

# Creating DPP Packages in Vantage

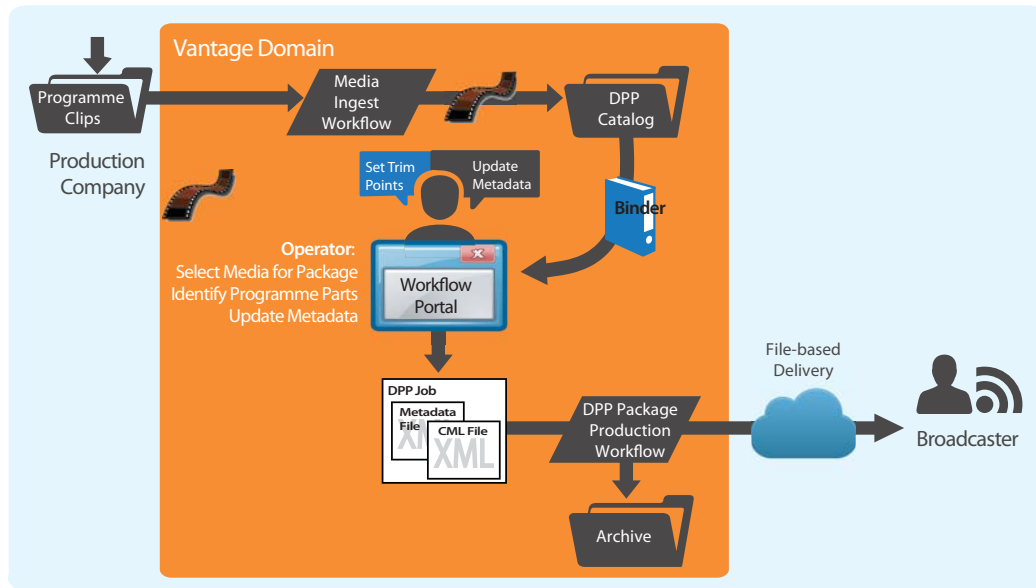
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# Synopsis

This application note focuses on setting up and implementing Vantage media processing systems to produce Digital Production Partnership (DPP), Version 4.1-compliant television programme packages, ready for broadcast or distribution.

**Figure 1.** Creating DPP Packages with Vantage



Key features of DPP packages include:

- An AS-11 MXF file with 100 Mb 1080i/25 AVC Intra HD video or IMX D10 PAL SD video
- A timeline with specific timecode requirements, and compliant audio
- DPP-compliant editorial and technical embedded metadata.

In this application note, you'll learn how to set up and use Vantage to produce DPP packages in three different ways:

- Entering metadata and marking segments, assembling a timeline with slate, bars, and tones, validating metadata, and encoding a DPP programme
- Entering metadata and marking segments and validating metadata and encoding a DPP programme from a pre-built timeline
- Processing existing DPP XML metadata and an existing timeline into a DPP programme.

## Topics

- [Flexible DPP Package Production](#)
- [Vantage Components for DPP Processing](#)
- [Vantage Resources for DPP Processing](#)
- [Implementing DPP Package Processing Systems in Vantage](#)

**Note:** Information about the Digital Production Partnership is published on the [Digital Production Partnership Web site](#). A PDF document—[Technical Delivery Standards](#)—is also available. For a high level overview of Vantage components, features, and system requirements, see [The Complete Solution for DPP File Creation](#) solution brief.

# Flexible DPP Package Production

DPP package production in Vantage is flexible, offering the following methods of work:

## Automatically Create an Entire DPP Package Including Metadata and Timeline

- Operators use the DPP Workflow Portal to select parts from a Vantage catalog and enter DPP metadata to create a DPP XML file and a CML file that is submitted to a workflow to create video with a DPP-compliant timeline.
- A Vantage Post Producer workflow renders the CML with a DPP timeline, based on parts marked by operators, adding slate, black, bars and tones according to DPP requirements.
- Vantage Transcode Pro processes the XML and the programme file from a Post Producer workflow to create an AS-11 DPP package.

This approach requires Workflow Portal, Vantage Transcode Pro, and Post Producer licenses.

## Add Metadata and Encode a DPP Package Using a Pre-built Timeline

- Create a DPP-compatible timeline in an editing system.
- Enter the DPP metadata in the DPP Workflow Portal; mark the programme parts accordingly, creating a DPP metadata XML file.
- Utilize Transcode Pro to process the DPP metadata XML and programme file, and encode the AS-11 DPP package. This method requires Workflow Portal and Transcode Pro licenses.

## Create a DPP Package Using Existing DPP Metadata and Media Files

- Analyze DPP metadata XML file to confirm compliance.
- Utilize Vantage Transcode Pro to process the XML and a DPP-compatible timeline to encode an AS-11 DPP package. This method requires Analysis and Transcode Pro licenses.

These methods are described in [Implementing DPP Package Processing Systems in Vantage](#).

# Vantage Components for DPP Processing

Telestream has implemented DPP package production in Vantage using the following features:

- *DPP Workflow Portal*—a Vantage Windows client program, which enables operators to create DPP package processing jobs, marking parts in a proxy to generate a DPP timeline including slate, bars, and black (as a CML file), enter DPP metadata, and submit the job to DPP package publishing workflows.

**Note:** The Workflow Portal Windows program is a Vantage client, and must be installed on operator workstations. Operators select DPP configurations (which are created in the Vantage Management Console) for use in DPP media processing systems.

- *Post Producer*—renders the CML with the programme's video and metadata to create video with a DPP-compliant timeline, including slate, bars, and tone.
- *Transcode Pro*—encodes DPP programme files, automatically inserting DPP metadata, creating a DPP package in AS-11 MXF format with appropriate audio and video encoding.
- *Vantage Analysis tools*—validates the metadata in the DPP metadata XML files, ensuring valid formatting and compliance.
- *Delivery Connectors*—enables automatic package delivery or deployment to archiving, delivery, and publishing systems, including Aspera and Signiant delivery options (HTTP, S3, and FTP are standard capabilities).

## Vantage Resources for DPP Processing

The Vantage workflows and Workflow Portal configurations described in this application note are all available on the [Telestream Web site](#) for you to download, study, modify, and use.

Vantage customers can go to the [Telestream Web site Vantage Downloads page](#) and click on the Workflow examples at the bottom of the page. Click the Download Vantage Workflow Examples, unzip the file, and open the DPP Examples Workflow folder.

You can import these resources into your Vantage domain using the Vantage Management Console (Workflow Design Items > Vantage Workflows—click the Import icon in the toolbar and select Import Workflows), and modify them to suit your media processing requirements. If you don't know how to import resources into your Vantage domain, please refer to the Domain Management Guide, accessible from the Help menu in the console.

## Implementing DPP Package Processing Systems in Vantage

Before you can use Vantage to produce DPP-compliant programme packages, make sure that the Vantage Workflow Portal Windows client program is installed on operator's workstations.

You also must implement and configure some DPP Processing vantage workflows and DPP Workflow Portal configurations, as described in the scenarios following.

Three different scenarios are described in detail in this application note. Each describes a DPP package processing system to handle specific and common application requirements:

- [Complete DPP Package Processing System](#)
- [DPP Package System for Existing DPP Media Files](#)
- [DPP Package System for Existing DPP Metadata & Media Files](#)

Telestream recommends that you first build and test the system outlined in [Complete DPP Package Processing System](#). After you have implemented and understand how to use this system, Telestream recommends that you review and implement the other two systems, as appropriate for your requirements.

# Complete DPP Package Processing System

This topic describes how to implement a complete DPP package processing system in Vantage and use it to assemble one or more non-compliant video parts, manually enter/edit DPP metadata, and generate a DPP package with your media. Before you can use Vantage to produce DPP packages, you must create DPP processing workflows and a DPP Workflow Portal configuration.

**Note:** You don't have to create these resources from scratch. Telestream suggests that you download the prototype DPP workflows and Workflow Portal configuration from the Telestream Web site (see [Vantage Resources for DPP Processing](#)). You can import them into your Vantage domain to study, test, and modify them to meet your needs.

You use Workflow Designer to import, view, update and/or create DPP workflows. You use the Vantage Console to import, view, update and/or create DPP Workflow Portal configurations.

Implementing a complete DPP package processing workflow involves these steps:

1. [Creating an Ingest Workflow](#)—to create a proxy and thumbnail from ingested media, register the media in a catalog for access by an operator.
2. [Creating a Publishing Workflow](#)—to render the video and CML with a DPP-compliant timeline as mezzanine media, and a Flip action to render the mezzanine video as a DPP package, automatically inserting metadata, slate, bars, and tones in either HD or SD format.
3. [Creating a DPP Configuration for Workflow Portal](#)—Create a DPP configuration in the Vantage Domain Console, for use by operators in Workflow Portal.
4. [Generating DPP Packages](#)—Process media parts in the ingest workflow, use Workflow Portal to select and trim media, add metadata, configure audio channels, and process the job in the publishing workflow to produce your DPP package.

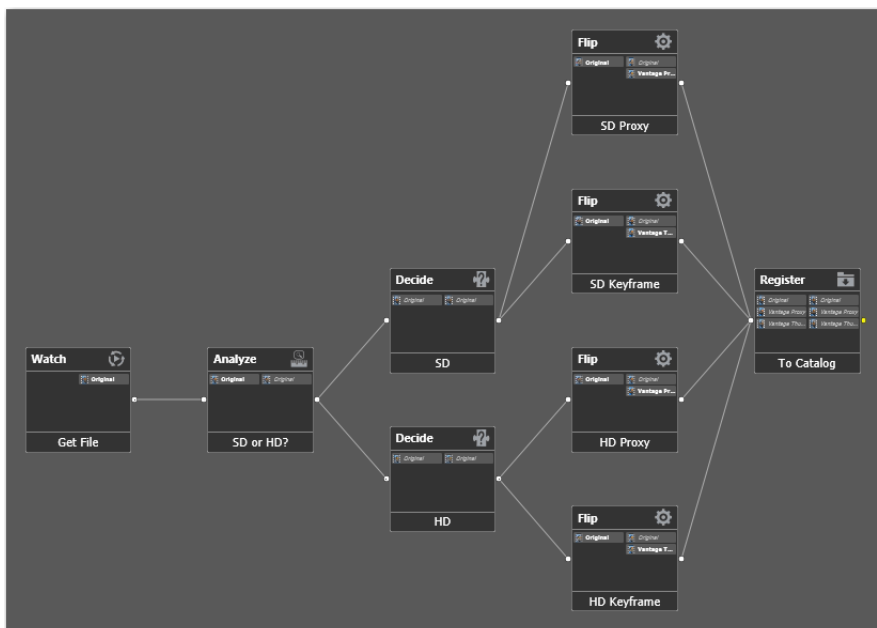
## Creating an Ingest Workflow

DPP Ingest workflows should be designed and configured to pick up incoming media, and produce HD and/or SD proxies and keyframes as appropriate, and register the media in a Vantage catalog for access by operators using Workflow Portal.

**Note:** Input media and proxy frame rates must be set to a supported PAL frame rate (25fps or 50i as appropriate). Any standards conversion must be performed prior to registering the media in a catalog for selection in Workflow Portal in preparation for submission to the publishing workflow. The ingest workflow depicted here assumes that the incoming media is at the proper frame rate. If your incoming media's must be adjusted, you could process it in a separate workflow or add the frame rate adjustment processing to the ingest workflow.

The prototypical complete DPP package processing ingest workflow is depicted below:

**Figure 2.** Typical DPP Ingest Workflow (for both HD and SD)



In Workflow Designer, create a new DPP ingest workflow or import the DPP Ingest workflow from the Web examples. The DPP ingest workflow should have the following functionality:

- A *Watch action (or other means of submitting jobs)*—ingests the source media, assigns it the nickname *Original*.
- (Optionally) an *Analyze action and Decide actions*—with the Media Properties filter enabled, using the Media Properties analysis tool to set the *Video Height* variable, to support processing both HD and SD media in a single ingest workflow.
- An *SD Flip action*—for transcoding SD media into proxy format using:
  - *Encoder*—QuickTime Encoder, to produce a QuickTime MOV file
  - *Input Nickname*—*Original*
  - *Output Nickname*—*Vantage Proxy*
  - *Video codec*—H.264 Video, 640 x 480 @ 25 fps, with Specify Quality bitrate 50.
  - *Audio codec*—AAC Audio 2 64 kbps, 44.1kHz, 16-bit audio stereo channels.

- *An HD Flip action*—for transcoding HD media into proxy format using:
  - *Encoder*—QuickTime to produce a QuickTime MOV file
  - *Input Nickname*—*Original*
  - *Output Nickname*—*Vantage Proxy*
  - *Video codec*—H.264 Video, 640 x 360 @ 25 fps, with Specify Quality bitrate 50.
  - *Audio codec*—AAC Audio 2 64 kbps, 44.1kHz, 16-bit audio stereo channels.

**Note:** To show source Start of Material (SoM) timecode in Workflow Portal, configure the container of the QuickTime proxy action to generate a timecode track, then enable Use Clip Start Time in the Option menu.

- *Flip actions*—for grabbing a keyframe (using the nickname *Vantage Thumbnail*) so that operators can view thumbnails in Workflow Portal.
- *A Register action*—To register the ingested media and the proxy and keyframe in a DPP ingest catalog (for example, name the catalog *DPP In*).

## Creating a Publishing Workflow

In Workflow Designer, create a complete DPP package publishing workflow or import the DPP Publishing workflow from the Web examples (see [Vantage License Requirements](#)).

The complete DPP publishing workflow should be designed and configured to allow an operator to submit media from Workflow Portal for final encoding and publication. Publishing workflows may include HD 4- or 16-channel and/or SD workflows, depending on your publishing requirements.

A prototypical HD 4-channel publishing workflow is depicted below. (The actions are the same for SD and HD—only the configurations are different):

**Figure 3.** Typical HD DPP Publishing Workflow in Workflow Designer



The workflow should have the following functionality:

- *Receive action*—enables an operator to submit media files, the CML file that specifies the programme’s clips, and the associated metadata file to this workflow from Workflow Portal: (These nicknames are required, because they are assigned in Workflow Portal)
  - *Media Files Nickname*—*DPP CML*
  - *Attachments Nickname*—*DPP XML*

- *Conform action*—renders the media files (clips) referred to in the *DPP CML* file as a mezzanine ProRes video file, with a DPP-compliant timeline.

Transcoder configuration for encoding SD media:

- *Video codec*—ProRes 4:2:2 PAL 720 x 608 (to preserve the VBI from the source) @ 25fps, Interlaced Upper Field First
- *Audio codec*—PCM stereo, 24-bit Little Endian

Output configuration:

- *Encoder*—QuickTime MOV file
- *Nickname*—*DPP Timeline Master*.

Transcoder configuration for encoding HD media:

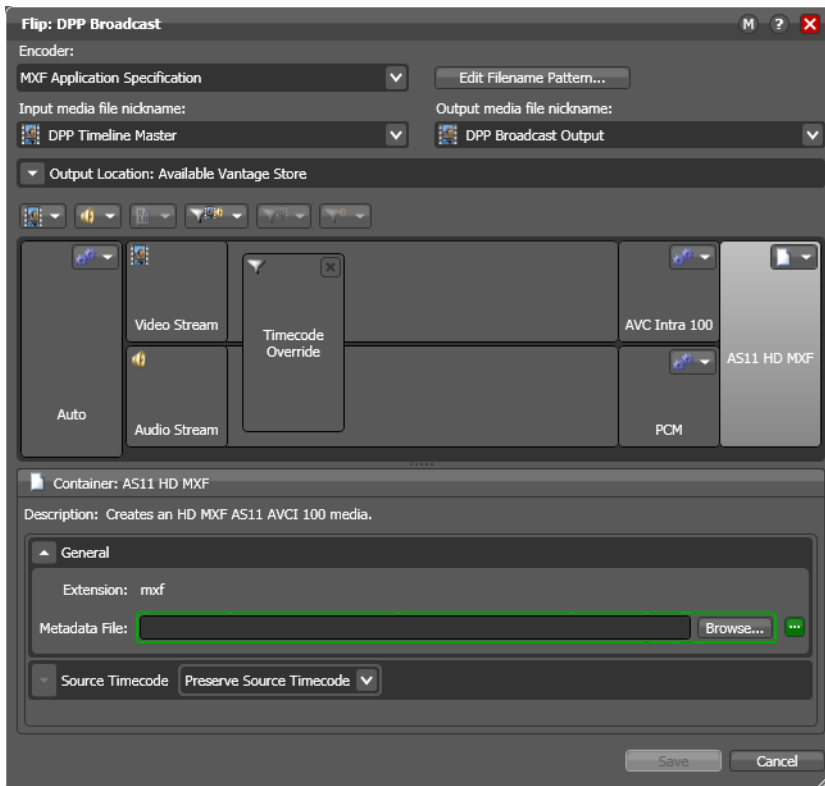
- *Video codec*—ProRes 4:2:2 1920 x 1080 Progressive @ 25fps
- *Audio codec*—16-channel PCM 5.1, 16-bit Little Endian

Output configuration:

- *Encoder*—QuickTime MOV file
- *Nickname*—*DPP Timeline Master*.

- *Identify action*—with the File Properties identifier enabled, sets the *DPP Metadata File* variable to the path of the associated XML metadata file. This variable is used to insert the XML during the encode in the next action.
- *Flip action*—renders the *DPP Timeline Master* video as an AS-11 MXF file from the mezzanine ProRes media file, inserting metadata into the file from the source XML file (*DPP XML*), and performs a timecode override to start the video at the proper, DPP-compliant time.

**Figure 4.** Flip Inspector for Typical HD DPP Package Publishing Workflow





- The Flip action should be configured as:
  - *Input File Nickname*—*DPP Timeline Master*
  - *Output File Nickname*—*DPP Broadcast Output* (or other nickname, as required)
  - *Timecode Override Filter*—to set the starting timecode at 09:59:30:00 @ 25 fps
  - *Add Silent Channels Filter*—to create silent audio channels if necessary

Configuration for encoding SD media:

- *Encoder*—MXF AS Encoder
- *Video Codec*—IMX D10, 4:3 PAL 720 x 608 @ 25fps
- *Audio Codec*—4-channel PCM, with the Single Channel per Track option *disabled*
- *Container*—AS11 SD MXF, with the metadata file variable set to *DPP Metadata File* and Source Timecode set to Preserve Source Timecode

Configuration for encoding HD media:

- *Encoder*—MXF AS Encoder
- *Video Codec*—AVC Intra 100, 1080i 25 4:2:2, Interlaced Upper Field First
- *Audio Codec*—4- or 16-channel PCM, with the Single Channel per Track option *enabled*
- *Container*—AS11 HD IMX, with the metadata file variable set to *DPP Metadata File* and Source Timecode set to Preserve Source Timecode.

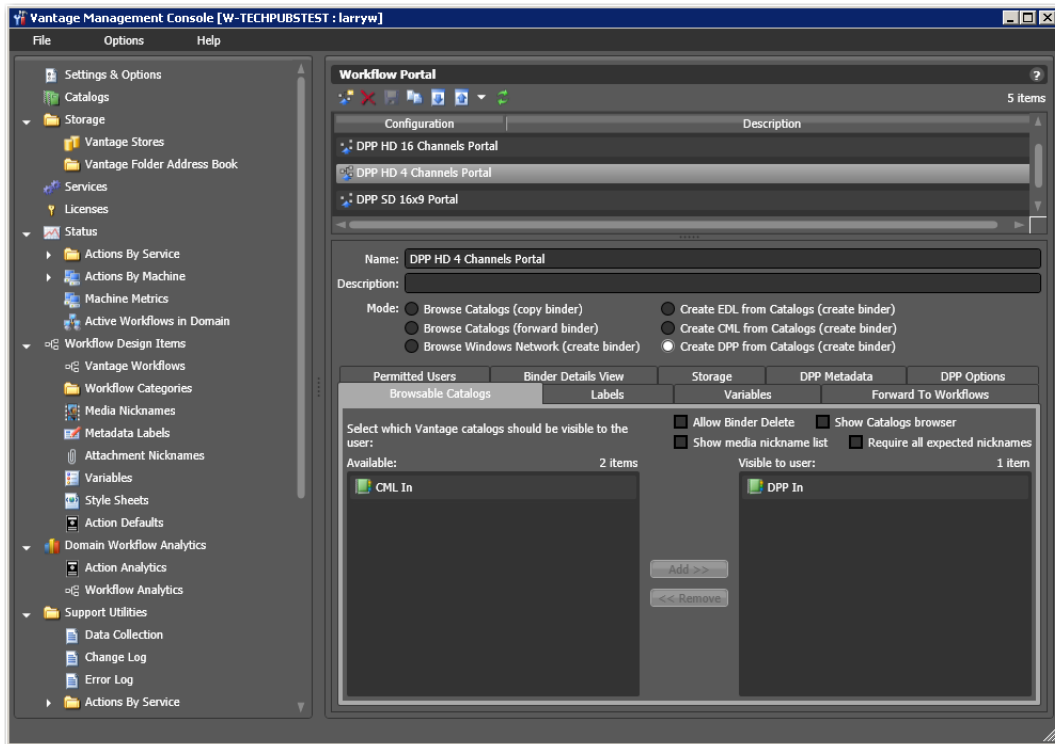
**Note:** In this workflow, the Flip action stores the DPP programme package video file in an available Vantage Store. You can modify it to store the output where required, or add other file-operation actions to place the output video in an appropriate system.

## Creating a DPP Configuration for Workflow Portal

You need to create a DPP Workflow Portal configuration and configure it to allow operators to create a DPP package, enter/edit metadata to accompany the programme, and submit the assets to a DPP package publishing workflow, directly from the DPP Workflow Portal.

In the Management Console, create a new DPP Workflow Portal configuration or import the DPP Workflow Portal configuration from the Web examples (see [Vantage Resources for DPP Processing](#)).

**Figure 5.** Implementing Typical DPP Configuration in the Management Console



**Note:** DPP configurations are only supported in the Workflow Portal Windows client. Workflow Portal configurations are created in the Vantage Management Console.

- [Typical DPP Configuration Settings](#)
- [Specifying Slate Options](#)
- [Using Variables, Nicknames, and Constants in Compositions](#)
- [Sample Custom Slate CML](#)

## Typical DPP Configuration Settings

The configuration should have the following minimal set of functionality:

- *Mode*—Create DPP from Catalogs (create binder)
- *Browsable Catalogs*:
  - Choose the catalogs where operators will look for media to process (for example, *DPP In*)
  - Recommended Settings:
    1. Ensure that *Allow Binder Delete* is turned off. If enabled, binders are removed from the catalog when they are submitted. (Enabling this allows you to use the catalog as a task list for an operator, but prevents an operator from re-submitting a file in case of an error.)
    2. Ensure that *Show Media Nickname List* is turned off. If enabled, the path to media files will be displayed.
    3. Disable *Show Catalogs Browser* if you are only using one catalog. This is only necessary when the operator must use more than one catalog.
    4. Disable *Require all expected nicknames*.

- *Labels*—Disable *Show Labels* and *Allow Add*. (Since all DPP metadata is formatted as XML, labels are not utilized.)
- *Variables*—No variables are necessary for this workflow.
- *Forward to Workflows*—Specify one or more DPP package publishing workflows the operator can forward jobs to for processing.

If you want the operator to choose between workflows (for example, an SD or HD publishing workflow) then you can make each workflow optional. Otherwise, choose a single workflow, make it required, and simplify the interface by unchecking *Show Forward to Workflows* to hide this tab.

- *Permitted Users*—Assign the authorized Vantage users (or everyone), as required.
- *Binder Details View*—Set the options as required. Enable the *Submit* button, and enable the *Play* button to scrub the proxy file and set in/out points.
- *DPP Metadata*—Set default settings in each category for all DPP metadata. You can also control whether operators can edit each parameter by choosing whether or not the parameter is read-only.

For example: The *Distributor* field may always be set to your company name; by marking it as read-only, the operator cannot change it. Any mandatory field left blank must be entered by the operator.

- *DPP Options*—Set *White and Tone*, *Part Ending*, *Video Resolution* and *Slate* information (for custom slates, see [Specifying Slate Options](#), below) that affects the output. These options can also be set as read-only. The parameter *Include 2 frames of white and tone* controls whether to include two frames of white in the preliminary slate; if disabled, black is used instead.

**Note:** *Setting the video resolution to SD or HD affects which audio configurations are valid, and also affects which slates are used (either SD or HD). Generally, this is a read-only parameter for the operator—the target publishing workflow will be either SD or HD.*

## Specifying Slate Options

You can select slate options for each job in Workflow Portal. To specify a default slate, display the DPP Options tab and select *Slate > Default*. Optionally, specify a background PNG or MOV file.

Vantage also allows you to create a custom slate behind the text that is rendered in the slate.

**Note:** For details on creating CML files, read the *Post Producer Developer’s Guide*.

Slates are completely customizable, and enable you to display your own branding. To provide a custom slate, you must separately create and provide a CML file to be used for the slate parts. The CML should include a single segment, which is 7 seconds long.

## Using Variables, Nicknames, and Constants in Compositions

Vantage supports the use of variables to make slates more flexible, and functional from job to job without changes. Variables are placed in the CML using the syntax `{ $Variable-Name }`. The workflow is responsible for supplying the run-time value to each variable, and the Conform action will use the current value for each occurrence of the variable in the CML. Values can be supplied during job submission by associated XML files, operator-entry in Workflow Portal, or during manual job submission in Workflow Designer, for example.

These variables may be used in text fields to dynamically insert metadata and part information:

**Table 1.** DPP Slate Variables

Variable	Description
DPP_Total_Parts	Part total
DPP_Programme_Duration	Total programme duration
DPP_Part	Part number (for the first slate, 1)
DPP_Part_Duration	Part duration
DPP_Series	Series title
DPP_Programme	Programme title
DPP_Episode	Episode title / number
DPP_Production_Number	Production number
DPP_Originator	Originator
DPP_Copyright_Year	Copyright year
DPP_Other_ID	Other identifier
DPP_Distributor	Distributor

Vantage also uses constants—for slate resources, `{%%LOCAL_MEDIA_FILES}`. `LOCAL_MEDIA_FILES` identifies a Vantage-supplied set of files stored in a specific location during Vantage domain installation.

Finally, you can also specify files that have been identified in any action in the workflow, by denoting `{#Nickname}`, when you may not know the current location of that file or the name changes on a job-by-job basis.

For full details on the use of these three features, see the Post Producer Developer's Guide.

## Sample Custom Slate CML

```
<?xml version="1.0" encoding="UTF-8"?>
<Composition xmlns="Telestream.Soa.Facility.Playlist" version="1.0">
  <Sequence layer="0">
    <Segment>
      <Canvas Background="Black" duration="00:00:07:00@25" adjust="body"/>
        <Image duration="00:00:01:00@25" layout="zoom"
location="{%%LOCAL_MEDIA_FILES}\SlateClock\Slate_Clock_10.png"/>
        <Image duration="00:00:01:00@25" layout="zoom"
location="{%%LOCAL_MEDIA_FILES}\SlateClock\Slate_Clock_9.png"
offset="00:00:01:00@25"/>
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location="{%%LOCAL_MEDIA_FILES}\SlateClock\Slate_Clock_8.png"
offset="00:00:02:00@25"/>
        <Image duration="00:00:01:00@25" layout="zoom"
location="{%%LOCAL_MEDIA_FILES}\SlateClock\Slate_Clock_7.png"
offset="00:00:03:00@25"/>
        <Image duration="00:00:01:00@25" layout="zoom"
location="{%%LOCAL_MEDIA_FILES}\SlateClock\Slate_Clock_6.png"
offset="00:00:04:00@25"/>
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location="{%%LOCAL_MEDIA_FILES}\SlateClock\Slate_Clock_5.png"
offset="00:00:05:00@25"/>
        <Image duration="00:00:01:00@25" layout="zoom"
location="{%%LOCAL_MEDIA_FILES}\SlateClock\Slate_Clock_4.png"
offset="00:00:06:00@25"/>
    
```

```

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align="right" wrap="false" background-color="transparent" foreground-
color="#FF7F7F7F" weight="bold" style="normal" size="36pt" font="Arial"
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        <Area right="1720px" bottom="270px" left="768px" top="220px"/>
SERIES
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layout="stretch" overflow="overflow" vertical-align="top" horizontal-
align="right" wrap="false" background-color="transparent" foreground-
color="white" weight="normal" style="normal" size="48pt" font="Helvetica"
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{$DPP_Series}
        </Title>
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align="head">
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PROGRAMME
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```

```

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    </Title>
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    </Title>
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PART {$DPP_Part} OF {$DPP_Total_Parts}
    </Title>
    <Title layer="1" duration="00:00:07:00@25" adjust="edge"
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color="#FF4F4F4F" weight="normal" style="normal" size="32pt"
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Rendered with Telestream Vantage
    </Title>
    </Segment>
    </Sequence>
</Composition>

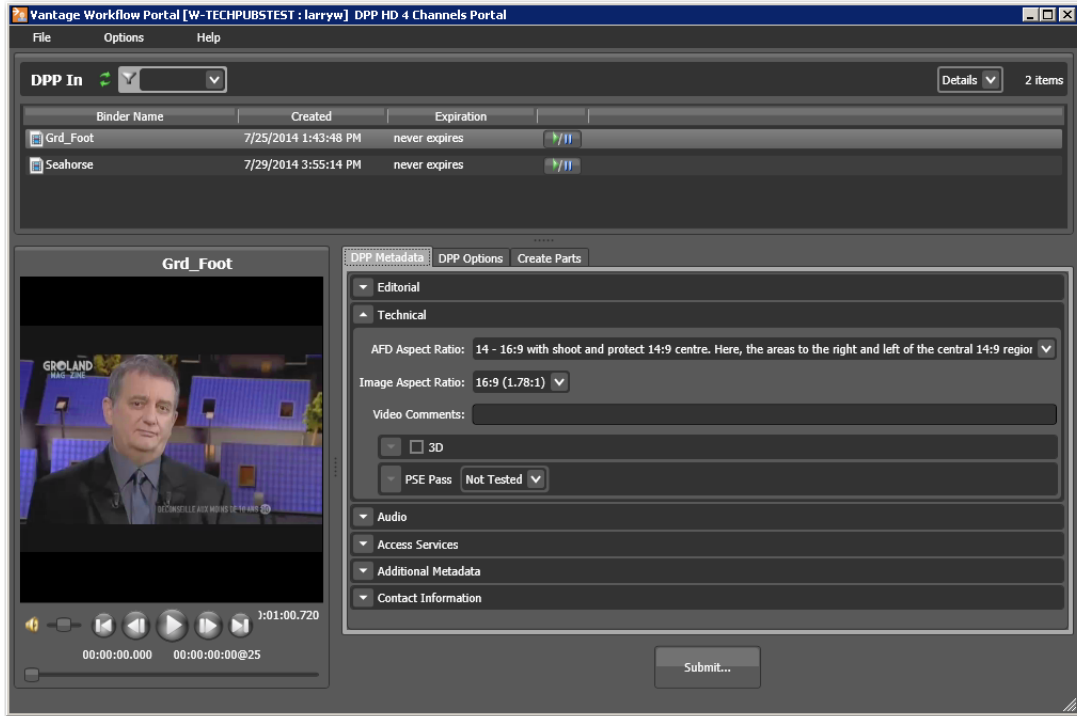
```

# Generating DPP Packages

To create programme packages using the complete programme package processing system, activate the DPP ingest and publication workflows in Workflow Designer, and then follow these steps.

1. Locate the media file(s) to be used for a given programme—copy or drag and drop them into the DPP Ingest workflow’s watch folder to produce proxies for previewing and selection of segment in/out points, and register the media in the DPP Ingest catalog.
2. Run the Workflow Portal and select the DPP configuration.

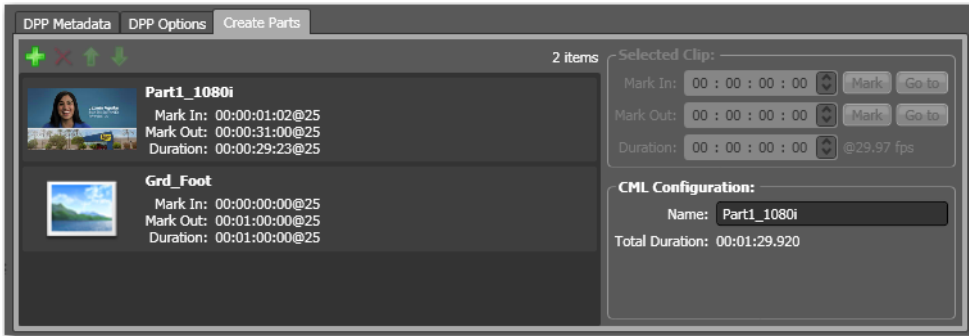
**Figure 6.** Typical DPP Configuration being Used in the Workflow Portal



3. Use the Create Parts tab to:

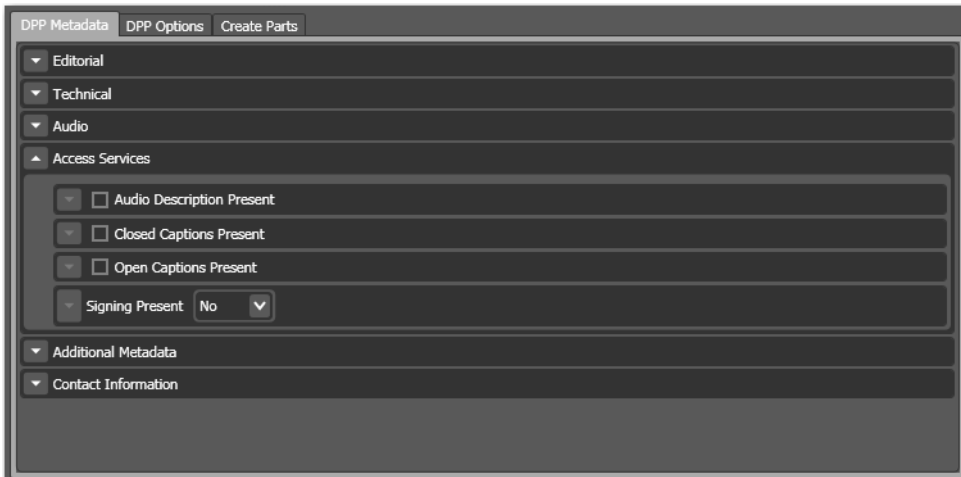
- add one or more media files from the Vantage catalog that comprise your DPP package. Each item you add will be used to create a part; you can use the same file multiple times in a multi-part programme where each part has a specific mark-in and mark-out point.
- Use the Proxy Viewer to scrub media when you want to clip a part. Select in and out points as necessary to indicate the start and stop points for each part. (This part information is then included in the DPP XML metadata).

**Figure 7.** Using the Create Parts tab to add, preview, and clip parts



4. Use the DPP Metadata tab to enter/edit DPP metadata. The metadata panels are organized by category: Editorial, Technical, etc., as shown below:

**Figure 8.** Using the DPP Metadata Tab in the Workflow Portal



5. Use the DPP Options tab to configure DPP options for this job, including settings for tone and slate, as shown below:

**Figure 9.** Using the DPP Options Tab in the Workflow Portal





6. Submit the job (Click the Submit button at the bottom—see [Figure 6](#)). When all of the media and metadata tasks are complete, submit a job to the appropriate DPP package publishing workflow.

The DPP Portal will automatically create a CML (with the nickname *DPP CML*) file and a DPP XML (nicknamed *DPP XML*) file as the input for the job to render the CML with the programme's video and audio, and insert metadata to create a DPP package in the correct format, with the correct timeline.

**Note:** If you have not configured the DPP metadata correctly, Vantage will ask you to correct the error. For example, if you specify that the output is SD (which supports 4 channels of audio) but you select a 16-channel audio configuration, Workflow Portal will ask you to either select HD or a 4-channel audio configuration.

# DPP Package System for Existing DPP Media Files

If you already have assets with the correct DPP time line, you can use this system to select the media, enter DPP metadata, and directly transcode the assets into a DPP package. The only difference between this system and the complete DPP package processing system is that the publishing workflow skips the Conform action, and renders the ingested *Original* media directly into a DPP package.

The ingest workflow is the same, and so is the DPP configuration for Workflow Portal.

To manually add DPP metadata to an existing programme file (typically created in an NLE, with DPP timeline, bars, tone, black, slate, etc.), the first media item marked as a part will be published using the *Original* nickname. You should still mark the start and end point for each part prior to submitting a job so that the DPP metadata XML is generated correctly. Note that all parts must be in the same asset in a job.

Use Workflow Designer to import, view, update and/or create DPP workflows. Use the Vantage Domain Console to import, view, update and/or create DPP Workflow Portal configurations.

Implementing this DPP package processing system involves these steps:

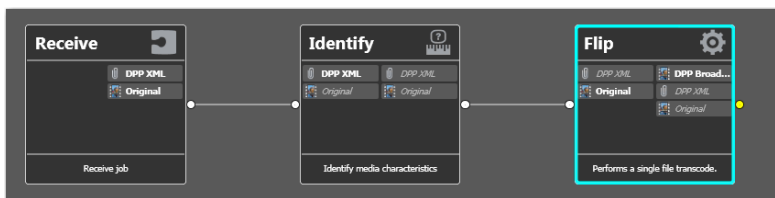
1. **Creating an Ingest Workflow**—to create a proxy and (optionally) a thumbnail, register the media in a catalog for access by an operator.
2. **Creating a Publishing Workflow**—to render the DPP package, automatically inserting metadata with a Flip action, in either HD or SD format.
3. **Creating a DPP Configuration for Workflow Portal**—Create a DPP configuration in the Vantage Domain Console, for use by operators in Workflow Portal.
4. **Generating DPP Packages**—Process media parts in the ingest workflow, use Workflow Portal to select and trim media, add/edit metadata, configure audio channels, and process the job in the publishing workflow to produce your DPP package.

## Creating a Publishing Workflow

In Workflow Designer, create a new DPP package publishing workflow for processing programmes with existing metadata files. The workflow should be designed and configured to ingest the media and the validated metadata XML file, and generate a DPP package.

A prototypical workflow is depicted below. (The actions are the same for SD and HD—only the configurations are different):

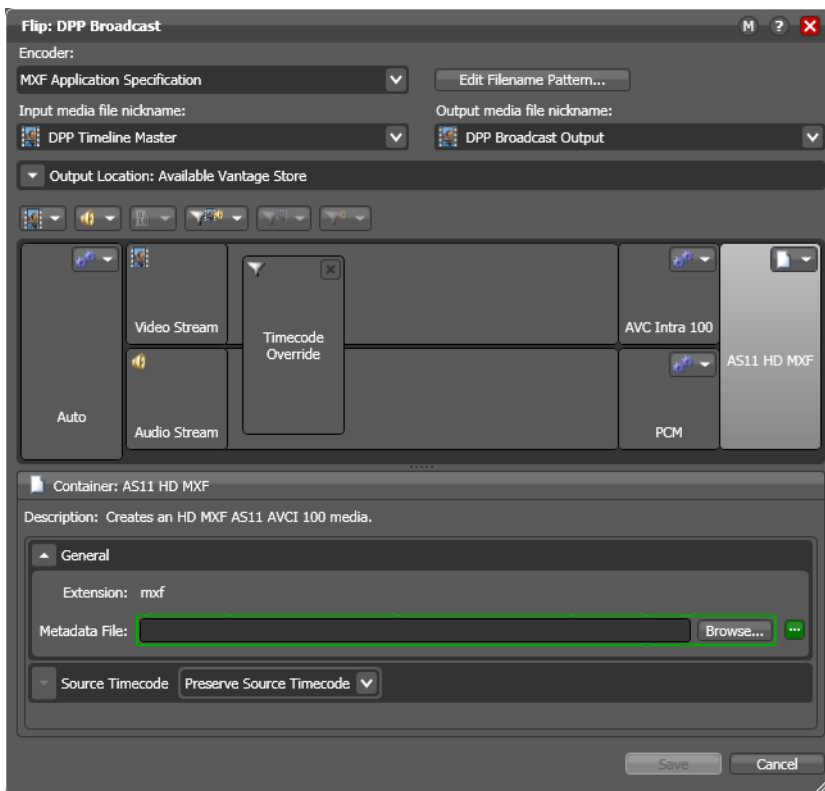
**Figure 10.** Typical External Metadata DPP Package Publishing Workflow



The workflow should have the following functionality:

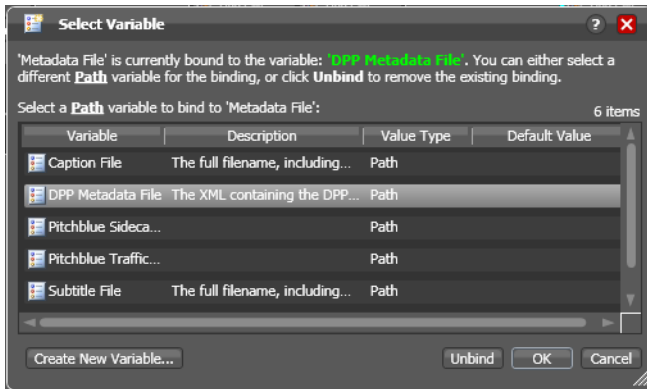
- *Receive action*—enables an operator to submit media and the associated metadata file to this workflow from Workflow Portal:
  - *Media Files Nickname*—*Original*
  - *Attachments Nickname*—*DPP XML*
- *An Identify action*—with the File Properties identifier enabled, to set the *DPP Metadata File* variable to the path of the associated XML metadata file.
- *A Flip action*—renders the *DPP Timeline Master* video as an AS-11 MXF file, inserting meta-data into the file from the source XML file (*DPP XML*), and performs a timecode override to start the video at the proper, DPP-compliant time. Refer to the Inspector panel and the Select Variable dialog, below, as you review the configuration details.

**Figure 11.** Flip Inspector for Typical HD DPP Publishing Workflow



The metadata file generated by Workflow Portal is referenced by a variable, as shown below. Click on the green Browse button, select the variable (*DPP Metadata File*), and click OK. Note the green border around the text field when the variable is bound:

**Figure 12.** Flip Inspector for Typical HD DPP Publishing Workflow



- The Flip action should be configured as:
  - *Input File Nickname*—*DPP Timeline Master*
  - *Output File Nickname*—*DPP Broadcast Output* (or other nickname, as required)
  - *Timecode Override Filter*—to set the starting timecode at 09:59:30:00 @ 25 fps
  - *Add Silent Channels Filter*—to create silent audio channels if necessary

For encoding SD media:

- *Encoder*—MXF AS Encoder
- *Video Codec*—IMX D10, 4:3 PAL 720 x 608 @ 25fps
- *Audio Codec*—4-channel PCM, with the Single Channel per Track option *disabled*
- *Container*—AS11 SD MXF, with the metadata file variable set to *DPP Metadata File* and Source Timecode set to Preserve Source Timecode

For encoding HD media:

- *Encoder*—MXF AS Encoder
- *Video Codec*—AVC Intra 100, 1080i 25 4:2:2, Interlaced Upper Field First
- *Audio Codec*—4- or 16-channel PCM, with the Single Channel per Track option *enabled*
- *Container*—AS11 HD IMX, with the metadata file variable set to *DPP Metadata File* and Source Timecode set to Preserve Source Timecode.

## Generating DPP Packages

To create DPP packages using the DPP package processing system for existing DPP media files, activate the DPP ingest and publication workflows, and follow these steps.

1. Locate the media file (with the DPP timeline already set) to be used for a given programme—copy or drag and drop it into the DPP Ingest workflows' watch folder to produce proxies for previewing and selection of segment in/out points, and register the media in the DPP Ingest catalog.
2. Run the Workflow Portal and select the DPP Configuration.

**3.** Use the DPP Workflow Portal to:

- Select the media file (with the DPP timeline already set) from the Vantage catalog (only one media file may be used, but it may have multiple parts.)
- Use the Proxy Viewer to scrub media when you want to clip a part. Select in and out points as necessary to indicate the start and stop points for each part. (This part information is then included in the DPP XML metadata).
- Use the DPP Metadata tab to enter/edit DPP metadata
- Use the DPP options tab and ensure that settings are correct.

**4.** Submit the job. When all of the media and metadata tasks are complete, submit a job to the appropriate (HD or SD) DPP package publishing workflow. The DPP portal will automatically create a CML (with the nickname *DPP CML*) file and a DPP XML (nicknamed *DPP XML*) file as the input for the job to render the CML with the programme's video and audio, and insert metadata to create a DPP-compliant video in the correct format, with the correct timeline.

**Note:** If you have not configured a correct DPP package, Vantage will ask you to correct the error. For example, if you specify that the output is SD (which supports 4 channels of audio) but you select a 16-channel audio configuration, Workflow Portal will ask you to either select HD or a 4-channel audio configuration.

# DPP Package System for Existing DPP Metadata & Media Files

if you already have assets with the correct DPP time line and DPP metadata XML files, you can automatically validate them using Vantage Analysis, and then perform a final transcode directly. To create a DPP package processing system that validates existing DPP metadata files for insertion into an externally-created DPP media file (typically created in an NLE, with DPP timeline, bars, tone, black, slate, etc.), you don't need to use Workflow Portal.

Instead, you create a workflow to validate the DPP metadata file, and then submit it with its programme media file, for processing in a DPP package publishing workflow that only has a Flip action—no Conform action is used, because the media has already been produced.

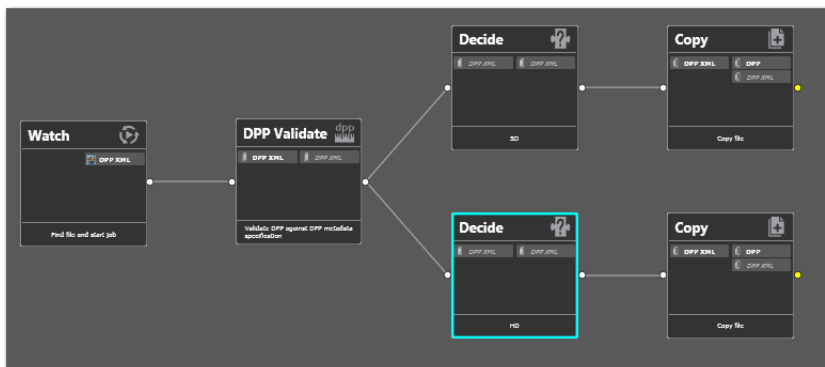
Implementing a system for existing DPP metadata file and DPP media files involves these steps:

1. **Creating a DPP Metadata Validation Workflow**—to create a proxy and (optionally) a thumbnail, register the media in a catalog for access by an operator.
2. **Creating a Publishing Workflow**—to render the DPP package with a Flip action, automatically inserting metadata, in either HD or SD format.
3. **Generating DPP Packages**—Process the media file and metadata files with the DPP Validation workflow to validate the metadata XML files. If the metadata is valid, the publishing workflow encodes the media and inserts the metadata to create a DPP package.

## Creating a DPP Metadata Validation Workflow

Optionally, create a DPP metadata validation workflow, if you need one to validate your externally-created metadata files. Here is a prototype:

**Figure 13.** Typical DPP Validation Workflow



The workflow should have the following functionality:

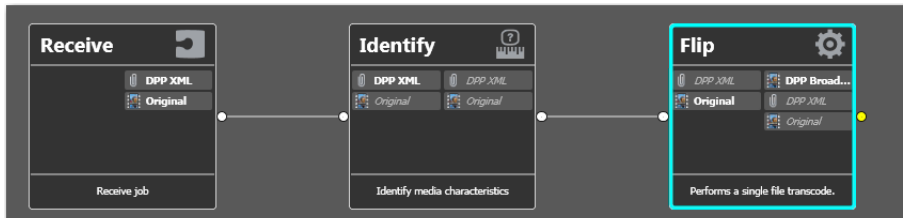
- A *Watch* action—configured to identify and ingest Attachments as you drop metadata XML files in the Watch's target folder, starts the job and assign the nickname *DPP XML*.
- A *DPP Validate* action—configured to parse the *DPP XML* file, validating it as well-formed DPP metadata. It should be configured to generate a True/False variable for the *Decide* actions to operate on, and generate a report so you know any problems it finds.
- *Decide* and *Copy* actions—to place the XML file in a valid or invalid folder for further processing as appropriate.

## Creating a Publishing Workflow

In Workflow Designer, create a new DPP package publishing workflow for processing programmes with existing metadata files. The workflow should be designed and configured to ingest the media and the validated metadata XML file, and generate a DPP package.

A prototypical workflow is depicted below. (The actions are the same for SD and HD—only the configurations are different):

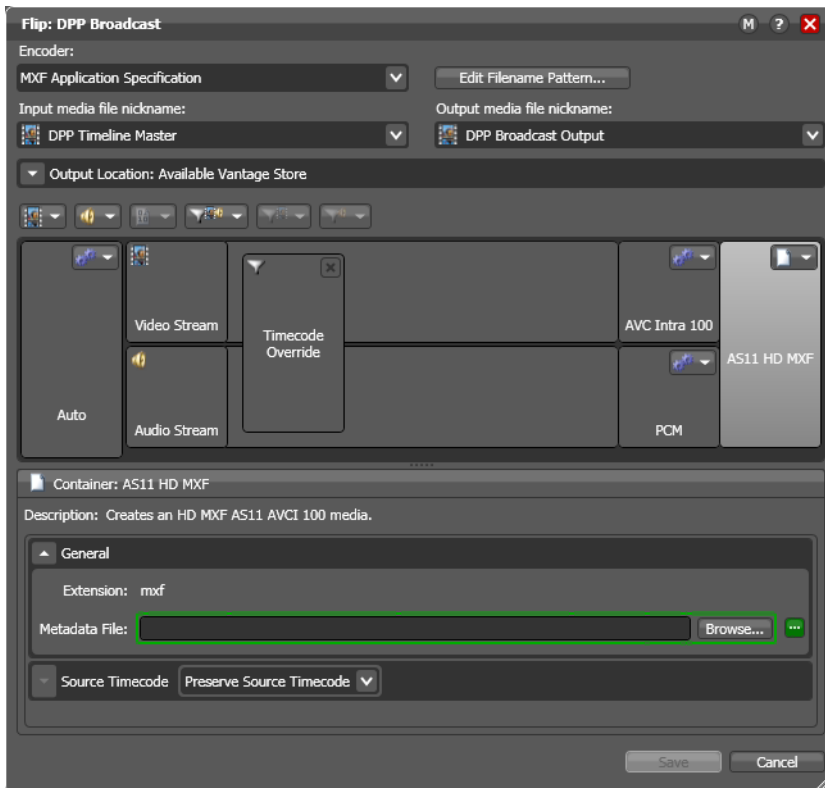
**Figure 14.** Typical External Metadata DPP Package Publishing Workflow



The workflow should have the following functionality:

- A *Watch action*—monitors a target watch folder for incoming programme files.
  - *Media Files Nickname*—*Original*
- An *Associate action*—monitors a target watch folder for the associated XML file by the same root name as the ingested programme file.
  - *Attachments Nickname*—*DPP XML*
- An *Identify action*—with the File Properties identifier enabled, to set the DPP Metadata File variable to the path of the associated XML metadata file.
- A *Flip action*—renders the *DPP Timeline Master* video as an AS-11 MXF file, inserting meta-data into the file from the source XML file (*DPP XML*), and performs a timecode override to start the video at the proper, DPP-compliant time.

**Figure 15.** Flip Inspector for Typical HD DPP Package Publishing Workflow



- The Flip action should be configured as:
  - *Input File Nickname*—*DPP Timeline Master*
  - *Output File Nickname*—*DPP Broadcast Output* (or other nickname, as required)
  - *Timecode Override Filter*—to set the starting timecode at 09:59:30:00 @ 25 fps
  - *Add Silent Channels Filter*—to create silent audio channels if necessary

For encoding SD media:

- *Encoder*—MXF AS Encoder
- *Video Codec*—IMX D10, 4:3 PAL 720 x 608 @ 25fps
- *Audio Codec*—4-channel PCM, with the Single Channel per Track option *disabled*
- *Container*—AS11 SD MXF, with the metadata file variable set to *DPP Metadata File* and the Source Timecode set to *Preserve Source Timecode*

For encoding HD media:

- *Encoder*—MXF AS Encoder
- *Video Codec*—AVC Intra 100, 1080i 25 4:2:2, Interlaced Upper Field First
- *Audio Codec*—4- or 16-channel PCM, with the Single Channel per Track option *enabled*
- *Container*—AS11 HD IMX, with the metadata file variable set to *DPP Metadata File* and the Source Timecode set to *Preserve Source Timecode*.



## Generating DPP Packages

To create DPP packages using external DPP metadata files and DPP media files, activate the DPP validation and publication workflows,

Next, locate the media file and metadata files to be used for a given programme—copy or drag and drop the media file and metadata file into the DPP Validation workflows' watch folder to validate the metadata XML files.

When the metadata validation workflow completes, if the metadata is valid, the workflow copies the XML file to a valid metadata folder, which is watched by the publishing workflow. When both files are present (with the same root name), the publishing workflow encodes the media and inserts the metadata to create a DPP package.

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