quality is below the Quality Threshold set in the Pass 1 Tempo action.
5. Notice the timeline features described below. The orange artifact markers indicate places that did not meet the re-timing quality threshold in Pass 1. You can then mark the scenes containing those artifacts to be excluded from re-timing in Pass 2.
  - Timeline markers:
    - Orange - Artifacts
    - Green - Scene changes
  - Timeline buttons:
    - Scene
    - Artifacts
    - Silence
  - Jump between artifacts and scene changes by pressing the corresponding buttons.
  - Jump between silence points, open the Timeline tab and note silence detection settings.

- Note that excluded segments are best created on scene changes with low audio levels, when possible. Creating excluded segments when the audio level is high may result in momentary audio glitches.
- Note that as opposed to a 1st pass binder, the Segment List tab is now called Excluded Segment List. Scenes you add to this list will be excluded from re-timing.



6. Look through the segments in the Exclusion Segments List in the preview player and possibly delete any that are acceptable visual quality or manually add other segments to the list that you feel should be excluded from re-timing to improve quality. The purpose of this second pass in the Tempo Portal is to *exclude* all segments that exhibit unacceptable quality so that a second re-timing pass will not touch those segments, resulting in a higher quality final re-timed output.
7. Use Forward to Workflows to submit the media you have just marked up for re-timing again in the Pass 2 workflow. Your Exclusion Segment List is converted to an Exclusion CML, which is automatically processed with all the other files from the Pass 1 workflow to do a second re-timing of the media.
8. When the Pass 2 workflow completes, the re-timed output file can be found in the Vantage Store specified in the workflow. The re-timed media does not re-time any of the scenes you marked for exclusion after Pass 1. This should produce a re-timed output in which all scenes are above the Quality Threshold set in the Tempo action.

For additional information about using the Two Pass feature, see the [Tempo Workflows](#) chapter in this guide. You may also want to refer to the demo video and accompanying Vantage App Note called "Using Tempo Two Pass" on the [Telestream.net](https://telestream.net) web site.

## Tempo Portal Menus

This table describes the menu selections in the Tempo Portal.

Menu	Selection	Description
<b>File</b>	Change Vantage Domain	Displays a window for selecting a domain from all the domains on the network.
	Recent Domains	Shows recently accessed domains in a menu for selection.
	Change/Reload Application Configuration	Displays a window for selecting a Workflow Portal configuration.
	Exit	Closes the Tempo Portal program.
	New Project	Clears the clip and segment list to start a new project.
	Open Project	Opens a previously saved project file and places the Portal in the state the project was in when it was last saved.
	Save Project F11	Re-saves the current Portal project. Also use F11 to re-save existing projects.
	Save Project As F12	Saves the current Portal project in XML format in the location you specify. Also F11 saves new projects as, or F12 saves existing projects as.
<b>View</b>	Half Size Video	Sets preview video scale to 50%.
	Normal Size Video	Sets preview video scale to 100%.
	Double Size Video	Sets preview video scale to 200%.
	Scale Video to Fit	Scales preview video to fit the window.



Menu	Selection	Description
<b>Options</b>	Restore Tips & Warnings	Restores Portal tips and warnings display after the feature has been disabled.
	Hide Tips & Warnings	Hides Portal tips and warnings.
	Prompt for Login Next Time Application is Launched	When checked, the Portal requires login each time the program is launched, to increase security.
	Use Clip Start Time	When checked, the preview window uses the start time defined in the proxy media. When unchecked, the start time is zero.
	Display Audio Levels	Turns audio level bars on and off, along the sides of the preview window.
	Display Segment Markers	Shows/hides the segment markers (white) on the timeline in the player.
	Display Scene Change Markers	Shows/hides the scene change markers (green) on the timeline in the player.
	Display Artifact Markers	Shows/hides markers identifying re-timing artifacts for operator inspection
	Display Marker Navigation Buttons	Shows/hides the Marker Navigation buttons
	Enable Mark In Keyframes	Enables/disables generation of segment specific keyframes on a Mark In.
	Enable Preview Player Timeline Expansion	Enables/disables timeline expansion feature
<b>Help</b>	Contents	Displays the help guide.
	Index	Displays the index of the help guide.
	Search	Searches for key words in the guide.
	Tempo Portal Help	Displays the Tempo User Guide.
	Online Help	Displays the Vantage guides available on the Telestream web site.
	About	Displays the Portal version information.

## Tempo Context Menu

This table describes the context menu commands in the Tempo Portal Segment List.

Selection	Description
Copy Mark In	Copies the Mark In value of the selected segment.
Copy Mark Out	Copies the Mark Out value of the selected segment.
Paste Mark In	Pastes a copied Mark In value to the selected segment.
Paste Mark Out	Pastes a copied Mark Out value to the selected segment.
Copy Mark Out to Mark In	Enabled when multiple segments are selected. For all selected segments, it replaces the Mark In time with the Mark Out time of the preceding segment.
Copy Mark In to Mark Out	Enabled when multiple segments are selected. For all selected segments, it replaces the Mark Out time with the Mark In time of the next segment.
Sort List by Mark In	Sorts the Segment List by Mark In values.
Copy Segment Metadata	Copies the metadata of the selected segment.
Paste Segment Metadata	Pastes copied metadata to the selected segment.
Duplicate	Creates a copy of the selected segment.
Merge Segments	Merges multiple segments selected by Ctrl-click or Shift-click.
Move Up	Moves the selected segment up one position in the list.
Move Down	Moves the selected segment down one position.
Delete	Permanently removes the selected segment.

# Tempo Workflows

This chapter presents prototype Tempo workflows that you can implement to give you a head start in deploying Tempo in your environment.

Two workflows are required for a minimal Tempo workflow to re-time media:

- [Tempo Ingest Workflow](#)—ingests media, creates proxy and thumbnail files, and registers the files into the catalog used in the Tempo Portal. Optionally, black and slate/spot/color bar segments are identified, and a metadata label is created.
- [Tempo Re-Timing Workflow](#)—often called a publishing workflow in all Workflow Portal applications—ingests the Portal-generated composition that identifies the source asset to re-time and provides re-timing instructions. This workflow transcodes a re-timed media file.

Additionally, the Tempo Two Pass feature allows you to process media in multiple passes to achieve very high quality re-timing results.

- [Tempo Two Pass Re-timing Workflows](#) allow you to re-time the media in stages for best results.

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**Note:** Beginning with Vantage 8.0 UP1 with Tempo ComponentPac 8.0.1, the Tempo action is available in the Telestream Cloud. Refer to the *Vantage Cloud Port User Guide* for details about using the Tempo action and other Vantage actions in the Cloud.

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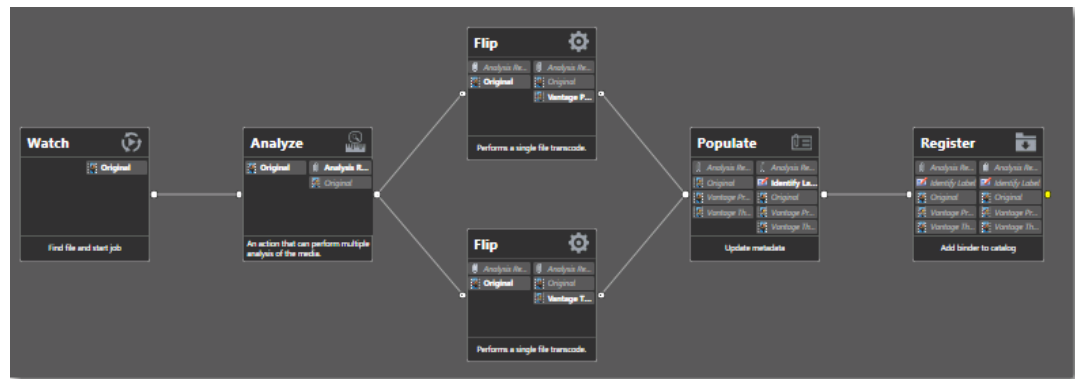
**Note:** Before you can implement the workflows you will create here, you must create Tempo Portal configurations and set up other resources as explained in the chapter, [Configuring Tempo Resources](#). In particular, to take advantage of the Tempo Two Pass feature, configure all resources as explained in that chapter, and then create Portal configurations as described in [Creating Two Pass Portal Configurations](#).

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## Tempo Ingest Workflow

Before media files can be reviewed and segmented for re-timing using Tempo Portal, they must first be processed by an ingest workflow to these operations:

- Ingest the source media file in a target directory monitored by a Watch action or manually submitted to the workflow starting with a Watch or Receive action
- Optionally, analyze source for Black Detection, Scene Change Analysis, and Slate/Spot Analysis.
- Optionally, analyze source and extracts specific metadata into a label
- Create a proxy from the media file (required) and create a thumbnail (optional)
- Register the source media file into a catalog along with the output from the workflow: thumbnail, proxy, metadata, segment report, etc.



Any workflow can be used as an ingest workflow, if receives a source media input file, creates a proxy file, and registers the output into a catalog. Optionally, the ingest workflow can be configured to analyze the source media to extract metadata, and for Black Detection, Scene Change Analysis, and Slate/Spot Analysis, which can be automatically created in Workflow Portal, reducing operator workload.

Vantage Tempo can utilize these types of files in Tempo Portal:

- *Segment Analysis Report*—generated for use in automatically creating Black Detection, Scene Change Analysis, and Slate/Spot Analysis segments in Workflow Portal.
- *Proxy*—a small, QuickTime duplicate of the source file that is used to scrub video:
- Create a QuickTime H.264/AAC MOV proxy file or an MP4 x264/AAC proxy file (with a timecode track included in the container for QuickTime only).
  - The encoded proxy file must have the same frame rate and timecode notation as your source media. The frame should be the same ratio, smaller for scrubbing (and encoding speed).
  - For SD proxies (4:3) use a 640 x 480 frame size. For HD proxies (16:9) use 640 x 360.
  - Assign the nickname *Vantage Proxy*, which the player automatically recognizes.

- *Optional Thumbnail*—a JPEG keyframe snapshot in the source file displayed in the Tempo Portal Catalog binder list to visually represent the binders. Consider grabbing a keyframe several seconds into the source.
- *Metadata Label*—which can be populated with metadata extracted from the source so that you can pass the metadata to a publishing workflow for use there.

## Watch Action

Configure the Watch action (in the Monitor category) to ingest the source media file from a watch folder.

## Analyze Action

The Analyze (from the Analysis category) action automates detection and analysis of black, slate and spot and color bars, as well as scene changes and analysis of Telecined material and its characteristics.

This aids in metadata extraction and automatic segment generation. Depending on your requirements, configure an Analyze action with these optional tools as follows:

- In the Analyze Settings for the action, check Generate Analysis Result Attachment and specify *Analysis Result* as the file nickname (required). This file will contain data for each tool you add. In Workflow Portal, when you drag media into your segment list, the data is used as appropriate, depending on the type of segments you decide to auto-generate.
- *Media Properties tool*— Enable Video Width, Video Height, and Video Framerate, assigned to variables of the same name. This metadata is added to a metadata label for passing to a publishing workflow for use in the Tempo action for transcoding.
- *Black Detection tool*—to identify black segments; typically you can use the default configuration except under General, where you should disable Consider Audio. For special circumstances, configured per your requirements.
- *Slate/Spot Analysis tool*—to identify slate, spot, and color bars segments; typically use the default configuration except under General, where you should disable Consider Audio. For special circumstances, configured per your requirements.

The results of the black and slate/spot detectors (timecode and duration) are stored in the report to automatically create these segments in Workflow Portal.

- *Scene Change tool*—to identify scene changes and identify them as segments; typically, use the default configuration. For special circumstances, configured per your requirements.
- *Telecine Detection tool*—to identify scene changes and identify them as segments; typically, use the default configuration. For special circumstances, configured per your requirements.
- *Telecine Cadence Analysis*—to detect breaks or changes in Telecined content, to determine the cadence(3322/3232), field order, starting phase, and position of the

first repeated position in the cadence. The filter can detect both a 3:2:3:2 and a 3:3:2:2 cadence within the source media.

Check for each metric to collect, and assign a variable. Then, add a Populate action and create a label with these variables as parameters, to be used in the publishing workflow (which must be modified to accept the label and use the parameters.) In Tempo, if your Source Video Type is set to Telecined 60i (Unedited, with Fixed Known Cadence), you can bind the value of the First Repeated Field Position to the appropriate variable from the ingest workflow.

## Flip Actions

Two Flip actions (located in the Transcode category) transcode the incoming media file into a QuickTime or MP4 proxy file for scrubbing, and a keyframe JPEG image to use for the thumbnail view.

### Proxy Flip Action

This Flip action generates the proxy file. It should be configured as follows:

- Create a QuickTime H.264/AAC MOV proxy file or an MP4 x264/AAC proxy file.
- The encoded proxy file must have the same frame rate and timecode notation as your source media.

*H.264 Video*—For the Frame Width/Height/Frame Rate, and Frame Rate settings, bind them to the variables you specified in the Analyze action. (You could also add a Compute action to correctly reduce the size of the frame retaining the correct frame ratio.) Alternatively, for SD proxies (4:3) use a 640 x 480 frame size. For HD proxies (16:9) use 640 x 360.

- Assign the nickname *Vantage Proxy*, which the player automatically recognizes.

### Thumbnail Flip Action (Optional)

This Flip action that generates the thumbnail, and should be configured as follows:

- Use the Keyframe encoder to create a single JPEG keyframe.
- Assign the nickname *Vantage Thumbnail*, so that they display in the Catalog panel in Workflow Portal.

## Populate Action

The Populate action (located in the Metadata category) should be configured to create an Identify label and add Video Height, Video Width, and Framerate fields. This label will be passed to the publication workflow for encoding the asset using the same metrics.

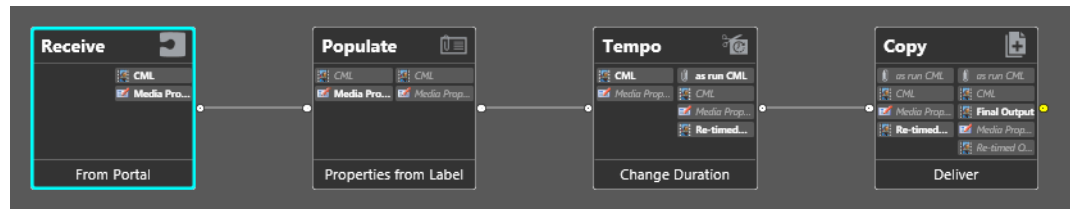
## Register Action

The Register action (from the Catalog category) registers the binder assets (original, proxy, label, analysis report, and keyframe thumbnail) in a Tempo catalog (which must have been created previously).

# Tempo Re-Timing Workflow

A simple, prototype Tempo workflow is shown here. At a minimum, a Tempo re-timing workflow must contain these actions:

- A Receive action to ingest the composition file from Tempo Portal and start the job
- A Tempo action to re-time the source media, producing a re-timed output media file.



## Receive Action

The Receive action (located in the Common category) is configured to receive the composition file (CML) you submitted from the Portal. *Expected Nicknames* must be set to CML as shown below.

Also, select the Identify Label under Labels.

## Populate Action

Use the Populate action (from the Metadata category) to extract the metadata from the Identify label (Variables from Label Parameters) and assign the values to the same variables again, for use in the Tempo action during encoding.

## Tempo Action

Use the Tempo action (from the Edit category) to re-time the media file and adjust the running time of the segments as specified.

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**Note:** This is not a topic on how to configure every control in the Tempo action. Complete details for configuring Tempo (or any other action) are presented in the man page—in the inspector, click the M icon in the upper right corner.

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The following controls should be configured as required.

*Input File Nickname*—Must be set to CML. (The CML nickname must also be set as the output from the Receive action).

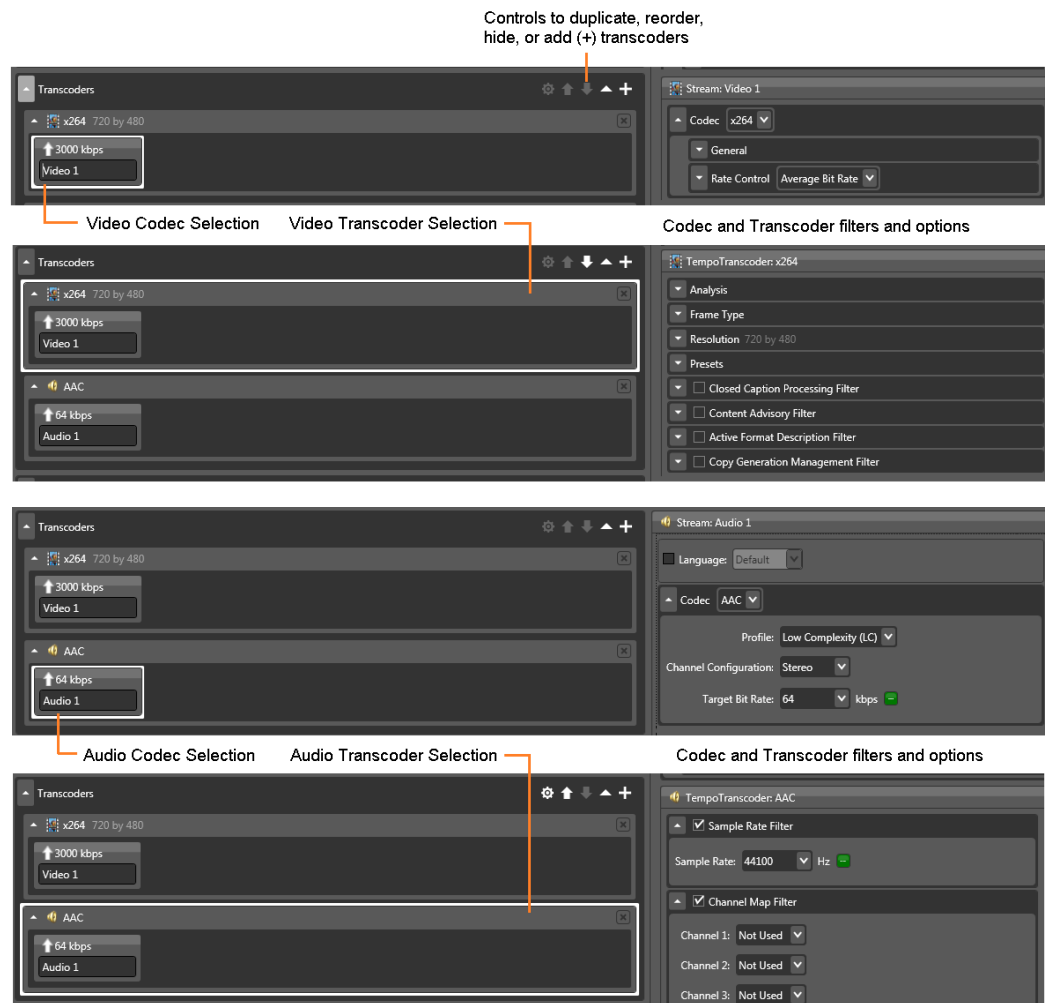
*Generate Composition Chronicle*—Typically, leave unchecked.

*Composition Chronicle Location*—Specifies where to output the composition file.

*Transcoders*—Add one or more Transcoders using the Add Transcoder (Plus sign) icon at the right side of the Transcoders panel. One video transcoder may be added, and up to 32 audio transcoders.

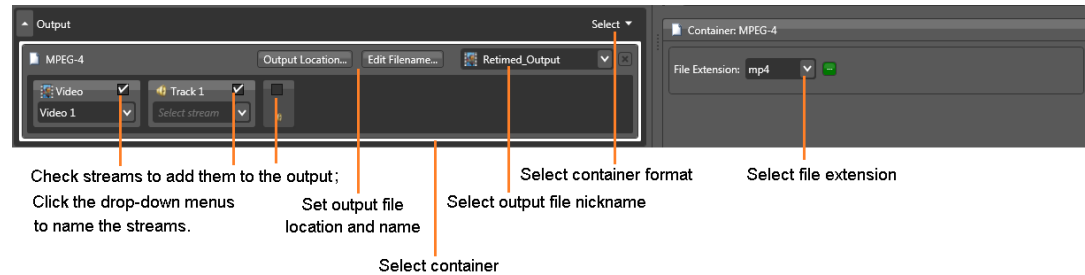


Select the codec and configure it, and then select the transcoder, and configure it. Different configuration options appear, depending on whether the codec or transcoder is selected (as shown in the figure following). These options allow you to set the resolution (width, height, framerate, aspect, interlace), frame type, captioning, content advisory, active format description, and copy limitations).



**Output**—Add output video and audio streams by checking stream boxes. Select the media (container) type for the streams using the Select menu in the right upper corner of the Output panel, and specify the Output Location for the encoded file using the Output button. You can also edit the file name using the Edit Filename button.

To view and configure the output container, click the overall output area and make selections in the right panel. To view each video or audio output stream, click the particular stream inside the container and view its listing in the right panel.



## Using Video Processors

Video Processors are available in the Tempo action to add an Image Processing Filter or a Color Space Filter. You can create and save multiple Video Processor templates with different processing selections, making for easy repeatability of particular configurations whenever you need them.

If you use Video Processors in the Tempo action, you must modify the Tempo CML file produced by the Tempo Portal before submitting it to a Tempo workflow. See the *Processors* section of the [Tempo Action](#) topic (on the following pages).

*Processors*—You can create as many video processor templates as necessary using the Plus icon at the right side of the Processors panel. Configure filters for the templates in the right panel.

---

**Note:** Using the Video Processors requires manual adaptation of the composition file produced by the Tempo Portal before submitting the file to a Tempo workflow.

---

To configure Video Processor templates and modify the composition, perform these steps:

1. Click the + (add) button in the Tempo action Video Processors section.
2. Enter a name for the processor in the field that says, “Enter template name.”
3. Click the new processor to highlight it, and make filter selections in the right panel.
4. Open the CML file generated by the Tempo Portal.
5. In the Video Source block, add this line for each processor (up to 2):

```
<Processor template="template name"/>
```

The template name is the name you gave the Video Processor template in the Tempo action Inspector (step 2 above).

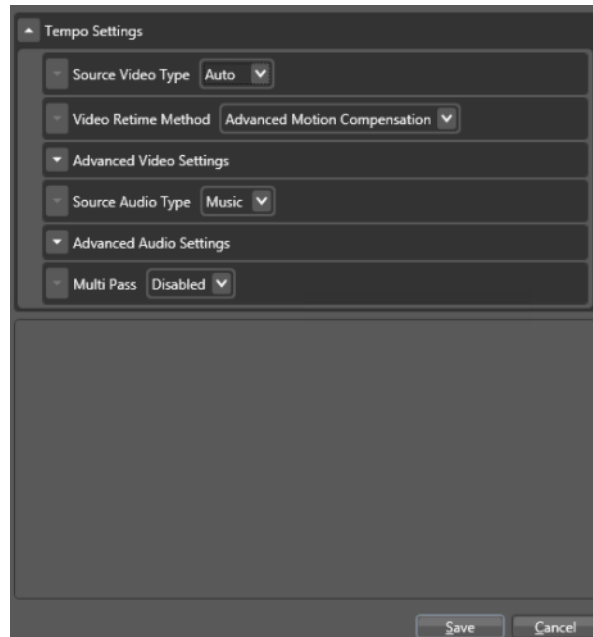
Here is a snippet of CML code as an example:

```
<Source identifier="1764957960" timecode="lrc">
  <File location="//share/path/media_file.mov" />
  <Subtitle preserve708="false" />
  <Processor template="VidProc1" />
  <Processor template="VidProc2" />
```

</Source>

## Configuring Tempo Settings

The Tempo Settings panel allows you to set up Tempo action advanced source video and audio settings, and re-timing methods.



Open each sub-panel to display and configure the settings.

### Source Video Type

Specifies the source video type, selected from the menu.

*Auto*—causes Tempo to auto-sense the source video type. Output quality may be enhanced by selecting a specific type, if it is known. Progressive sources are treated as progressive. Interlaced sources are treated as interlaced; however, interlaced sources at 29.97 fps are treated as mixed (see description below). If the entire source is known to be interlaced 29.97 fps, select *Interlaced* rather than *Auto*.

*Progressive*—Sources are treated as progressive even when encoded as interlaced.

*Telecined 60i (Unedited, with fixed known cadence)*—Sources are treated as Telecine, unedited, with known cadence and first repeated field position. The fields for cadence type and first repeated field position must be set correctly for correct rendering of the video output. The output is Telecined.

Supply the following values:

*Telecine Cadence Type*—Specifies the Inverse Telecine cadence to use: 3223 | 3322.

*First Repeated Field Position*—Specifies the position of the first repeated field.

*Telecined 60i (Unedited, with fixed unknown cadence)*—Sources are treated as Telecine, unedited, but with unknown cadence and/or first repeated field position. With this selection, cadence is automatically determined with the first strong cadence. This option should not be selected if there are any changes in the Telecine cadence of the source. The output is Telecined.

*Telecined 60i (Edited)*—Sources are treated as Telecine, with possible edits and cadence changes. This option should be selected if there are any changes in the Telecine cadence of the source. The output is Telecined.

*Telecined 60p (Unedited, with fixed known cadence)*—60p (59.94 progressive) sources are treated as Telecine, unedited, with known cadence and first repeated field position. The fields for cadence type and first repeated field position must be set correctly for correct rendering of the video output.

Supply the following values:

*Telecine Cadence Type*—Specifies the Inverse Telecine cadence to use: 3223 | 3322.

*First Repeated Frame Position*—Specifies the position of the first repeated frame.

*Telecined 60p (Unedited, with fixed unknown cadence)*—60p (59.94 fps progressive) sources are treated as telecined, unedited, but with unknown cadence and/or the first repeated frame position. With this selection, cadence is automatically determined with the first strong cadence. This option should not be selected if there are any changes in the Telecine cadence of the source.

Supply the following values:

*Cadence Detection Sensitivity* (Default: 50)—Specifies the point at which film cadence is detected. In almost all the cases, cadence sensitivity should be left at its default value. Setting to a lower value decreases sensitivity and should only be used if cadence changes are erroneously detected in places where cadence is stable. Setting to a higher value increases sensitivity and should only be used if cadence changes are not being detected.

*Telecine Cadence Type*—Specifies the Inverse Telecine cadence to use: 3223 | 3322.

*Telecined 60p (Edited)*—Progressive sources are treated as Telecine, regardless of whether there are edits or cadence changes. The output is progressive.

Supply the following values:

*Cadence Detection Sensitivity* (Default: 50)—Specifies the point at which film cadence is detected. In almost all the cases, cadence sensitivity should be left at its default value. Setting to a lower value decreases sensitivity and should only be used if cadence changes are erroneously detected in places where cadence is stable. Setting to a higher value increases sensitivity and should only be used if cadence changes are not being detected.

*Telecine Cadence Type*—Specifies the Inverse Telecine cadence to use: 3223 | 3322.

*Telecined 30p (Unedited, with fixed known cadence)*—30p (29.97 fps) sources are treated as Telecine, unedited, with 1:1:1:2 cadence and known first repeated field position.

Supply the following value:

*First Repeated Field Position*—Specifies the position of the first repeated field.

*Telecined 30p (Unedited, with fixed unknown cadence)*—30p (29.97 fps) sources are treated as telecined, unedited, with 1:1:1:2 cadence but with an unknown first repeated frame position. With this selection, cadence is automatically determined with the first strong cadence. This option should not be selected if there are any changes in the Telecine cadence of the source.

Supply the following value:

*Cadence Detection Sensitivity* (Default: 50)—Specifies the point at which film cadence is detected. In most cases, cadence sensitivity should be left at its default value. For high quality sources, setting to a lower value decreases sensitivity and should only be used if cadence changes are erroneously detected in places where cadence is stable. Setting to a higher value increases sensitivity and should only be used if cadence changes are not being detected. For lower quality sources, this value can be adjusted downward to prevent cadence-related errors. A typical value for a highly macro-blocked, low-quality source would be 25. Sources with light macroblocking work best at 40.

*Telecined 30p (Edited)*—30p (29.97 fps) sources are treated as Telecine, with possible edits that may interrupt the expected cadence pattern.

Supply the following value:

*Cadence Detection Sensitivity* (Default: 50)—Specifies the point at which film cadence is detected. In most cases, cadence sensitivity should be left at its default value. For high quality sources, setting to a lower value decreases sensitivity and should only be used if cadence changes are erroneously detected in places where cadence is stable. Setting to a higher value increases sensitivity and should only be used if cadence changes are not being detected. For lower quality sources, this value can be adjusted downward to prevent cadence-related errors. A typical value for a highly macro-blocked, low-quality source would be 25. Sources with light macroblocking work best at 40.

*Interlaced*—Sources are treated as interlaced, even when the source is encoded as progressive. The output is interlaced.

*Mixed*—Sources are assumed to have broken cadence and may also include interlaced and progressive fragments. For example, a Telecined source with interlaced or progressive commercial inserts. Specify Telecine Cadence Type, Cadence Detection Sensitivity, and Ltr Propagation.

*Telecine Cadence Type*—Specifies which cadence of interlaced Telecine will be used:

*Auto*—Handles 2:2 (PsF), 3:2:3:2, 3:3:2:2, 1:1:1:2, 2:2:2:4 cadence, progressive and interlaced video.

*22*—can be used for predominantly 2:2 (PsF) sources and if selecting Auto produces unsatisfactory results.

*3232*—can be used for predominantly 3:2:3:2 sources and only if selecting Auto or using Telecine (Edited) video source type produces unsatisfactory results.

*3322*—can be used for predominantly 3:3:2:2 sources and only if selecting Auto or using Telecine (Edited) video source type produces unsatisfactory results.

*1112*—can be used for predominantly 1:1:1:2 sources and only if selecting Auto or using Telecine (Edited) video source type produces unsatisfactory results.

*2224*—can be used for predominantly 2:2:2:4 sources and only if selecting Auto or Telecine (Edited) video source type produces unsatisfactory results.

*Cadence Detection Sensitivity* (Default: 50)—Specifies the point at which film cadence is detected. In almost all the cases, cadence sensitivity should be left at its default value. Setting to a lower value decreases sensitivity and should only be used if cadence changes are erroneously detected in places where cadence is stable. Setting to a higher value increases sensitivity and should only be used if cadence changes are not being detected.

*Ltr Propagation*—Enables low-temporal-rate motion profile propagation in high-temporal-rate output. For instance, PsF frames will be converted to PsF instead of interlaced. This may help to reduce a pulsing effect in the video, when processing noisy sources.

### **Video Retime Method**

*Advanced Motion Compensation*—Specifies that Tempo should apply a specific motion-compensation algorithm to re-time the video.

*Cadence Modulation + Advanced Motion Compensation*—Applies only to Telecined or Mixed sources. Fragments without cadence are processed by Advanced Motion Compensation. When checked, source frames are retimed as follows:

For encoders configured to output interlaced video:

60i source fragments with 3:2:3:2 or 3:3:2:2 cadence result in altered 3:2:3:2 cadence after re-timing.

60i (30p) source fragments with 1:1:1:2 cadence result in altered 3:2:3:2 cadence after re-timing.

60i true interlace source fragments result in true interlace frames after re-timing obtained by applying advanced motion compensation.

Progressive (or PsF) source fragments result in true interlace frames after re-timing obtained by applying advanced motion compensation.

For encodes configured to output progressive video:

60i source fragments with 3:2:3:2 or 3:3:2:2 cadence will result in altered 1:1:1:2 cadence after re-timing.

60i (30p) source fragments with 1:1:1:2 cadence will result in altered 1:1:1:2 cadence after re-timing.

60i true interlace source fragments will result in progressive frames after re-timing obtained by applying advanced motion compensation.

Progressive (or PsF) source fragments will result in progressive frames after re-timing obtained by applying advanced motion compensation.

60p source fragments with 3:2:3:2, 3:3:2:2 and 2:2:2:4 cadence will result in altered 3:2:3:2 cadence after re-timing.

*HQ Blend*—Applies only to progressive and interlaced video. For interlaced video, specifies that Tempo should de-interlace the video using Advanced Motion Compensation, blend the sources according to the re-time settings, and then re-interlace the video. For progressive video, the sources are simply blended according to the re-time settings.

Supply the following value:

*Use Original Frame if Within*—Specifies the maximum percent (measured as a percentage of frame duration), for potential input frames to be considered as occurring at the same time as the current output frame. If an input and output frame are very close together, the output frame will be supplied by the input frame, based on this limit.

*Cadence Modulation + HQ Blend*—Specifies that Tempo should use Cadence Modulation on frames with 3:2:3:2, 3:3:2:2, 1:1:1:2 or 2:2:2:4 cadence and HQ Blend on all other frames. This setting only applies when the Source Video Type is set to Mixed, and Telecine Cadence Type is set to Auto.

*Adaptive*—Specifies that Tempo should use Cadence Modulation on frames with cadence for mixed sources. Other frames are processed using Advanced Motion Compensation or HQ Blend based on quality metrics to minimize video artifacts. This setting only applies when the Source Video Type is set to Mixed | Interlaced | Mixed.

*Nearest Neighbor*—Applies only to progressive and interlaced video. Specifies that Tempo should select the closest input frame as the source for any output frame to re-time the video.

## Advanced Video Settings

*Source Frame Configuration*—Select how you want the Tempo action to decode the input file. The field dominance selected in this advanced setting **MUST** match the output field order specified in the Transcoder resolution panel. Select Detect from Source File when you want the Tempo action to treat the input as normal for the type of essence in the input file, and also assume standard field dominance for interlaced media. If the media essence is not encoded in a standard way or there is a field dominance error for interlaced, select progressive, or interlaced with the dominance to use when decoding the input file.

*Output Frame Configuration*—Specifies how you want Tempo to encode the output file.

*Use Encoder Settings*—Specifies that the Tempo action should treat the output as normal for the type of essence in the output file, and also assume standard field dominance for interlaced media.

*Interlaced Upper Field First | Lower Field First | Progressive*—If the media essence is not encoded in a standard way, you should select the appropriate setting for encoding the file. For instance, when using Cadence Modulation and encoding interlaced, but 1:1:1:2 cadence is desired in the output, select Progressive.

*Blank Top | Blank Bottom | Blank Left | Blank Right*—Specifies frame alteration by filling the specified lines / columns with black to eliminate flicker and artifacts. See tooltips for details.

*Preserve VBI Start Line*—Specifies the index of the first line of VBI to preserve. Relative to the Blank Top value and the Number of VBI lines value. For example, using a 720 x 512 NTSC source, Blank Top is set to 32, Preserve VBI Start Line is 2, and Number of VBI Lines to Preserve is 2. In the output, the top 28 lines will be black filled; 2 lines of VBI will be preserved, and the final 2 lines again filled with black. See tooltips for details.

*Number of VBI Lines to Preserve*—Specifies the number of VBI lines to leave intact in the output frame. Relative to the Blank Top value and the Preserve VBI Start Line value. See example in previous control. See tooltips for details.

*Noise Suppression Strength*—Specifies the relative strength of the noise suppression process (0-100). Noise suppression is designed to prevent a pulsing effect in the apparent degree of noise in the output of re-timed noisy, native-interlaced sources.

*Number of Threads*—Specifies the number of threads to use when re-timing (0-128). When set to zero, one thread per core is utilized.

*Align Segments to Full Second*—Check to align each retimed segment to the nearest full second. When checked, all segments are set to full-second alignment. Fixed (non-retimed) segments may also be retimed by up to 2 frames to account for DF timecode.

**Processor.** Select which video processor to use for transcoding.

### **Source Audio Type**

*Source Audio Type*—Specifies Music | Speech as the audio type, so that the audio settings can be auto-adjusted for the specified type of audio in the media.

### **Advanced Audio Settings**

*Cross Fade Duration*—Specifies the cross-fade duration between adjacent segments, in milliseconds.

*Enable Pitch Correction*—When checked, enables Tempo to automatically correct audio distortion introduced during processing. The likelihood of distortion increases as the rate of re-timing approaches the maximum allowable change. For operator-driven workflows, you can override the Tempo action setting, and allow the operator to set pitch correction on a segment-by-segment basis in Workflow Portal.



### Metadata

Allows generating retimed EBU STL files for up to three languages. The original file must be referenced in the source CML file. The files are associated with language 1, 2, and 3 output files ordinally. That is, the first file in the CML is associated with the Language 1 output file, etc.

*Retimed STL Subtitles*—When checked, specify the output file by file nickname or by fully-qualified path and file name.

### Multi Pass

Enables or disables (default) Two Pass re-timing (drop-down menu specifies that this action is disabled or being used in the 1st Pass or the 2nd Pass).

## Copy Action

The Copy action shown in the example is optional. The Copy action copies the re-timed output to any output location you prefer for broadcast or distribution.

## Tempo Two Pass Re-timing Workflows

The Tempo Two Pass capabilities build upon what is available in the standard Vantage Tempo capability by allowing refinement of the re-timing process in a second pass. The following pages explain Two Pass workflows, and a detailed example video and app note further describing Tempo Two Pass are available on the [Telestream.net](https://telestream.net) web site.

With Tempo Two Pass you have the option of placing the Tempo action into one of the following Modes:

- **Disabled**—The default mode for a Tempo action re-times media in one pass. This option is not used for two-pass configurations.
- **1st Pass**—In this mode the Tempo action analyzes and detects issues or trouble-spots with the first pass Tempo output. A Tempo action configured in the Pass 1 mode produces a TIFO file (Tempo Intermediary) and a Tempo Quality Report metadata attachment file. This file corresponds to the points in the first pass Tempo output that are possibly unsuited for re-timing (because they were identified as areas which presented difficulties for the Time Compression algorithm). The media and report files are included in a catalog and binder that the Tempo Portal operator can select as source inputs to the Pass 2 workflow.
- **2nd Pass**—In this mode, the Tempo action must be provided 1st-pass re-timed media and a Tempo Quality Report in the source catalog for the 2nd pass. A nickname must also be selected for an Exclusion CML.

The Tempo Portal uses the information in the Tempo Quality Report to identify program segments to consider for exclusion because they contain artifacts (places that do not meet a specified Quality Threshold). Additionally, the Tempo Portal allows the operator to view artifacts in a timeline view and in the Exclusion Segment List where scenes can be selected for exclusion. The scenes marked for exclusion are listed in an Exclusion CML automatically created by the portal.

The original CML and the Exclusion CML are supplied by the portal automatically when the portal operator submits the edited catalog to the 2nd Pass workflow. The Tempo action bypasses the excluded segments in the second pass, re-timing only those segments that will produce a high quality output.

- The Tempo Two Pass approach requires proper setup of the following Vantage components:
  - Workflows
  - Portal
  - Catalogs

## Configuring a Catalog for Two Pass

The Tempo Two Pass scenario requires two separate catalogs or one catalog containing two folders:

- Pass 1 catalog
- Pass 2 catalog

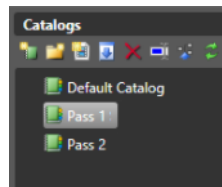
or

- Tempo Catalog
  - Pass 1 folder
  - Pass 2 folder

The Pass 1 catalog or folder is the target of an Ingest workflow that receives and registers the media to be re-timed.

The operator accesses the Pass 1 catalog and binder in the Tempo Portal and submits it to the Pass 1 workflow for initial re-timing and analysis. The outputs of the Pass 1 workflow get registered into the Pass 2 catalog.

The Pass 2 catalog and binder are accessed by the operator and prepared in the Tempo Portal for submission to the Pass 2 workflow, which produces the final re-timed output.



## Configuring Workflows for Two Pass

The following presents an overview of single pass and Two Pass re-timing:

**A Tempo Ingest Workflow**—This workflow brings the initial material into Vantage and registers it into the Pass 1 catalog, which allows it to be visible to a Tempo Portal operator. The operator accesses the catalog and binder in the portal, selects re-timing parameters, and submits it to the Single Pass or Pass 1 workflow for re-timing.

**A Tempo Single Pass Workflow**—This is the same one-pass re-timing workflow that has always been available in Tempo. The operator marks scenes for re-timing in the Tempo Portal and submits the marked catalog/binder to the Single Pass Workflow via the *Forward to Workflows* portal panel. The workflow, receives the catalog and an automatically generated CML markup file from the portal. A Tempo action follows the CML instructions to create a TIFO file, which is presented to a Vantage Transcoder (Flip) to render the final re-timed output.

**A Tempo Pass 1 Workflow**—This is the first pass of a Two Pass Tempo workflow. The purpose of the first stage is to produce an intermediate output that identifies questionable sections not suitable for re-timing and to supply re-timed media from which to make a more refined submission using a second pass.

The Pass 1 workflow creates a mezzanine TIFO file that can be passed to the next stage for further re-timing refinement or sent to a direct output workflow if the first-pass quality is satisfactory. This TIFO file is given the nickname Tempo Intermediary. The first stage may also include a Flip action to generate a new Vantage proxy from the Tempo Intermediary file, and possibly another Flip action to generate a thumbnail file for displaying the binder as a thumbnail in the portal. Optionally, the first pass Tempo workflow may include an Analyze action for Scene Change Analysis of the Tempo Intermediary output. Note that the Tempo, Analyze, and Flip actions in this workflow are ideal candidates for open workflows. A Register action places the outputs of this workflow into the Pass 2 catalog for later access by the Pass 2 workflow.

In the Tempo Portal, the Pass 2 catalog/binder contents are analyzed so that scene changes and re-timing artifacts can be displayed in the timeline and used to compile an Excluded Segments List. The operator can also mark additional segments on the timeline for adding to the list. When the operator submits the list to the Pass 2 workflow, an Exclusion CML representing the Exclusion List is passed to the workflow along with the media to identify scenes NOT to be re-timed to avoid quality issues.

**A Tempo Pass 2 Workflow**—This is the final workflow that you will target if you have chosen a two-pass process. This workflow consumes the original CML created by the first pass through the Tempo portal, as well as the *Exclusion CML* media nickname that is generated by the second pass through the Tempo Portal. The Exclusion CML prevents re-timing of scenes marked as unsuitable for re-timing. The Tempo action in the Pass 2 Workflow emits a re-timed TIFO output that is then available for use as the final output, or it can be transcoded again into the desired final format.

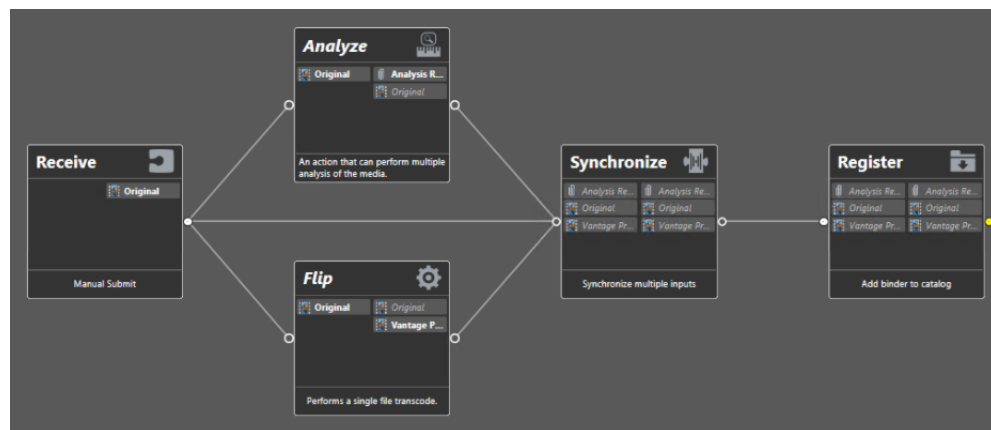
**Tempo Direct Convert Workflow**—This optional workflow may be used if the output of the Pass 1 workflow is of sufficient quality that it does not require a second pass. The Direct Convert workflow transcodes the Pass 1 mezzanine TIFO file into the final re-timed output.

## Tempo Ingest Workflow

The primary purpose of the ingest workflow is to create the requisite proxy and keyframe thumbnail versions of the original media and to register a binder containing the original media, proxy, and thumbnail into the appropriate catalog.

Registering into a catalog is required in order for the Tempo Portal to access the media. A Tempo Portal configuration created in the Vantage Management Console > Workflow Portal panel is also required to make the catalog available to the Tempo Portal.

An optional Analyze action with Scene Detection Analysis selected for segment detection may also be used in the ingest workflow. This provides automatic scene detection and presentation on the timeline when the catalog and binder are selected in the Tempo Portal.



## Tempo Single Pass Workflow

The Tempo Single Pass workflow, accepts the previously ingested media file and re-timing input parameters (via an automatically generated CML file) from the Tempo Portal. It then performs re-timing based on the CML, and generates an output (or outputs) in the format desired.

In the example below, the Receive action creates a Tempo Media Properties label that populates variables with details describing the ingested media file (in this case, progressive, top field first, or bottom field first). Decide actions branch the media processing depending on the media characteristics. Only one output from the Decide actions gets used. That output passes through a Tempo action for re-timing according to the instructions in the CML file received from the Tempo Portal. The Flip action then transcodes the re-timed file into the desired final output format.

Note that the branching used in the example is not required. The simplest single pass workflow only needs to contain a Receive action, and Tempo action, and a Flip action, and even the Flip action is not required if you can use the Tempo TIFO output directly.



## Tempo Pass 1 Workflow

The Tempo Pass 1 workflow represents the first stage of re-timing processing in a Two Pass scenario. The Pass 1 workflow receives input from the Tempo portal after ingest. The portal operator selects the media and re-timing parameters and submits them to the Pass 1 workflow using the Forward to Workflow panel. (Re-timing instructions are contained in an automatically generated CML file that the portal sends to the workflow during submission.)

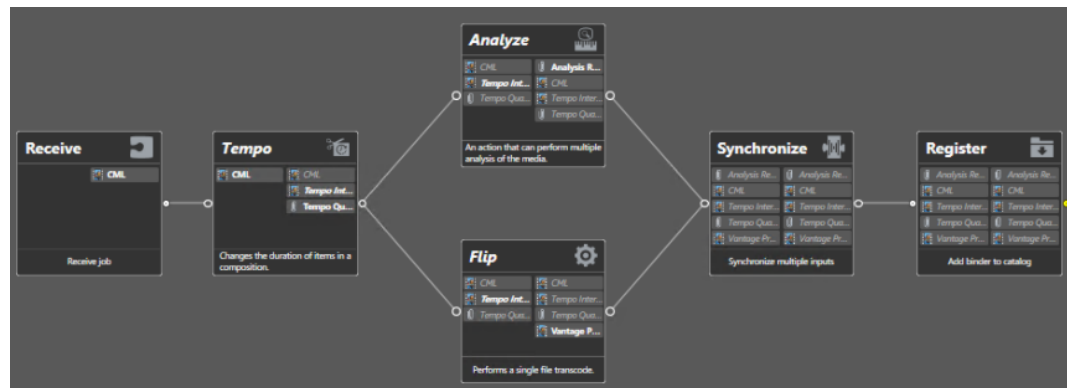
The Tempo actions in Pass 1 re-time the video and produce a TIFO file with the nickname Tempo Intermediary. This TIFO file is later submitted by the Tempo Portal operator, to the Pass 2 workflow for a second re-timing pass. Additionally, the Tempo action produces a Tempo Quality Report (CML file) that describes the media, including any artifacts where re-timing quality is lower than the Quality Threshold.

An Analyze action in Pass 1 detects scene changes in the media and generates an Analysis Result attachment, which is read by the Tempo Portal to automatically show scene changes on the timeline.

A Flip action produces a re-timed proxy file, and a second optional Flip action (not shown) can be used to produce a thumbnail file for displaying a binder icon in the portal.

A Register action registers the re-timed media, proxy, thumbnail, Analysis Report, and Tempo Quality Report into a catalog, which can be accessed from the Tempo Portal.

The behavior of the Tempo Portal in the next stage is driven by the Tempo Quality Report. The new proxy helps operators analyze the re-timed material to recognize areas where re-timing does not work well. The operator then uses the portal to mark areas of exclusion (areas that re-timing should not touch) in the second pass.



## Tempo Pass 2 Workflow

The Tempo Pass 2 workflow represents the final stage in a Tempo Two Pass scenario. To utilize this workflow, the operator must have used the initial re-timed files in the Pass 2 catalog/binder generated by the Pass 1 workflow, and marked scenes from that binder to exclude selected scenes found not suitable for re-timing by Pass 1.

In this workflow, the Receive action automatically receives these files from the Tempo Portal when the operator selects this workflow in the Forward to Workflow panel:

- CML—the original CML generated by the portal for Pass 1 re-timing
- Exclusion CML—the CML indicating scenes to leave untouched during re-timing.



The final Tempo action re-times the output media a final time, producing the higher quality output desired of a Two Pass workflow. The original CML describes the media and the initial re-timing instructions. Scenes that the operator marked for exclusion in the Tempo Portal are listed in the Exclusion CML. This CML instructs the Tempo action which scenes not to include in re-timing to prevent quality issues. The Tempo action uses both CMLs to produce the second pass re-timed output in whatever format you selected in the Tempo Transcoder and Output selections.

Note that the above workflow is the simplest possible form. You can elaborate on this workflow as needed. For example, you can use Populate, Decide, and multiple Tempo actions, as in the Single Pass Workflow described earlier, to detect different aspects of the video and branch the workflow accordingly.