



GLOBAL TECHNICAL SPECIFICATIONS

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1. OVERVIEW

This document contains the required technical specifications for High Definition (HD) & Ultra High Definition (UHD) deliverables for PBS Distribution (PBSd).

PBS Distribution offers streaming of content on various distribution platforms. This requires PBS Distribution to receive files that are delivered in accordance with the specifications outlined herein. Source material must be compliant with the specifications detailed below in this document.

2. SOURCE MATERIAL REQUIREMENTS

There are no exceptions to the following requirements

- All video content delivered must not contain VITC time code, rating bugs, CC bugs, bumpers, advertisements, promotional lower thirds, overlay branding, hashtags, web tags, website promotion, on-air offer language and visuals, and other calls to action before, during, and/or after the program.
- All files must consist of the feature program with eight (8) seconds of slate and two (2) seconds of black and silence at the head of the program, and two (2) seconds of black and silence at the tail of the program.
- PBS Distribution requires seamless versions of episodic content.
- When delivering UHD content, a matching HD ProRes 422 HQ mezzanine file must also be delivered.
- All primary audio streams shall contain 5.1 surround and/or stereo. Mono audio is not accepted.
- All audio must be frame synchronous throughout the program. Audio and video may not be out of sync by more than 20 milliseconds.
- PBS Distribution requires closed captioning for all programs, promotional trailers, and bonus material. All caption files must be delivered in .SCC format.
- Promos and Trailers are required for all content.
- All content, including bonus video and promotional trailers, must be cleared for home entertainment distribution, worldwide in perpetuity. This includes but is not limited to funders, video, stock footage, and music.
- All content must be sent through a full creative and technical quality control (QC) process by the production company prior to delivery to PBSd, to ensure deliverables are both editorially and technically problem free. QC reports must be provided when assets are delivered.
- Files must be delivered via Aspera or Signiant. Hard Drive is only accepted for delivery of UHD content (and supporting HD mezzanine files). Other delivery methods including SFTP, Dropbox, or Box are not allowed.

3. PRIMARY VIDEO ASSET SPECIFICATIONS

3.1 Accepted Video Codecs

HD: Preferred - Apple ProRes 422 HQ

Acceptable - DNxHD MXF OP1a 175 10bit or higher resolution.

UHD: Preferred - Apple ProRes 422 HQ 4K

Acceptable - DnxHR HQ UHD or 4K UHD IMF extension 2.

When delivering UHD content, a matching HD ProRes 422 HQ mezzanine file must also be delivered.

3.2 Color Space and Levels

1080 High Definition deliverables must fully conform to the ITU-R recommendation BT.709-6 (aka Rec 709) parameter values, and Ultra High Definition files must fully conform to Recommendation BT.2020-2 (aka Rec 2020) parameter values. All levels must be within legal limits and a valid range. IRE 0-100 and analogue 0-700 mV. White or black clipping must not be evident.

3.3 Resolution

Minimum image format for all video content is 1920 x 1080 pixels, compliant with SMPTE ST 274-2008 standard. UHD (3840 x 2160 pixels) files are also acceptable, compliant with SMPTE ST 2036-1 for UHDTV1 and UHDTV2, respectively.

3.3 Frame Rate / Scan Mode

All video assets delivered for distribution must be in native frame rate. Progressive scan mode is required for all frame rates (23.98, 25, 29.97) for domestic distribution. International distribution requires interlaced scan mode, except for 23.98.

3:2 Pulldown flags are not allowed.

Mixed Frame Rates are not acceptable within the program content. All content must be delivered with a single frame rate used throughout the program.

3.4 Aspect Ratio

The aspect ratio of all HD video content shall be delivered in the original aspect ratio. All content must fit within a 16:9 frame. The postage stamp effect (window boxing) will not be accepted for HD. 4x3 Pillarbox is only acceptable for SD archival content and must be pre-approved by PBS Distribution before delivery occurs.

3.5 Safe Areas

Safe Action is the area within which all significant action must be contained as defined by SMPTE standard 2046-1. The area is defined as 93% of the width and height of the production aperture.

Safe Title Area is the area within which all significant text must be contained as defined by SMPTE standard 2046-1. The area is 90% of the width and height of the production aperture.

3.6 Time Code & Slate Format

All program content must begin at the exact time code (01:00:00;00 or 10:00:00;00), and content should be drop frame.

All files must consist of the feature program with eight (8) seconds of slate and two (2) seconds of black and silence at the head of the program, and two (2) seconds of black and silence at the tail of the program. Do not include bars and tone before the slate.

Material delivered shall follow the formatting below:

00:59:50;00 SLATE is 8 seconds (:08) in duration

00:59:58;00 BLACK is 2 seconds (:02) in duration

01:00:00;00 PROGRAM START at 1 hour or 10 Hour (international content)

BLACK for Two (2) seconds after program

3.7 Slates

A slate should be visible for eight (8) seconds before video content begins. The slate must contain the program title, episode title & number (if applicable), program total run time (first frame to last frame of picture, not including slates or textless elements), audio channel configuration, frame rate, date, and production company.

Example Slate:

Program Name
Episode Title & Number (if applicable)
Program Total Run Time
Frame Rate

Aspect Ratio
Texted or Textless
Production Company Name

Audio Config:
Ch 1: Left Stereo
Ch 2: Right Stereo

3.8 Commercial Blacks

PBS Distribution requires seamless versions of episodic content for domestic distribution. Commercial blacks & bumpers must be removed for domestic distribution.

Funder and commercial blacks may remain in the content for international distribution only, and with prior approval from your PBSd contact.

3.9 Texted Video

All video content delivered must not contain VITC time code, rating bugs, CC bugs, bumpers, advertisements, promotional lower thirds, overlay branding, hashtags, web tags, website promotion, on-air offer language and visuals, and other calls to action before, during, and/or after the program.

All graphics and lower thirds must be within title and action safe areas per SMPTE specifications.

Segment or episodic recaps or previews must be removed from the program and provided as a separate file if available.

Please speak with your PBS Distribution contact regarding previously discussed exceptions to the recap and preview requirement.

3.10 Textless Video

PBS Distribution requires textless masters to be provided for all primary video content in which identifying lower thirds, burned-in subtitles, translations, and other graphics appear. Texted open titles/credits and end credits must be provided at the end of the full textless file.

Please speak with your PBS Distribution contact regarding previously discussed exceptions to this textless requirement.

4. PRIMARY AUDIO ASSET SPECIFICATIONS

4.1 Primary Audio Stream

All primary audio streams on video masters shall be delivered as 5.1 Surround plus Stereo. If 5.1 audio is not available, stereo audio must be provided. Mono audio is not accepted.

4.2 Bit Depth and Rate

All audio should be formatted with a minimum 24-bit depth and 48 KHz sampling rate.

4.3 Audio Quality

All audio mixes must be free of audible clipping, noise, static and other distortions. The mix should be well balanced and equalized, with clear dialogue and narration that are not buried by effects or music.

The individual channels should be in phase to prevent cancellation or artifacts when tracks are down mixed to stereo. Stereo synthesizing is not allowed on any content.

4.4 Audio Levels

The audio mix of long form (“program”) content must conform to the guidelines presented in ATSC A/85:2013, using ITU-R BS.1770-3 for loudness measurement and true-peak measurement and must apply to all channels of a program, except for LFE channels. Measured loudness shall indicate the average loudness of normally spoken dialogue during the body of the program, and the resultant average must conform to -24 LKFS, +/- 2 LU. True Peak levels shall not exceed -2 dBTP at any time

4.5 Audio Phase and Synchronization

All audio channels must be frame synchronous throughout the program. Primary and secondary service audio must not lead or lag video by more than one-half frame.

4.6 Audio Split Tracks

Audio split tracks are required for all content being distributed via broadcast and internationally. Split tracks must be provided as separate .wav files and must be in sync with video.

Please refer to the audio split track channel assignment section of this document for configuration information.

4.7 Secondary Audio Stream

Secondary audio streams including Descriptive Video Service (DVS), Spanish audio programming (SAP/LAS), and other foreign language tracks are accepted, if available. The tracks must be provided as separate .wav files and in sync with video.

4.8 Audio Channel Assignments

Audio channel assignments on master video files must always be adhered to in accordance with this document. If DME (Dialogue, Music, Effects) is available for stereo files, it must be provided.

4.8 Primary Audio Channel Assignments

5.1 + 2.0 Channels:

Channel 1: Left Front

Channel 2: Right Front

Channel 3: Center

Channel 4: LFE

Channel 5: Left Surround

Channel 6: Right Surround

Channel 7: Stereo Left Full Mix

Channel 8: Stereo Right Full Mix

*Channel 9: Left Dialogue, Music, Effects (Full Mix minus Narration/VO), undipped**

*Channel 10: Right Dialogue, Music, Effects (Full Mix minus Narration/VO), undipped**

Stereo Channels:

Channel 1: Stereo Left Full Mix

Channel 2: Stereo Right Full Mix

*Channel 3: Left Dialogue, Music, Effects (Full Mix minus Narration/VO), undipped**

*Channel 4: Right Dialogue, Music, Effects (Full Mix minus Narration/VO), undipped**

* NOTE: For content wherever narration or voice over is not present Music & Effects without dialogue is required.

4.9 Audio Split Track Channel Assignments

Separate Dialogue, Music, and Effects tracks must be delivered as discrete .wav files.

For content wherever narration or voice over is not present Music & Effects without dialogue is required.

Please speak with your PBS Distribution contact regarding previously discussed exceptions to this audio requirement.

Domestic Distribution – 5.1 Surround:

Channel 1: Left (Music, Ambience, Effects, Background Dialogue)
Channel 2: Right (Music, Ambience, Effects, Background Dialogue)
Channel 3: Center (Dialogue or Narration, including Dialogue not in English)
Channel 4: Low Frequency Effects (Explosions/Music Effects)
Channel 5: Left Surround (Music, Ambience, Effects)
Channel 6: Right Surround (Music, Ambience, Effects)

International Distribution (Required if Master has 5.1):

Channel 1 & 2: Music (stereo)
Channel 3 & 4: Effects (stereo)
Channel 5: Synch Dialogue
Channel 6: Narration and Voice Overs
Channel 7 & 8: Full Mix (stereo)
Channel 9 & 10: Dialogue, Music, Effects (undipped)

Stereo (required if 5.1 is not available):

*Channel 3: Left Dialogue, Music, Effects (Full Mix minus Narration/VO), undipped**
*Channel 4: Right Dialogue, Music, Effects (Full Mix minus Narration/VO), undipped**

5. CLOSED CAPTIONING

To meet various compliance standards and in the interest of serving deaf and hard of hearing individuals, PBS Distribution requires closed captioning for all programs, promotional trailers, and bonus material.

5.1 Format

All caption files are required in the .SCC format and must match the time code of the master asset.

5.2 Encode Standard

Closed Captions must be encoded as specified in the CEA 708 standard.

5.3 Caption Style and On Screen Placement

Captions must pop-on and may not roll up. All captions shall not block important visual content on the screen including character faces, featured text such as lower-third identifiers, graphics, credits, and other information that is important for understanding program content. Captions must not overlap or run off the edge of the screen.

Captions must be placed in the center lower third of picture but should be temporarily moved into the upper third of the picture if captions conflict with on screen lower third graphics. Placement of captions may not remain in the upper third of the picture throughout the entirety of the video.

5.4 Accuracy and Synchronization

Captions must be in sync with the audio per FCC guidelines and regulations. Captions should begin and end in sync with the corresponding speech or sound, displayed at a speed that can be read by viewers.

All captions must match spoken words in the original language without paraphrasing or substitution. Captions should include full lyrics of songs included in the audio track, appropriate punctuation, and capitalization, correct verb tense, and proper spacing between words.

5.5 Additional Caption requirements

Non-verbal audio cues not visibly obvious (e.g. offscreen noise) must fully be conveyed by captions, with indication of the speaker, existence of music, sounds effects, and audience reaction.

If there is more than one speaker at a given time, captions must identify each speaker using caption identification or placement, including speakers off-screen.

6. SECONDARY VIDEO ASSET SPECIFICATIONS

Trailers and/or promos are required for each program. Optional video assets such as bonus material can be delivered upon availability.

6.1 Accepted Video Codecs

HD: Preferred - Apple ProRes 422 HQ.

Acceptable - DNxHD MXF OP1a 175 10bit or higher resolution.

UHD: Preferred - Apple ProRes 422 HQ 4K.

Acceptable - DnxHR HQ UHD or 4K UHD IMF extension 2.

6.2 Promos and Trailers

A minimum of one (1) commercially cleared promo (between 30 seconds and 2 minutes runtime) and one commercially cleared trailer (between 2 minute and 6 minutes runtime) is required for each series, season, and/or program. All promos and trailers must be cleared for usage worldwide.

For seasons containing multiple episodes, season promos and trailers must be provided. Episode specific promos are requested if available.

6.3 Bonus Material

Bonus materials such as cast and crew interviews, behind the scenes features, deleted scenes, making-of specials, electronic press kits, and other supporting material may be submitted with the primary program content.

6.4 Post Finishing and Closed Caption Requirements

All promos, trailers, and other supplemental bonus material must be fully post produced (finished) and meet the same technical requirements as the primary video files to be considered for inclusion on streaming platforms and Blu-Ray and DVD.

Closed caption files are required for all bonus material including promos and trailers.

6.5 Audio Requirements

Promos and trailer audio channels should match that of the program and must comply with all program audio requirements.

7. FILE NAMING CONVENTION

All media assets submitted to PBS Distribution must adhere to the following file naming convention:

Rightsline ID-Asset Title-Language Code-Asset Type.File Extension

Below are definitions for the four specific, ordered sections of the file name format, each separated by a dash (-). This will be followed by the file extension of your file type (e.g. MOV, MXF).

- 1. Rightsline ID:** *A unique, five-digit numerical code.* This code allows our various departments to track the program across all our systems, from Production to Digital to Accounting. The PBSd Production title manager will provide the Rightsline IDs for your programs as soon as they are available.
- 2. Asset Title:** *Program Title, season/episode number and descriptors (if applicable).* Do not include spaces in the title. Additional descriptor information such as audio configuration and textless at tail should be included in this title section.
- 3. Language Code:** *A two-letter code, ISO 639-1 standard.* The primary language code of most content is “en” for English, “es” for Spanish, or “fr” for French; other language codes are available online.
- 4. Asset Type:** *A particular tag identifying the type of file.* The Asset Type allows our system to properly identify and associate all the various files of a program together. Each file must be submitted with one of the following Asset Types:

Video (.mov / .mxf)

- Texted
- Textless
- Promo
- Trailer
- Bonus
- Credits
- FundingPod
- FunderCard

Audio (.wav)

- FullMix
- DVS
- SAP
- DME
- Dialogue
- Music
- Effects
- NarrationVO
- 51FullMix
- L/R/C/LFE/LS/RS

Caption (.scc)

- Caption
- BonusCaption
- PromoCaption
- TrailerCaption
- FundingCaption

Images (.jpg / .png / .psd)

- Banner
- FullArtwork
- LogoArtwork

Here are some file names examples:

36023-SanditonS1E1stereo-en-Texted.mov
36023-SanditonS1E1-stereo-en-Textless.mov
36023-SanditonS1E1-en-Caption.scc
36023-SanditonS1E1-en-51FullMix.wav
36023-SanditonS1E1LeftSurround-en-LS.wav
36023-SanditonS1E1-en-Promo.mov
36023-SanditonS1E1-en-PromoCaption.scc
36023-SanditonS1E1-en-FunderCard.mov
36023-SanditonS1E1-en-Banner.jpg

Please note:

- Do not use accented letters or any of the following characters in file names: & # % \$ * \ / ' " ; : ! ?
- All spaces must be removed from the file name and dashes must be used. Do not use underscores to separate the four sections of the file name.
- The Rightsline ID will be provided by your PBSd point of contact, and a unique code will be provided for assets being delivered for each episode, if delivering episodic or mini-series content, and for individual movies.
- Please note that the ID provided for supporting materials at a season level such as season trailers and behind the scenes might match the ID of the first episode of a season.
- If a file is redelivered, you must add the version number (e.g. V2, V3, etc.) and the date (MMDDYY) within the Program Title to indicate which version that file is.

Example: 36023-SandtionS1E1v209282021-en-Texted.mov

If you have any questions about the file naming convention, please reach out to your PBSd Production point of contact.

8. CLEARANCES

8.1 Clearances

All elements within the body of the texted and textless programs, and secondary assets such as bonus video, trailers, and promos, must be fully cleared worldwide in perpetuity for home entertainment distribution.

Any content including but not limited to video, stock footage, or audio that has not been cleared for home entertainment distribution must be removed from the master assets before being delivered to PBS Distribution.

Please reference your contract and delivery exhibit for further details.

9. QUALITY CONTROL (QC)

9.1 Quality Control

All content must be run through a full quality control (QC) process before being delivered to PBS Distribution.

9.2 Creative Quality Control

All content must be reviewed to ensure accuracy of the editorial and creative content within the body of the program or promo/trailer. This includes spelling of lower thirds and credits, the inclusion of all names in the credits, accurately used stock footage, information has been fact checked, etc.

9.3 Technical Quality Control

All content must be fully technically QCd and reviewed to ensure that there are no issues with the picture or audio in the deliverables, and that the content has been created per the specs listed in this document. QC reports must be provided to your PBSd contact upon delivery of assets.

Any technical issues found by PBS Distribution post-delivery will be rejected and the production company or post house delivering assets will be required to fix the assets at their own expense and redeliver the content.

9.4 Replacement of Assets

If any technical, legal, or creative issues are discovered by the production company after delivery to PBS Distribution, please alert your production contact immediately and provide the following information:

- 1) The episode(s) and timecode(s) affected
- 2) A detailed description of the problem(s) that need to be addressed
- 3) An estimated date for redelivery of assets

While PBS Distribution will make every effort to replace problematic video and audio, all requests are subject to review, and depending on the severity of the issue and timeline for release the content may not be replaced.

Any approved replacements will incur significant manufacturing and redelivery fees, and potential product destruction fees, that will be billed back to the production company for payment to be made to PBS Distribution.

Please follow the QC procedures listed above to avoid replacements.

10. FILE DELIVERY METHOD

10.1 File Delivery Method

Content will only be accepted via Aspera or Signiant unless the content is UHD content (see below). Other delivery methods such as SFTP, Dropbox and Box are not acceptable.

UHD Files, and their supporting HD Mezzanine files, may be delivered via Hard Drive with prior authorization from your PBS Distribution contact.

10.2 Onboarding for File Delivery

All content providers must be onboarded for delivery via Aspera and Signiant. Please speak with your PBS Distribution contact to setup your delivery method.