



VOD Affiliate Processing/Distribution **Requirements**

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Terms and Definitions

Box Art	An image file that is associated with the video asset and linked to the video asset within the metadata file. The orientation of this image is portrait to mimic a VHS tape box.
C3	Is a proprietary measurement standard from the Nielsen Company to gather rating data. The C3 data can be carried within the VOD asset allowing VOD views to be added to the linear ratings. C3 refers to the ratings for average commercial minutes in live programming plus three to seven days of time shifted playback (DVR and VOD).
CTS	Comcast Technology Solutions
EFT	Electronic File Transfer - Transporting digital files across a network. Some technologies such as FTP are open ended while other solutions like Radiance True Delivery™ and Aspera are much more efficient but require a server/client on both sides of the transmission.
Express Lane	Is the CTS's web based VOD authoring and ingestion system allowing a client to upload directly from an editing system into the CTS digital workflow for distribution. The system includes an intuitive metadata editor and scheduler within the User Interface (UI) that leverages the professional grade transcode and validation tools within the CTS.
Extranet	A secure network that is partially accessible to authorized persons outside of a company or organization.
Metadata	Data about the video file including things like: Title, Rating, Run Time, Folders, Start, and End Dates. There is one XML metadata file per video asset. There are defined specifications for different type of metadata files, the most common and required specification for VOD is CableLabs® 1.1
Movie Asset or Video Asset	The main program within a VOD package
Planner	An Excel document that has some limited data about the content like: Title, Rating, Run Time, Folders, Start, and End Dates. One document can have all of the video assets pitching for a given month.
Portal	A secure intranet web site that is accessible to authorized persons outside of a company or organization.
Poster Art	An image file that is associated with the video asset and linked to the video asset within the metadata file. The orientation of this image is landscape.
Preview Clip	An edited segment of the larger video asset and linked to the video asset within the metadata file.
Rapid VOD	Is a service that the CTS provides to transport VOD Packages to the local site within as little as 24 hours.
VDS	Video Distribution System - The CTS's file based distribution system for VOD and other file based content.
VOD	Video On Demand
VOD Package	Describes the elements that are required for a VOD asset to be distributed. Minimally a VOD package consists of a metadata file and video asset. Items like Poster Art, Box Art, and Preview Clip are optional.
WDP	Wholesale Delivery Platform - The CTS's file based distribution system for VOD and other file based content.
Work Order	An order authorizing specific work or distribution of content. CTS considers a complete work order to be the submission of metadata or planner and the associated media needed (i.e. MPEG file)

I. Introduction

The CTS currently processes and delivers VOD and File Based Content through its Express Lane System.

This document contains requirements for content and related elements associated with this distribution service.

In addition to file based distribution the CTS offers providers a full suite of video and audio processing and delivery services, which includes:

- Encoding (SD/HD)
- MPEG Editing (SD/HD)
- Post-Production / Editing
- Content Enhancements
- Rapid VOD Content Turnaround
- Internet File-Based Delivery

These services are further defined below. If you have any questions about these or other services, please contact your sales associate.

A. **Encoding (SD/HD)**

Using industry standards and specifications the CTS offers encoding services to digitize content from a variety of tape formats in both SD and HD. (see *Appendices B & C*).

B. **MPEG Editing (SD/HD)**

The CTS uses a software suite of tools to perform cut-only edits while maintaining a valid VOD formatted file. This service allows the CTS to perform basic edits at a fraction of the cost of doing so in a traditional non-linear editing environment.

C. **Post-Production / Editing**

For added value, the CTS offers content providers a full suite of post-production services with top-of-the-line SD and HD editing facilities that are staffed by experienced and award-winning video and audio professionals. Post-production services may be utilized to create unique content like: VOD highlights - taking raw footage of a live game or sporting event, editing the video and adding music, color commentary, and voice-over narration - then delivering the finished product to VOD servers around the country, all within a few hours of the event.

D. **Content Enhancements**

As additional added value, the CTS can provide enhancements to VOD content to improve end-user experience and/or the content value. The CTS can enhance content in many ways, such as by embedding interactive triggers or passing/adding watermarking to the VOD content for usage tracking.

E. **Rapid VOD Content Turnaround**

The CTS takes pride in leading the industry with innovative rapid turnaround models that many content providers take advantage of today. The standard turnaround for CTS VOD content is 2-3 days. But, by taking advantage of the CTS's rapid turnaround services, that timeline may be reduced to as short as 6 hours (restrictions and limitation may apply).

F. Internet File-Based Delivery

The CTS provides encode and/or transcode services for multiple internet media outlets including Comcast Xfinity®, iTunes®, and thePlatform. The CTS's digital workflow can systematically create the internet asset(s) as secondary assets to other work orders that are being processed like VOD. Internet video file work orders can also be created independently for the specification needed.

II. Requirements

A. Content Package or Work Order

The receipt of the content, metadata, and ancillary files is considered to be the completion of a work order and are the key components to a VOD Content Package.

1. Asset

The main/primary content title of a VOD package (or Internet package) is referred to as the “Asset.” A primary asset can be submitted to the CTS in multiple forms; Directly from the Networks or from 3rd party aggregators. These assets can be delivered in one of the acceptable formats called out in Appendix B.

2. XML Metadata

CableLabs® 1.1 Metadata is a XML file that is required for each VOD package. The metadata is due in with the MPEG asset.

3. Ancillary Material

Poster Art, Box Art, and Preview Assets are not required but are the most common forms of ancillary assets that are associated with a content package. While these ancillary elements are optional for VOD packages per the CableLabs® 1.1 Metadata specifications. These assets are required to be submitted on the same schedule as the Asset.

III. Tools and Secondary Services

There are a variety of useful tools and services available to our clients to help track and manage the content. These are listed below.

A. C3 Rapid Turnaround

C3 services provided by the CTS, when called out in the metadata, will prioritize the content to be delivered within 6 hours of receipt.

B. Express Lane Dashboard

The CTS offers a Web Portal with asset status information like pitch date and distribution status at each site. The Launch team will provide high level training on how to access and use this communication tool.

COMCAST WHOLESALE **Provider Asset Search** [Change Password](#) [Reload](#) [Logout](#) **EXL**

Provider Assets

Welcome **Asset Search** Detail Batch MDUs Create Asset Batch Upload Batch Errors Reports

By Date / Keyword
By Asset Suite

3 of 7 Providers selected

Date Filter: License Window Star

Date Range: Start Date: 3/1/2016 End Date: 3/31/2016

Severity: At Risk In Progress Complete [Show All](#)

Package Asset ID: optional

Package Asset ID	Title Sort Name	Movie Asset ID	Provider Name	Content Tier	LW Start Date	LW End Date	Catch	Distribute
PCKG0001458250923905	ATK	MOVI0001458250923905	PBS_PHL	EXPRESS_LANE	2016-03-25	2017-02-28	2/2	2/2
PCKG0001458250596653	Curtis	MOVI0001458250596653	PBS_PHL	EXPRESS_LANE	2016-03-23	2017-02-28	2/2	2/2
PCKG0001458938280244	ATK	MOVI0001458938280244	PBS_PHL	EXPRESS_LANE	2016-03-30	2017-02-28	2/2	2/2
PCKG0001458938623261	Curtis	MOVI0001458938623261	PBS_PHL	EXPRESS_LANE	2016-03-30	2017-02-15	2/2	2/2
PCKG0001458938456032	Curtis	MOVI0001458938456032	PBS_PHL	EXPRESS_LANE	2016-03-30	2017-01-31	2/2	2/2
PCKG0001458938791810	On Tour	MOVI0001458938791810	PBS_PHL	EXPRESS_LANE	2016-03-30	2017-01-31	2/2	2/2
PCKG0001458250739205	ATK	MOVI0001458250739205	PBS_PHL	EXPRESS_LANE	2016-03-24	2017-01-24	2/2	2/2
PCKG0001457558508443	Friday Arts	MOVI0001457558508443	PBS_PHL	EXPRESS_LANE	2016-03-14	2016-12-31	2/2	2/2
PCKG0001458938922318	Articulate	MOVI0001458938922318	PBS_PHL	EXPRESS_LANE	2016-03-30	2016-12-30	2/2	2/2
PCKG0001457559261458	Articulate	MOVI0001457559261458	PBS_PHL	EXPRESS_LANE	2016-03-14	2016-12-12	2/2	2/2
PCKG0001458939045952	Anthology	MOVI0001458939045952	PBS_PHL	EXPRESS_LANE	2016-03-30	2016-11-30	2/2	2/2
PCKG0001457558992314	On Tour	MOVI0001457558992314	PBS_PHL	EXPRESS_LANE	2016-03-14	2016-11-30	2/2	2/2
PCKG0001458939371678	First	MOVI0001458939371678	PBS_PHL	EXPRESS_LANE	2016-03-30	2016-10-31	2/2	2/2
PCKG0001458251029621	Flicks	MOVI0001458251029621	PBS_PHL	EXPRESS_LANE	2016-03-22	2016-09-30	2/2	2/2
PCKG0001457558771592	Flicks	MOVI0001457558771592	PBS_PHL	EXPRESS_LANE	2016-03-14	2016-09-12	2/2	2/2
PCKG0001457559117460	Flicks	MOVI0001457559117460	PBS_PHL	EXPRESS_LANE	2016-03-14	2016-09-05	2/2	2/2

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Appendix B: Encode Specifications

Below are highlights from the Cable Labs® Specification. The entire document can be obtained at:

<http://www.cablelabs.com/specification/content-encoding-profiles-3-0-specification/>

Standard Definition VOD Encoding Specification (VOD Ready)

Video:

- MPEG-2, Main level, main profile
- 4:3 (16x9 letterboxed to 4:3 may be used but not preferred)
- 4:2:0 chroma subsampling
- Frame rate of 29.97fps
- Black Level at 0 IRE
- 3 seconds of black at start of clip and 3 second of black at the end of clip (Minimum Requirement). Recommended black at the start is 7 seconds.
- Video data rate of no greater than 3.18Mbps
- Stream Type 0x02
- Stream ID 0xe0
- PID 0x1e1 (481)

Caption and V-Chip:

- [SCTE 20] formatted CEA-608 user data are required.
- ATSC [ATSC A/53, Part 4] formatted CEA-708D user data are required. The ATSC [ATSC A/53, Part 4] data MUST include cc_type '00' and '01' CEA-608 data pairs containing CC1 captions, and cc_type '10' and '11' data pairs containing DTVCC Service 1 captions.
- User data sections MUST observe the interleave requirements of [SCTE 43] section 5.2.2. Additional closed caption services embedded in the ATSC [ATSC A/53, Part 4] and [SCTE 20] user data constructs are optional.
- V-Chip data, encoded in accordance with [CEA 608-E], MUST conform to the ratings and/or content advisory data values set in Metadata

Note: It is permissible to use later versions of the standards referenced if those standards are updated and approved by the relevant standards body. Refer to informative reference [FCC 47 CFR 79.1] for rules governing carriage of closed captioning and exemptions. Refer to informative reference [FCC 00-259] for rules governing carriage of CEA-708 full syntax data.

Audio:

- 2-channel Dolby AC-3 at 192kbps
- Sampling Rate 48000sps
- Stream Type 0x81
- Stream ID 0xBD
- PID 0x1e2 (482)
- ISO-639 Language Descriptor

Secondary Audio:

- 2-channel Dolby AC-3 at 128kbps
- Sampling Rate 48000sps
- Stream Type 0x81
- Stream ID 0xBD
- PID 0x1e3 (483)
- ISO-639 Language Descriptor

Bit rate:

- Single program **transport stream** with a base data rate of 3.75Mbps or less
- Constant Bit Rate

Resolution:

- Vertical size of 480
- Horizontal size conforming to one the values in Table 3 of SCTE-43 corresponding to a vertical size of 480

Transport Stream:

- Single continuous transport stream, single program
- Transport stream must start on a packet boundary
- Program Number 0x001 (1)
- PMT PID 0x1e0 (480)
- PCR PID 0x1e1 (481) must be carried in the video

High Definition VOD Encoding Specification (VOD Ready)

MPEG2 Transport Stream:

- Continuous single program transport stream (SPTS)
- Constant bitrate, 188 byte packets
- Transport rate = 15.0 Mbps.
- Dolby AC3 Audio encoding
- PMT PID=0x1e0 (480)
- Video PID=0x1e1 (481)
- Primary Audio PID=0x1e2 (482)
- Secondary Audio PID=0x1e3 (483)
- Program Number=0x001 (1)
- Standard MPEG2 PSI and PCR rates

Video Encoding

- MPEG-2, Main Profile, High Level
- 4:2:0 Chroma Sub-sampling
- Frame rate = 29.97 Frames per second for 1080i or 59.94 Frames per second for 720p
- Possible resolutions include 1920 x 1080i and 1280 x 720p
- 3:2 film mode detection enabled
- Nominal GOP range = 12 to 22 but depends on Server Vendor requirement
- 3 seconds of black at start of clip and 3 second of black at the end of clip (Minimum Requirement). Recommended black at the start is 7 seconds.

Captions

- ATSC [ATSC A/53, Part 4] formatted CEA-708 user data are required. ATSC [ATSC A/53, Part 4] data MUST include type '00' and '01' CEA-608 data pairs containing CC1 captions, and type '10' and '11' data pairs containing DTVCC Service 1 captions.
- V-Chip data, encoded in accordance with [CEA 608-E], MUST conform to the ratings and/or content advisory data values set in Metadata.

Note: It is permissible to use later versions of the standards referenced if those standards are updated and approved by the relevant standards body. Refer to informative reference [FCC 47 CFR 79.1] for rules governing carriage of closed captioning and exemptions. Refer to informative reference [FCC 00-259] for rules governing carriage of CEA-708 full syntax data.

Baseband Video Standards – Not all may apply:

- SMPTE 240M – Signal Parameters for 1125-Line High Definition Video
- SMPTE 260M – Digital representation for 1125/60 High Definition Systems
- SMPTE 274M – 1920 x 1080 scanning and interface
- SMPTE 292M – Bit-Serial Digital Interface for High Definition systems
- SMPTE 296M – 1280 x 720 Scanning, Analog and Digital representation

Audio Encoding

- Adhere to Dolby Digital AC3 Encoding specification
- 48 kHz sampling
- Compression profile = Film Std or Light
- Dialog Normalization (*Dialnorm*) should match the level of average spoken dialogue (speech) within the encoded audio program. This method is consistent with industry standards for Dolby AC3 Encoding

Audio Bitrate

- Primary = 192 kbps for Stereo or 384 kbps for Dolby Digital 5.1
- Secondary (if available) = 128 kbps

Baseband Audio Standards – Not all may apply

- AES/EBU Digital Audio standard
- SMPTE 299M – 24-bit Digital audio format for HDTV Bit-Serial Interface
- Reference Level: –20 or –18 dBFS, Peaks not to exceed 0 dBFS.
- 48 kHz sampling

Stereoscopic 3D VOD Encoding Specification (VOD Ready)

The 3D VOD encoding requirements are very similar to the above specification for MPEG-2 HD encoding with the following exceptions:

Transport Stream:

- Transport rate = 18.75 Mbps

Video Encoding:

- TaB (Top-and-Bottom) formatted content must be used with progressive video formats exclusively (720p, 1080p)
- SbS (Side-by-Side) formatted content must be used with interlaced video formats exclusively (1080i)

For a more detailed explanation of Stereoscopic 3D video formatting, please see the CableLabs Content Encoding Profiles 3.0 Specification.

Standard Definition MPEG4 VOD Encoding Specification

Transport Stream:

- Single continuous MPEG-2 transport stream, single program
- Transport stream must start on a packet boundary
- Program Number 0x001 (1)
- PMT PID 0x1e0 (480)
- PCR PID 0x1e1 (481) must be carried in the video

Video:

- H.264, High Profile at Level 3
- 4:3 (16x9 letterboxed to 4:3 may be used but not preferred)
- 4:2:0 chroma subsampling
- Frame rate of 29.97 for video and 23.97 for film
- Black Level at 0 IRE
- Video data rate of no greater than 1.9Mbps
- Stream Type 0x02
- Stream ID 0xe0
- PID 0x1e1 (481)

Caption and V-Chip:

- [SCTE 20] formatted CEA-608 user data are required.
- ATSC [ATSC A/53, Part 4] formatted CEA-708D user data are required. The ATSC [ATSC A/53, Part 4] data MUST include cc_type '00' and '01' CEA-608 data pairs containing CC1 captions, and cc_type '10' and '11' data pairs containing DTVCC Service 1 captions.
- User data sections MUST observe the interleave requirements of [SCTE 43] section 5.2.2. Additional closed caption services embedded in the ATSC [ATSC A/53, Part 4] and [SCTE 20] user data constructs are optional.
- V-Chip data, encoded in accordance with [CEA 608-E], MUST conform to the ratings and/or content advisory data values set in Metadata

Note: It is permissible to use later versions of the standards referenced if those standards are updated and approved by the relevant standards body. Refer to informative reference [FCC 47 CFR 79.1] for rules governing carriage of closed captioning and exemptions. Refer to informative reference [FCC 00-259] for rules governing carriage of CEA-708 full syntax data.

Audio:

- 2-channel Dolby AC-3 at 192kbps
- Sampling Rate 48000sps
- Stream Type 0x81
- Stream ID 0xBD
- PID 0x1e2 (482)

Secondary Audio:

- 2-channel Dolby AC-3 at 128kbps
- Sampling Rate 48000sps
- Stream Type 0x81
- Stream ID 0xBD
- PID 0x1e3 (483)

- ISO-639.2 Language Descriptor
- ISO-639.2 Language Descriptor

Bit rate:

- Single program **transport stream** with a base data rate of 2.20Mbps
- Constant Bit Rate

Resolution:

- $\frac{3}{4}$ resolution (528x480)

High Definition MPEG4 VOD Encoding Specification

MPEG2 Transport Stream:

- Continuous single program transport stream (SPTS)
- Constant bitrate, 188 byte packets
- Transport rate = 7.20 Mbps or less
- Dolby AC3 Audio encoding
- PMT PID=0x1e0 (480)
- Video PID=0x1e1 (481)
- Primary Audio PID=0x1e2 (482)
- Secondary Audio PID=0x1e3 (483)
- Program Number=0x001 (1)

Video Encoding

- H.264 High Profile at Level 4
- Video data rate of no greater than 6.8 Mbps
- 4:2:0 Chroma Sub-sampling
- Frame rate = 29.97 Frames per second for 1080i or 59.94 Frames per second for 720p
- Possible resolutions include 1920 x 1080i and 1280 x 720p

Captions

- ATSC [ATSC A/53, Part 4] formatted CEA-708 user data are required. ATSC [ATSC A/53, Part 4] data MUST include type '00' and '01' CEA-608 data pairs containing CC1 captions, and type '10' and '11' data pairs containing DTVCC Service 1 captions.
- V-Chip data, encoded in accordance with [CEA 608-E], MUST conform to the ratings and/or content advisory data values set in Metadata.

Note: It is permissible to use later versions of the standards referenced if those standards are updated and approved by the relevant standards body. Refer to informative reference [FCC 47 CFR 79.1] for rules governing carriage of closed captioning and exemptions. Refer to informative reference [FCC 00-259] for rules governing carriage of CEA-708 full syntax data.

Audio Encoding

- Adhere to Dolby Digital AC3 Encoding specification
- 48 kHz sampling
- Compression profile = Film Std or Light
- Dialog Normalization (*Dialnorm*) should match the level of average spoken dialogue (speech) within the encoded audio program. This method is consistent with industry standards for Dolby AC3 Encoding

Audio Bitrate

- Primary = 192 kbps for Stereo or 384 kbps for Dolby Digital 5.1
- Secondary (if available) = 128 kbps

Standard Definition Encoding Specification for CTS Transcode Services

Video Encoding:

- H.264
- Frame rate = 29.97 fps
- 720x480 resolution
- 4:3 aspect ratio
- EIA 608-B is required of captioning is available.

Audio Encoding:

- AAC (advanced audio coding) codec
- Stereo at 48kHz
- Audio bit rate 256 kbps

Bit rate:

- Single program with a base data rate of 10 Mbps
- Constant Bit Rate

High Definition Encoding Specification for CTS Transcode Services

Video Encoding:

- Possible Codecs
 - H.264
 - DV25
 - DNxHD
- Frame rate = 29.97 fps
- 1920x1080i resolution
- 16:9 aspect ratio
- EIA 708-B is required of captioning is available.

Audio Encoding:

- AAC (advanced audio coding) codec
- Stereo at 48kHz
- Audio bit rate 256 kbps

Bit rate:

- Single program with a base data rate of 18-25 Mbps
- Constant Bit Rate

Standard Definition Encoding Specification for Contribution Grade Content

MPEG-2 Transport Stream

Video:

- MPEG-2, Main level, main profile
- 4:3 (16x9 letterboxed to 4:3 may be used but not preferred)
- 4:2:0 chroma subsampling
- Frame rate of 29.97 for video
- Scan Type = Interlaced (top field first)
- Black Level at 0 IRE
- 3 seconds of black at start of clip and 3 second of black at the end of clip (Minimum Requirement). Recommended black at the start is 7 seconds.
- Stream Type 0x02
- Stream ID 0xe0
- PID 0x1e1 (481)

Bit rate:

- Single program **transport stream** with a base data rate of 15.00Mbps
- Constant Bit Rate

Resolution:

- Full D1 resolution (720x486)

Transport Stream:

- Single continuous transport stream, single program
- Transport stream must start on a packet boundary
- Program Number 0x001 (1)
- PMT PID 0x1e0 (480)
- PCR PID 0x1e1 (481) must be carried in the video

AVC

Video Encoding:

- H.264
- Frame rate = 29.97 fps
- Scan Type = Interlaced (top field first)

- Full D1 resolution (720x486)
- 4:3 aspect ratio

Bit rate:

- Single program with a base data rate of 10.0 Mbps
- Constant Bit Rate

Transport Wrapper:

- Quicktime, Windows Media, MPEG2 TS are supported

SD Closed Captioning and V-Chip Specification:

- [SCTE 20] formatted CEA-608 user data are required.
- ATSC [ATSC A/53, Part 4] formatted CEA-708D user data are required. The ATSC [ATSC A/53, Part 4] data MUST include cc_type '00' and '01' CEA-608 data pairs containing CC1 captions, and cc_type '10' and '11' data pairs containing DTVCC Service 1 captions.
- User data sections MUST observe the interleave requirements of [SCTE 43] section 5.2.2. Additional closed caption services embedded in the ATSC [ATSC A/53, Part 4] and [SCTE 20] user data constructs are optional.
- V-Chip data, encoded in accordance with [CEA 608-E], MUST conform to the ratings and/or content advisory data values set in Metadata

Note: It is permissible to use later versions of the standards referenced if those standards are updated and approved by the relevant standards body. Refer to informative reference [FCC 47 CFR 79.1] for rules governing carriage of closed captioning and exemptions. Refer to informative reference [FCC 00-259] for rules governing carriage of CEA-708 full syntax data.

High Definition Encoding Specification for Contribution Grade Content

MPEG2 TS

MPEG2 Transport Stream:

- Continuous single program transport stream (SPTS)
- Constant bitrate, 188 byte packets
- Transport rate = 30.0 Mbps.
- Dolby AC3 Audio encoding
- PMT PID=0x1e0 (480)
- Video PID=0x1e1 (481)
- Primary Audio PID=0x1e2 (482)
- Secondary Audio PID=0x1e3 (483)
- Program Number=0x001 (1)
- Standard MPEG2 PSI and PCR rates

Video Encoding

- MPEG-2, Main Profile, High Level
- 4:2:0 Chroma Sub-sampling
- Frame rate = 29.97 Frames per second for 1080i
- Resolution 1920 x 1080i (top field first)
- Nominal GOP range = 12 to 22 but depends on Server Vendor requirement
- 3 seconds of black at start of clip and 3 second of black at the end of clip (Minimum Requirement). Recommended black at the start is 7 seconds.

AVC

Video Encoding:

- H.264 codec
- Frame rate = 29.97 fps
- 1920x1080i resolution (top field first)
- 16:9 aspect ratio

Bit rate:

- Single program with a base data rate of 25.0 Mbps
- Constant Bit Rate

Transport Wrapper:

- Quicktime, Windows Media, MPEG2 TS are supported

HD Closed Captioning Specification

- ATSC [ATSC A/53, Part 4] formatted CEA-708 user data are required. ATSC [ATSC A/53, Part 4] data MUST include type '00' and '01' CEA-608 data pairs containing CC1 captions, and type '10' and '11' data pairs containing DTVCC Service 1 captions.
- V-Chip data, encoded in accordance with [CEA 608-E], MUST conform to the ratings and/or content advisory data values set in Metadata.

Note: It is permissible to use later versions of the standards referenced if those standards are updated and approved by the relevant standards body. Refer to informative reference [FCC 47 CFR 79.1] for rules governing carriage of closed captioning and exemptions. Refer to informative reference [FCC 00-259] for rules governing carriage of CEA-708 full syntax data.

Audio Encoding Specification for HD and SD Contribution Grade Content

- Adhere to Dolby Digital AC3 Encoding specification
- 48 kHz sampling
- Stream Type 0x81
- Stream ID 0xBD
- PID 0x1e2 (482) for first audio, 0x1e3 (483) for second audio (if available)
- ISO-639 Language Descriptor
- Compression profile = Film Std or Light
- Dialog Normalization (*Dialnorm*) should match the level of average spoken dialogue (speech) within the encoded audio program. This method is consistent with industry standards for Dolby AC3 Encoding

Audio Bitrate

- Primary = 192 kbps for Stereo or 384 kbps for Dolby Digital 5.1
- Secondary (if available) = 128 kbps

Appendix C: CTS VOD Launch Process (Content Provider Check List)

New provider launch: 60 day standard cycle*

60 days prior to start – conference call, review provider values.

50 days prior to start - programmer sends content to Comcast Wholesale for validation

45 days prior to start – Comcast Wholesale sends provider worksheets to MVPD's

35 days prior to start – MVPD returns provider worksheet

21 days prior to start – Dry Run Testing – at least one asset of every type. Content and xml received, validated, reviewed, ingested, distributed to test catcher(s).

14 days prior to start – Library content ingest begins (if applicable)

7 days prior to start – XML for C3 and D4 to be ingested

7 days prior to start – Library content pitched (if applicable)

Launch Day – Confirm delivery status to all sites, troubleshoot issues (this may start as soon as content is pitched but will be completed on the launch day)

Add to Pitch: (Adding an existing provider to Affiliate Pitch)

-Request arrives via Provider

-Provider Worksheet sent to MVPD

-Provider Worksheet returned to Comcast Wholesale

-Business rules configured/applied to platform (usually 72 hours after the worksheet is returned)

-MVPD added to pitch and content begins delivering

**This process usually can be done in one business week if the MVPD returns the worksheet promptly*