ENCODER INSTALLATION AND CONFIGURATION POLICY

TABLE OF CONTENTS

1. INTRODUCTION

1.1. PREFACE

This document provides an overview of Nielsen encoding solutions and the policy for installing and configuring Nielsen Watermark encoder solutions in the U.S. This document supersedes all previous versions of the Nielsen Encoding Installation and Configuration Policy.

1.2. STATEMENT OF POLICY

This document establishes the policy by which Nielsen encoding and monitoring equipment will be installed and configured to ensure proper operation and performance for Nielsen television measurement to accurately detect and report household and out of home viewing. Media distributor clients are required to actively encode using the Nielsen encoding methodology per their service agreements with Nielsen.

Caution! Failure to comply with the Encoding Installation and Configuration Policy can result in incorrect data and loss of correct crediting. As a result, Nielsen may need to take actions to protect the integrity of Nielsen Ratings.

1.3. AUDIENCE

This document is intended for station managers, station engineers, and others who are responsible for overseeing the execution of this encoder policy. Clients and engineers should have a thorough knowledge of broadcast engineering equipment, the functions of each piece within the broadcast air chain, and the inter-relationships between and among the different pieces in the air chain.

1.4. RELATED DOCUMENTATION

Please refer to your Nielsen client agreement as well as the following documentation, as they contain important information about encoders and encoding:

ATSC Recommended Practice: Techniques for Establishing and Maintaining Audio Loudness for Digital Television (A/85:2013)." Advanced Television Systems Committee.

2. OVERVIEW OF LINEAR ENCODER INSTALLATIONS

Nielsen encoding technologies are critical to the Nielsen metering solution for accurately measuring TV content viewing behaviors on all platforms. Encoders use patented, perceptual-masking technology to embed watermarks (codes) in the content's audio.

Select an encoder that is appropriate for your particular facility configuration. See the "Nielsen Encoder Hardware Solutions" linked in section 3.8, including a link to the Related Documentation.

Select a location in the air chain for the encoder. The facility design is an important factor. The most convenient location may not be the optimal location. See section 4, "Nielsen Encoding In Linear Distribution." If you have questions or your particular installation is not addressed, contact Nielsen Encoder Support at 800-537-4872 option 2. The Nielsen Watermark solution needs to be installed in a location on the signal path that is after ALL switching sources, and PRIOR to any distribution outputs. Failure to do so may result in incorrect Nielsen Ratings data from specific sources, and will need to be corrected for optimum performance.

Install the encoder per the instructions in this document, the encoder-specific user manual, and support from the Nielsen Encoder support team. All distribution outputs including STL links, Fiber for MVPD and vMVPDs must include the same Nielsen Watermark information from the same unique hardware solution. The use of multiple Hardware using the same SID/CBET information is not allowed and may result in incorrect Nielsen Ratings.

Caution! Never install Multiple encoders in series with the same SID type.

Install a second encoder in the backup air chain. Each backup distribution path must contain an encoder to ensure codes continue to be inserted when the primary feed is interrupted due to faults or maintenance. For details, see section 6.9, "Secondary Or Backup Feeds."

Verify encoder operation offline in the primary and backup paths to confirm compatibility with other equipment in the air chain. If performance issues arise during off-air verification, contact Nielsen Encoder Support at 800-537-4872 option 2.

Caution! Any changes to the facility configuration that can affect or influence the performance of Nielsen encoding must be communicated to Nielsen Encoder Support for performance re-qualification. This includes, but is not limited to, Repack changes, station frequency changes, temporary low power exemptions, Multicast distribution, Simulcasting, extended off the air or outage and Nielsen encoder hardware platform changes. Without communication to the Nielsen Encoder Solutions team, Nielsen cannot guarantee the delivery of accurate data and will not be responsible for reprocessing data as a result of undocumented changes that have not been re-qualified.

3. NIELSEN ENCODING TECHNOLOGIES

Nielsen Watermarking is the name for technology using a process called Psychoacoustic Auditory Masking, where information is inserted into an audio signal that is inaudible by the human ear but detectable by Nielsen meters.The actual Encoded information or message is a unique Source Identification Code (SID code) which is a single number assigned by Nielsen to each tuning source, and a date and Timestamp. There are 2 Nielsen Audio Encoding System (NAES) watermarking types, NAES 2 and NAES 6 (also referred to as Nielsen Watermarks or NW).

NAES 2 and NAES 6 audio codes contain the same SID, Date, and Timestamp. Since the insertion rate for each differs, the date and time stamp of the NAES 2 audio codes are slightly different from those of the Nielsen Watermarks audio codes.

Nielsen policy is for NAES 2, NAES 6 (NW) and CBET encoding to be enabled on the encoder. Note that Bypass mode disables both NAES 2 and Nielsen Watermarks encoding, and should never be configured, unless as instructed and documented by Nielsen Encoder Support personnel.

3.1. NAES 2 (LEGACY)

Time Division Multiplex - data message inserted over time, Insertion rate duration for a complete watermark message is 1.87 seconds. NAES 2 specification uses two individual time slots for a complete message.

NAES 2 codes can be overwritten, however code degradation does happen with multiple overwrites, which includes partial or incorrect data, please review Nielsen policy on "Cascaded Nielsen Encoding-Encoders in Series" in section 8.1.

Compression rate survival down to 96 Kbps, depending on Audio codec used, however Nielsen recommends using Dolby audio specification for all broadcast signal audio data bit rates.

Program Content (PC) codes have a designated slot to align the start of a new message, and Final Distributor (FD)codes will then fill in the second time slot. Due to this design, it is imperative that PC codes are inserted prior to FD codes. If there is no PC code presence, FD codes will fill in repeatedly if no PC codes exist.

The frequency range for NAES 2 is as follows - (4.5 kHz to 6.3 kHz).

2 Slot design
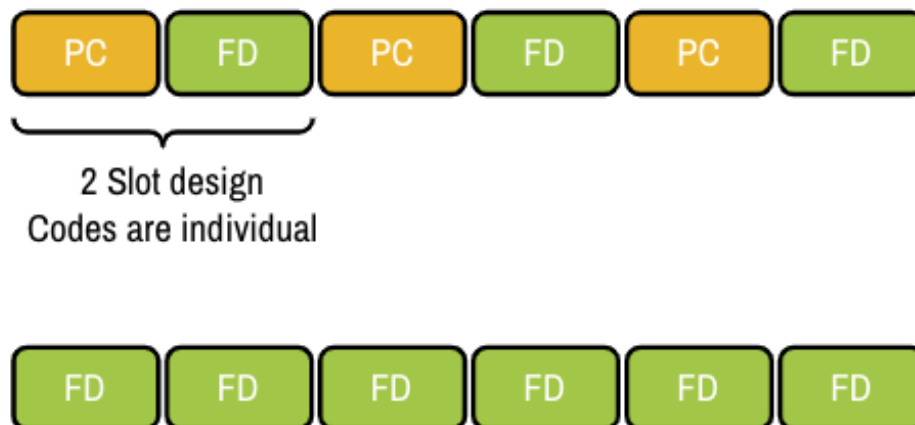Codes are individual

3.2. NAES 6 (NIELSEN WATERMARKS)

Time Division Multiplex - data message inserted over time, Insertion rate duration for a complete watermark message is 4.8 seconds. NAES 6 specification uses three individual time slots for a complete message.

NAES 6 codes can NOT be overwritten.

Compression rate survival down to 64, 32, or 16 Kbps depending on codec used, however Nielsen recommends using Dolby audio specification for broadcast signal audio data bit rates.

PC codes have a designated slot to align the start of a new message, and FD codes will then fill in the second time slot. FD codes will fill in the first slot if no PC codes exist. There is only one PC code slot, and once an FD code is present in the 1st slot, introduction of a PC code will result in errors. Due to this design, it is imperative that PC codes are inserted prior to FD codes. If there is no PC code presence, FD codes will fill in subsequent slots

The frequency range for NAES 6 is as follows - (2.99 kHz to 4.8 kHz).

3 Slot design
Codes are cumulative
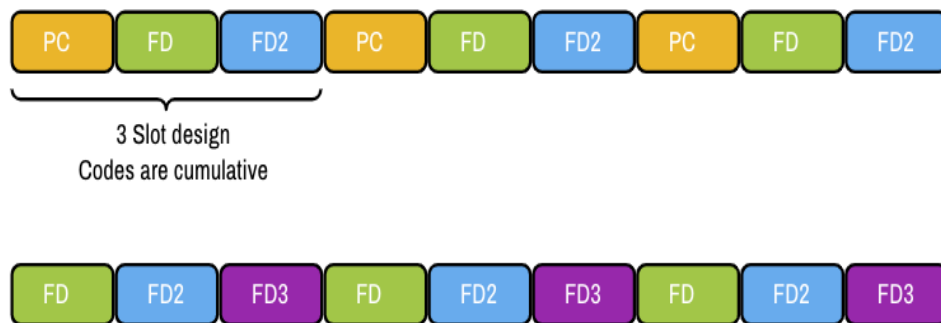
3.3.   CBET

A third type of Nielsen code called Critical Band Encoding Technology (CBET) is inserted for all national clients, as well as local clients in PPM markets, to enable out of home measurement. CBET codes utilize critical frequency bands between approximately 1-3kHz. CBET code insertion relies on frequency division rather than time division multiplexing, with each code requiring 4.8 seconds to provide a complete CBET message. CBET audio code is designed to survive audio compression down to 32kbps AAC, and requires only 8kHz sampling rate for decoding, unlike NAES codes which require 16 kHz sampling rate. CBET watermarks can be overwritten, however, Nielsen policy states that watermark encoding of the same type (layer 2 or layer 5) should not be performed.

- ▸ L5: Local TV Encoding
- ▸ L2: Network TV Encoding
- ▸ L1: Radio Encoding
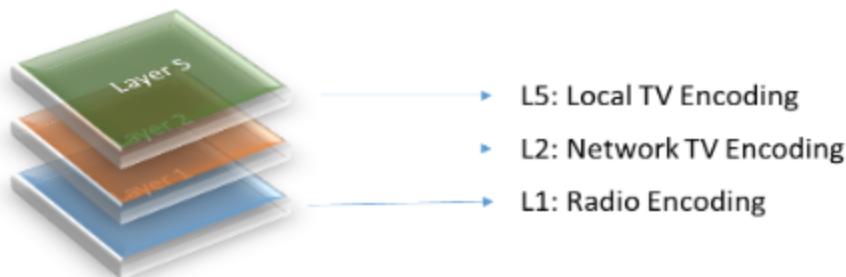
3.4.   NAES AUDIO CODE TYPES (PROGRAM CONTENT AND FINAL DISTRIBUTOR)

Program Content, or PC code, is used by broadcast networks, syndicators, and content distributors. These codes need to be added at the content creation part of the distribution chain, making sure that the specific program name has a single unique code/date/timestamp from a single Nielsen watermark appliance, that will match no matter when an affiliate airs the content. PC code also does NOT require "live" date/timestamp, as long as the Feedpoint information is correct for the content creation.

PC code tells 'what' someone is watching.

Final DIstributor, or FD code, is used by local broadcast stations, national cable networks, regional sports, local cable news, and all Viewer ready feeds FD codes are to be inserted at the time of programming distribution at the affiliate or National distribution time. The FD code date & timestamp MUST be locked to local time and be as accurate as possible to live.

FD code tells us 'where' someone is watching.

Nielsen Watermarking is most complete when there is both PC & FD as well as L2 & L5 Watermarks present on the signals being distributed from the local affiliates. This would be during Network and Syndication, as Local News and other local programming would only have FD/L5 Watermarks, which is within Policy. National Cablenet feeds will have FD/L5 Watermarks, and some syndication depending on content, which is Policy.

3.5. CBET AUDIO CODE TYPES (LAYER 2 AND LAYER 5)

CBET Layer 2 - Are the CBET codes used by Broadcasters (PC SID Encoded - examples: ABC, NBC, CBS), Cablenets (FD SID Encoded - examples: Disney, HBO), and Cable Headends (FD SID Encoded - example: Central Florida News).

CBET Layer 5 - Are the CBET codes used by Local stations (FD SID Encoded - examples: WXYZ, WABC).

CBET uses a re-scramble to allow for both a layer 2 and a layer 5 CBET code insertion on one channel. Re-scramble means Layer 2 and Layer 5 have all of the same frequencies, however the detail symbol assignments are different.

3.6. NIELSEN COMMERCIAL ENCODING TECHNOLOGIES

3.6.1. NAES 2 HIGH FREQUENCY (N2HF)

NAES 2 High-Frequency (NAES 2 HF) watermarking inserts NAES-2 type watermarks at a higher frequency than the standard NAES 2 frequency band. These NAES 2 HF watermarks are used in specialized applications to watermark commercial content. NAES 2 HF watermarks are similar in format to NAES 2 Hybrid watermarks with the following exceptions:

- There is no stacked decoding.
- The level setting is meaningless. NAES HF watermarks are not defined as PC or FD.
- The return value of timestamp should always be interpreted as a time code, never as a TIC.

3.6.2. NIELSEN WATERMARKS COMMERCIAL CODE (NWCC)

When the content is short (less than a minute), most commonly the content is a commercial. The applications that process short content use NWCC watermarks. Even if the NWCC watermarks only persist for a few seconds, they are easier to identify than NWTAM watermarks. The encoder inserts NWCC watermarks at 1.6-second intervals into a different frequency band. Pre-existing NWCC watermarks are not overwritten.

3.6.3. COMMERCIAL CODE DETECTION RATE EXAMPLE (30 SECOND CLIP LENGTH):

Nielsen Watermarks CC

- Insertion rate - 1 code/1.6 sec, which is 18 NWCC SIDs
- Detected - 17detected / 18 = 95%
- Detection rate required 95% of Audio SDK reference

NAES 2 HF

- Insertion rate - 1 code/2 seconds which is 15 N2HF SIDs
- Detected - 14 detected / 15 = 95%
- Detection rate required 95% of Audio SDK reference

3.7.   SPOTTRAC ENCODER END OF LIFE - END OF SERVICE

End-of-Support for the Nielsen SpoTTrac Digital Encoder commercial watermarking unit occurred on March 31, 2019. Nielsen strongly advises all SpoTTrac users to take immediate action to acquire a replacement solution as soon as possible. As of April 1st, 2019, Nielsen no longer supports this product and will not provide in-depth troubleshooting, root cause failure analysis or repairs, nor will we provide loaner encoder units to replace SpoTTrac encoders.

3.8.   NIELSEN ENCODER HARDWARE SOLUTIONS

Current Nielsen Encoder hardware options can be found at the following link:

https://nielsendownloads-blue.digitalengsdk.com/tv/Encoding/Nielsen%20Encoder%20Solutions%202021.pdf

EOL Hardware

- NAVE ll - Direct Replacement is a Ross NWE-3GA
- NAVE llc - Direct Replacement is a Ross NWE-TS
- Media Encoder for TV - Replaced by Converged Encoders (NWE-3GA or NWE-TS) or SDK
- Spottrac - SDK compliant facilities

Nielsen Encoder Hardware is shipped with a default SID, failure to enter the correct SID and CBET for your distribution path will result in no tuning credit. Nielsen will not be able to correct this data, as the Default SID is designed to never credit or "be saved" in the Nielsen system.

4. NIELSEN ENCODING IN LINEAR DISTRIBUTION

4.1. OVERVIEW OF ENCODER INSTALLATION

For all facilities, the Nielsen encoder must be installed after all program switching or routing and prior to all distribution from the facility, including the transmitter, cable VMPD, DirecTV, and EchoStar distribution paths.

Nielsen Policy is to never cascade or have multiple Nielsen encoding of the same code type (PC or FD) on the same specific path. Do not rely on watermark overwriting or multiple code slots to handle the addition of Nielsen Watermarks, the insertion of all Nielsen Watermark data is subject to this document.

Refer to the diagrams in the next section, "Basic Installation Diagrams." All signals leaving the facility must be encoded.

These diagrams are high level overviews of distribution scenarios, and now all possible combinations are covered. The Nielsen Encoder Support team is happy to review your specific installation and potential challenges to help determine a solution that will meet Nielsen Policy. Any deviation from this policy is the responsibility of the Engineers, Nielsen personnel will not be held accountable.
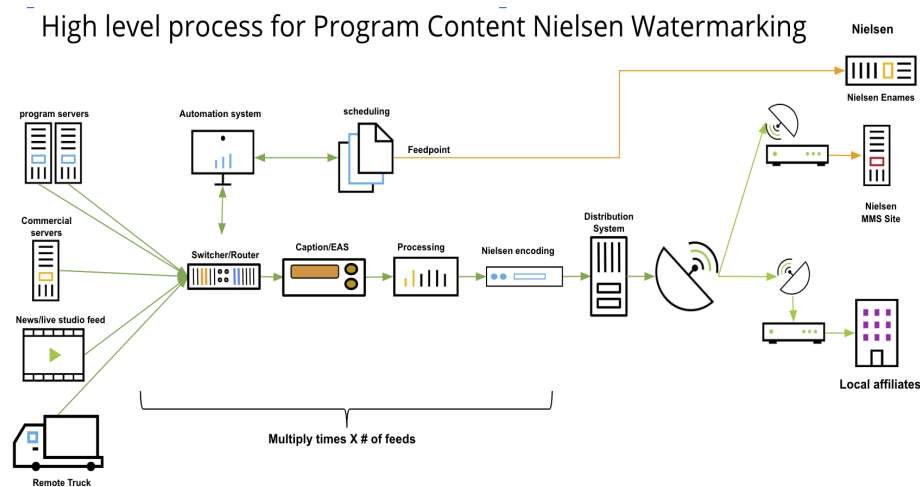
4.2. BROADCAST NETWORK

In the diagram below, the Nielsen Encoder is configured for Program Content (PC) Watermarks and Layer 2 CBET codes. The requirements for PC Codes do NOT require live to distribution time reference. While many facilities will lock the Nielsen encoders to their house clock, PC codes are designed to have a date and timestamp of when the content is created and distributed to affiliates, which can be hours or days earlier than distribution.

Nielsen requires that all PC encoded content provides feedpoint data to Nielsen that indicates programming information, as well as the SID/CBET codes, date, and timestamp to allow Nielsen to tie the Nielsen codes back to the specific program.

As with all Nielsen encoding, the Date and timestamp should be locked to an external source so there is never a duplication of SID/CBET/Date/Timestamp on any programming. PC Watermarking is designed for insertion at the broadcast level, where there is a single content distribution chain, providing the ability to identify the specific program with a single SID/CBET code. Do NOT perform PC watermarking on multiple distribution paths, this is out of Nielsen Encoder Policy.

The Nielsen encoder must be installed after all programming sources and processing for the distribution path, and prior to any distribution, such as satellite or fiber delivery.

High level process for Program Content Nielsen Watermarking

4.3. SYNDICATION

In the diagram below, the Nielsen Encoder is configured for Program Content Watermarks. The requirements for PC Codes do NOT require live to distribution time reference. While many facilities will lock the Nielsen encoders to their house clock, PC codes are designed to have a date and timestamp of when the content is created and distributed to affiliates, which can be hours or days earlier than distribution.

Nielsen requires that all PC encoded content provides feedpoint data to Nielsen that indicates programming information, as well as the SID/CBET codes, date, and timestamp to allow Nielsen to tie the Nielsen codes back to the specific program.

As with all Nielsen encoding, the Date and timestamp should be locked to an external source so there is never a duplication of SID/CBET/Date/Timestamp on any programming.

PC Watermarking is designed for insertion at the broadcast level, where there is a single content distribution chain, providing the ability to identify the specific program with a single SID/CBET code. Do NOT perform PC watermarking on multiple distribution paths, this is out of Nielsen Encoder Policy.

The Nielsen encoder must be installed after all programming sources and processing for the distribution path, and prior to any distribution, such as satellite or fiber delivery.

High level process for Syndication Nielsen Watermarking
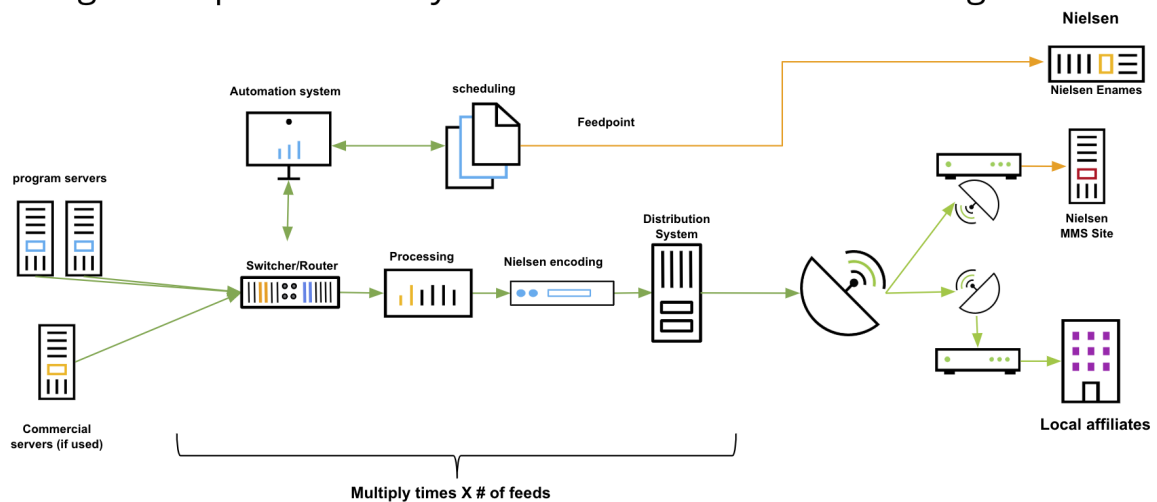
4.4.   LOCAL STATION USING ROSS NWE-3GA

In the diagram below, it shows the use of the Ross Video NWE-3GA used in the signal path prior to the digital ATSC encoder. The NWE-3GA does not accept Dolby AC3 audio, but can be field configured for either embedded or AES discrete audio and can be configured for SD or HD video formats.

All unique Final Distribution (FD) paths will require a separate unique FD code and Layer 5 (L5) CBET code, the use of multiple Watermarking products for the same FD/L5 watermarks is against policy, Nielsen requires this as the need for a single watermarked monitoring solution to provide confirmation of correct watermarks is needed. The use of a non Nielsen monitored FD/L5 distribution path is prohibited and can lead to a loss of Nielsen credit for that feed.

The Nielsen encoder will be configured for Final Distributor Watermarks and Layer 5 CBET codes. The requirements for FD/L5 Codes require a live distribution time reference source that is connected to the Nielsen encoder to maintain correct local timestamps. This is mandatory to provide accurate live and time shifted viewing breakout reporting.

As with all Nielsen encoder installations, the Nielsen encoder must be installed after all programming sources and processing for the distribution path, and prior to any distribution points including ATSC encoders and fiber links.

High level process for Final Distributor Nielsen Watermarking
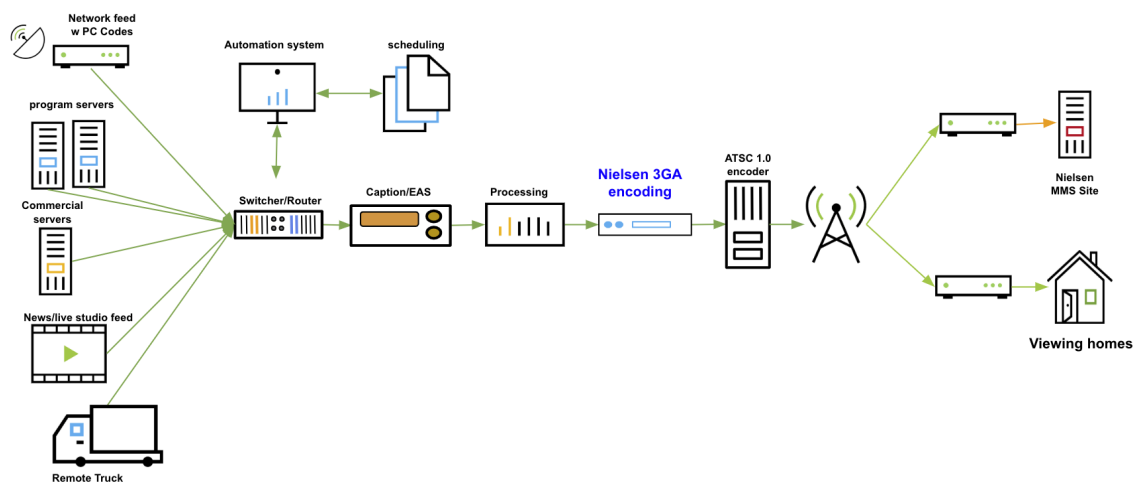
4.5. LOCAL STATION USING ROSS NWE-TS (TRANSPORT STREAM) ENCODER

In the diagram below, it shows the use of the Ross Video NWE-TS - an ATSC 1.0 compliant solution, adding the Nielsen Watermarks after the digital ATSC encoder. The NWE-TS can be configured for multiple subchannels, and is field configurable for Major/Minor or Audio PID.

Each subchannel on the NWE-TS will be configured for Final Distributor Watermarks and Layer 5 CBET codes. The requirements for FD/L5 Codes require a live distribution time reference source that is connected to the Nielsen encoder to maintain correct local timestamps. This is mandatory to provide accurate live and time shifted viewing breakout reporting.

The Ross NWE-TS is an ASI stream, ATSC 1.0 compliant solution, and requires 19.3965Mbps stream ONLY. The NWE-TS is very precise, and variations of this data rate will cause errors and not allow correct Nielsen watermarking. There are no adjustments, and this can not be used on an ASI stream using a different data rate.

Clients delivering OTT content with the national ad load intact, this policy defines using the same Nielsen encoded content as your primary feed using the same Nielsen encoder where possible. Please review section 5.3 for "Over The Top (OTT) or vMVPD Encoding."

All unique Final Distribution (FD) paths will require a separate unique FD code and Layer 5 (L5) CBET code, the use of multiple Watermarking products for the same FD/L5 watermarks is against policy, Nielsen requires this as the need for a single watermarked monitoring solution to provide confirmation of correct watermarks is needed. The use of a non Nielsen monitored FD/L5 distribution path is prohibited and can lead to a loss of Nielsen credit for that feed.

As with all Nielsen encoder installations, the Nielsen encoder must be installed after all programming sources and processing for the distribution path, and prior to any distribution points including STL and fiber links.

High level process for Final Distributor Nielsen Watermarking
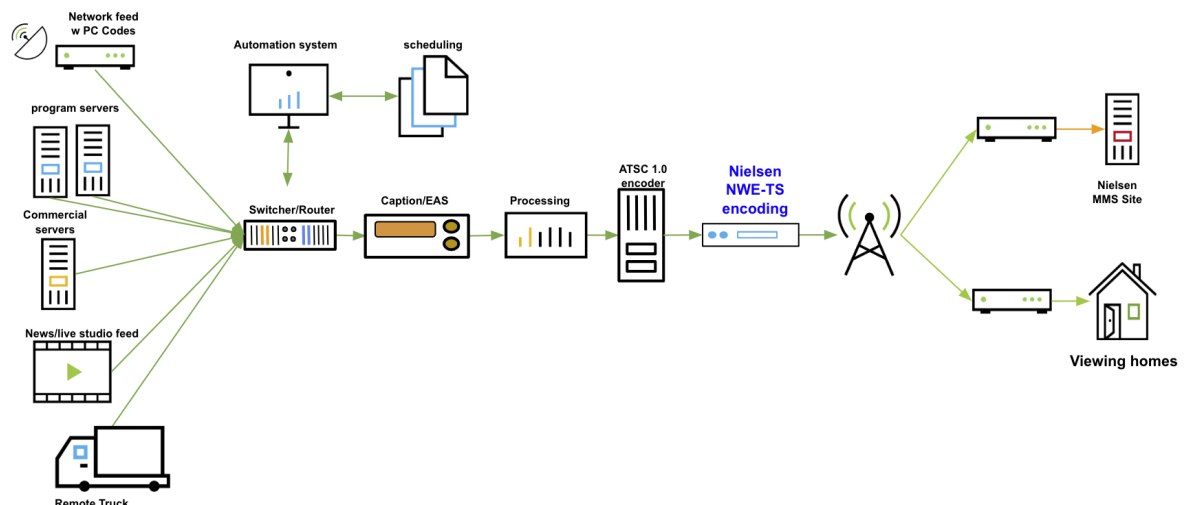
4.6.   LOCAL STATION PARENT / SATELLITE

For those stations providing a "satellite" local TV station, there are 2 Nielsen classifications, Full Satellite, and partial satellite.

For full Satellite, this means all programming, News, Ads, etc are identical to the Parent, and upon adding Nielsen watermarks to the parent signal, that Watermarked feed can be distributed to the Satellite station as well, and all Nielsen Watermarking will be credited to the Parent station.

If you are operating a partial Satellite, meaning some programming or ad loads are not identical to the parent, this must have a unique Nielsen encoder and SID/CBET codes. This partial Satellite feed also needs to be a "clean feed" meaning that the Nielsen Watermark from the Parent can NOT be present on the Satellite at any time. In this scenario, The Parent will receive the credit for the parent station ONLY, and the Satellite will have its own reporting as well.

Please review section 8 regarding cascaded Nielsen Watermarks for more information.

4.7. NATIONAL CABLE NETWORKS

In the diagram below, it shows the use of the Ross Video NWE-3GA used in the signal path prior to the satellite or IP encoder used for distribution. The NWE-3GA does not accept Dolby AC3 audio, but can be field configured for either embedded or AES discrete audio and can be configured for SD or HD video formats.

The Nielsen encoder will be configured for Final Distributor Watermarks and Layer 5 CBET codes. The requirements for FD/L5 Codes require a live distribution time reference source that is connected to the Nielsen encoder to maintain correct local timestamps. This is mandatory to provide accurate live and time shifted viewing breakout reporting.

All unique Final Distribution (FD) paths will require a separate unique FD code and Layer 5 (L5) CBET code, the use of multiple Watermarking products for the same FD/L5 watermarks is against policy, Nielsen requires this as the need for a single watermarked monitoring solution to provide confirmation of correct watermarks is needed. The use of a non Nielsen monitored FD/L5 distribution path is prohibited and can lead to a loss of Nielsen credit for that feed.

As with all Nielsen encoder installations, the Nielsen encoder must be installed after all programming sources and processing for the distribution path, and prior to any distribution points including fiber links.

For East / West distribution (Dual Feed) it is important that the cascading of Nielsen Watermarks not be performed. The East feed will be assigned a unique SID/CBET code, and the West as well. The East feed SID/CBET can not be present on the Nielsen watermarked West feed. If based on distribution requirements, there is no way to separate the East /West distribution, an exception can be implemented using a single SID for both the East and West feed. The East feed will have the SID/CBET code, which is distributed, as well as delayed for West distribution, with the West feed having a 3 hour delay, and both feeds Nielsen encoder clock set for the local time in that time zone.

In this scenario, Nielsen will be able to provide Live and Time Shifted viewing (TSV) for the East coast, and only live data for the West coast feed. All West coast TSV will report back to the East feed.

4.8.   NIELSEN INSTALLATION USING LINEAR ACOUSTICS

In the diagram below, it shows the use of the Linear Acoustics solution used in the signal path prior to the digital distribution encoder. The solution will provide both audio processing and Nielsen Watermarks.
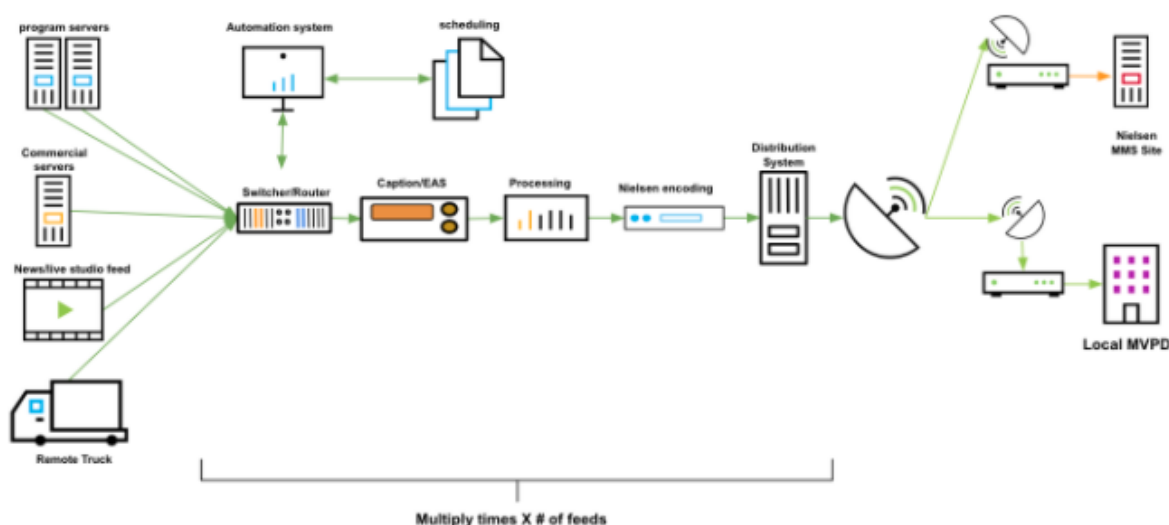
The Nielsen encoder will be configured for Final Distributor Watermarks and Layer 5 CBET codes. The requirements for FD/L5 Codes require a live distribution time reference source that is connected to the Nielsen encoder to maintain correct local timestamps. This is mandatory to provide accurate live and time shifted viewing breakout reporting.

All unique Final Distribution (FD) paths will require a separate unique FD code and Layer 5 (L5) CBET code, the use of multiple Watermarking products for the same FD/L5 watermarks is against policy, Nielsen requires this as the need for a single watermarked monitoring solution to provide confirmation of correct watermarks is needed. The use of a non Nielsen monitored FD/L5 distribution path is prohibited and can lead to a loss of Nielsen credit for that feed.

As with all Nielsen encoder installations, the Nielsen encoder must be installed after all programming sources and processing for the distribution path, and prior to any distribution points including ATSC or Satellite encoders and fiber links.
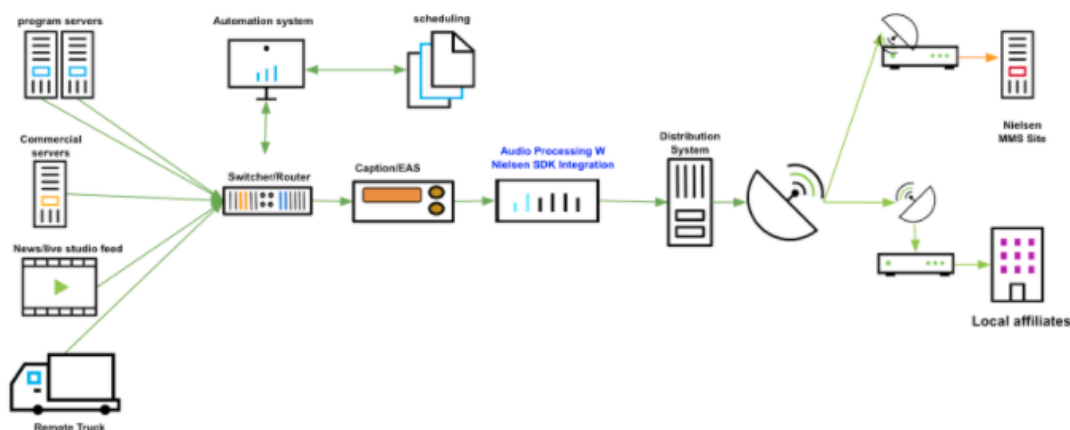
4.9.   NIELSEN SOFTWARE DEVELOPMENT KIT (SDK)

Nielsen has created a software development kit for integrating Nielsen encoding technology into existing television broadcast equipment. Clients and vendors who integrate Nielsen encoding technology undergo a rigorous certification process which has been audited and approved by the Media Ratings Council. In order to receive the SDK for evaluation a client or vendor must enter into an Evaluation Agreement with Nielsen. Once certification is completed, clients and vendors sign a commercial license agreement which authorizes them as Certified Vendors.

For any inquiries regarding the integration of the Nielsen Watermark SDK, please send an email to watermarksdkintegrationsupport@nielsen.com .

A list of current certified vendors is available at the link below:

(https://engineeringportal.nielsen.com/docs/Nielsen_Encoder_Certified_Vendors)

4.10. NIELSEN 3RD PARTY APPLIANCE INSTALLATION

In the diagram below, it shows the use of a 3rd Party Appliance that has integrated the Nielsen Watermarking SDK. installation may vary depending on the appliance, but with all Nielsen encoder installations, the Nielsen encoder must be installed after all programming sources and processing for the distribution path, and prior to any distribution points including ATSC encoders and fiber links.

This distribution model can be used for either PC or FD Watermarks and L2 or L5 CBET codes, but it can not perform both on the same hardware solution. Please reach out to Nielsen Encoder Support for any clarification and installation instructions.

The requirements for FD/L5 Codes require a live distribution time reference source that is connected to the Nielsen encoder to maintain correct local timestamps. This is mandatory to provide accurate live and time shifted viewing breakout reporting.

High level process for 3rd Party SDK Nielsen Watermarking
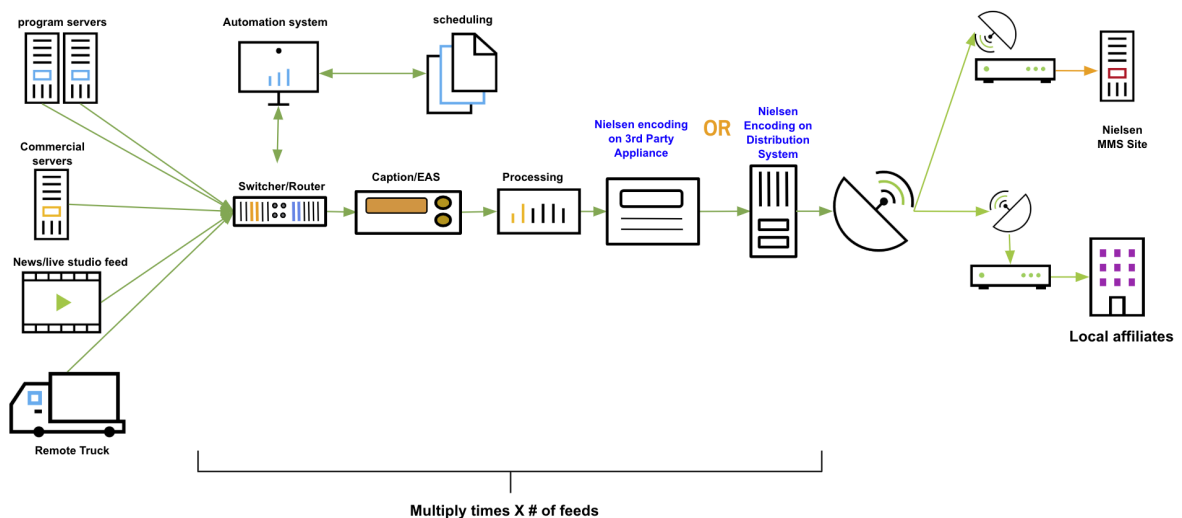
4.11. ENCODING ALERT CLIENT NOTIFICATION

The Nielsen Company requests all Nielsen Watermarking clients to create and maintain an Encoder Alert Distribution List (DL) on their own e-mail systems. This DL needs to include everyone at the local station, group ownership team members or National Broadcasters as needed. Nielsen will use this distribution list to send all encoder-related notification emails to the client.

When encoder information drops from a signal and is not received by the Nielsen Media Monitoring Site (MMS), the system generates a "No Code Alert" email message to notify the stations that the Nielsen encoder's information was missing from the signals.

Through a partnership with Nielsen, clients will create and maintain accurate distribution lists of appropriate contacts through their own e-mail systems for Encoder related Alert Notifications. Clients can ensure that the correct individuals receive No Code Alert notification for encoder failures, and there is no need to notify Nielsen with any staff changes. Nielsen will be able to provide a timely and accurate Alert notification that consistently reaches the appropriate audience.

Please follow the steps below to produce and send an Encoder Alert Distribution List to Nielsen.

Identify the individuals who need to be contacted for all encoding related alert notifications. Nielsen suggest one or more of the following:

- Chief Engineer
- Key Technical Staff (Master Control/Engineer on Duty)
- Research Director
- General Manager
- Key Corporate Engineering Contact
- Key Corporate Research Contact
- Any other necessary individuals as determined by the station or ownership group

Create a distribution list in your email system containing the email addresses of the key individuals identified in the previous step (e.g., TVStationCallLetters@mydomain.com or market.encoders@mydomain.com). To promote consistency, Nielsen asks that large groups compile all of the stations' email addresses before submitting the distribution list information to Nielsen via spreadsheet or a simple list. For example, a station XTNC could use encoders@xtnc.com, a Network/Group (TNC) could use individual market names to identify each station such as NY.encoders@xtnc.com or LA.encoders@xtnc.com. Alternatively, a Network/Group (TNC) could use individual market call letters (WQQQ) for each station such as WQQQ.encoders@xtnc.com.

Send the address(es) for the distribution list to Nielsen Encoder Solutions at encoders@nielsen.com. Nielsen will then send all encoding related alert notifications to the provided distribution list(s).


Monitoring/Alerting Process

- Client-owned DL
- Emergency 24hr contact info
- Proactive Notification
- PC/ L2 Encoding for National Broadcast
- Alerting
- In order to receive alerts from Nielsen for PC/ L2 code issues, client participation in submission of "Schedules" may be required

5.   VOD AND OTT INSTALLATIONS

5.1.   VOD IN TV RATINGS ENCODING

Nielsen's solution for VOD in TV Ratings applies a break out flag during the transcode process which is used to break out the contributions to C3 and C7 credit which come from VOD viewing as well as from Start-Over and Rewind services. This method requires no simulcast of the linear path and no on-premises monitoring. The breakout Flag is actually a specific SID provided to Clients that indicates to Nielsen systems that the following Nielsen data is to be credited as VOD instead of Live or Time Shifted Linear content.
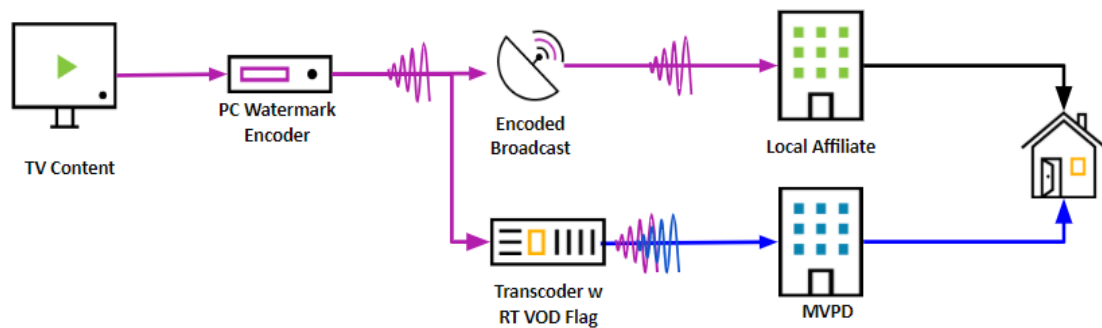
5.2.   VOD CONTENT RATINGS

Nielsen's solution for VOD Content Ratings uses a file based software encoding approach. Unlike other Nielsen encoding technologies, which use date/time values, encoding for VOD Content Ratings uses a Time-in-Content (TIC) approach. The SID codes and TIC values are managed by the Watermark Resource Record which is provided by Nielsen upon onboarding. Corresponding metadata for each asset is also delivered to Nielsen during the encode process, which is vital to matching asset viewing to SID/TIC data for reporting.
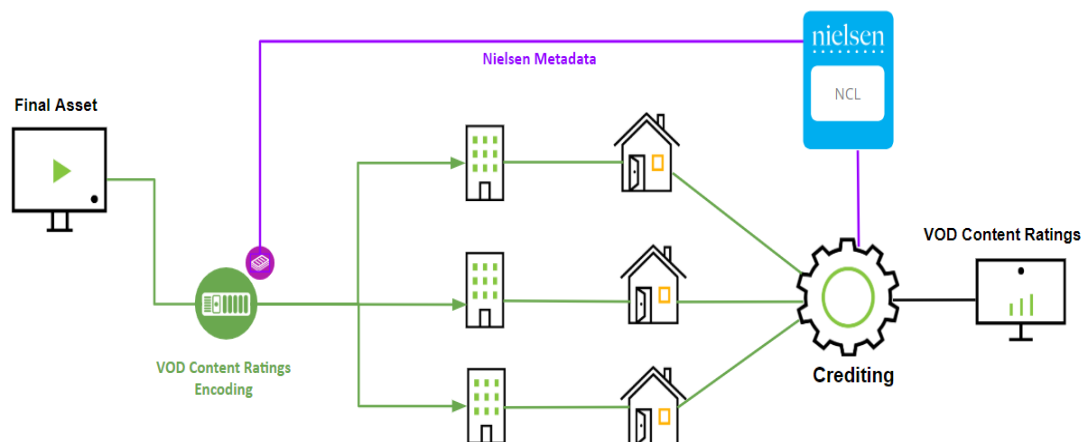
5.2.1.   VOD METADATA DEFINED

DTVR

Nielsen's Digital Television Ratings (DTVR) product measures content and ads consumed through a computer or connected device, with the same national linear ad load, using census based measurement encompassing Live Streaming, Digital VOD, Lookback viewing and Cloud DVR viewing within a 7 day window. Nielsen Watermarks encoding information is translated into ID3 tag information which is then read by our Software Development Kit which has been integrated into client applications available through web browser and connected devices. Demographic breaks are then assigned and calibrated using third-party data combined with Nielsen panel data to correct for misattribution and non-coverage instances. The result is ratings for digital viewing with linear ad load which is credited together with linear television ratings.

A brief list of the required steps to enable DTVR measurement are listed below:

1. Encode Content with full linear ad load
2. Transcode Watermarks to ID3 Tags
3. Implement App SDK/Browser SDK
4. Launch to App Stores
5. Validate the Data
6. Activate Service for Ratings Credit

Review diagram below for example:
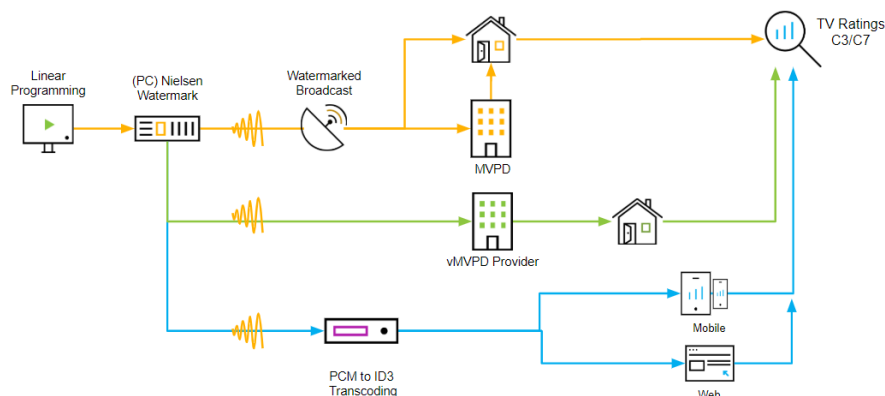
TRANSCODING (ID3/MPEG DASH)

5.3. OVER-THE-TOP (OTT) or vMVPD ENCODING and DISTRIBUTION

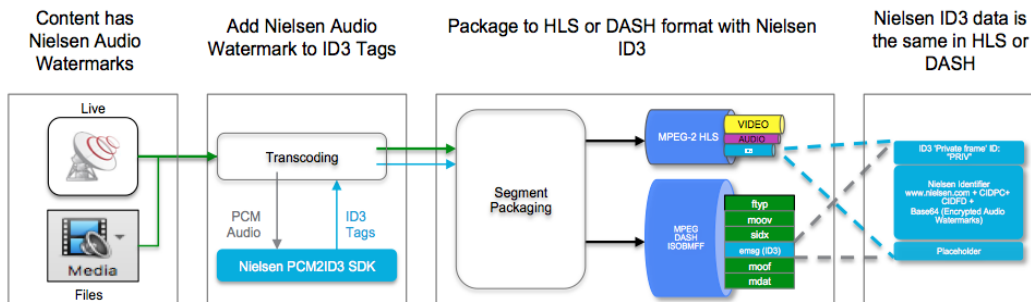As the media landscape continues to evolve, many clients have adopted delivery of their content to Over-The-Top (OTT) platforms. An Over-The-Top media service streams directly to consumers via the internet, often referred to as vMVPD providers. Nielsen's recommended method of OTT content delivery depends on whether the ad load is intact or whether you are employing Digital Ad Insertion (DAI) on your OTT/vMVPD feeds.

The first method, shown in the diagram below, for clients delivering their content with the complete ad load intact, this policy defines using the same Nielsen encoded content as your primary feed using the **same Nielsen encoder**. The image below provides an example of a compliant OTT/vMVPD solution.
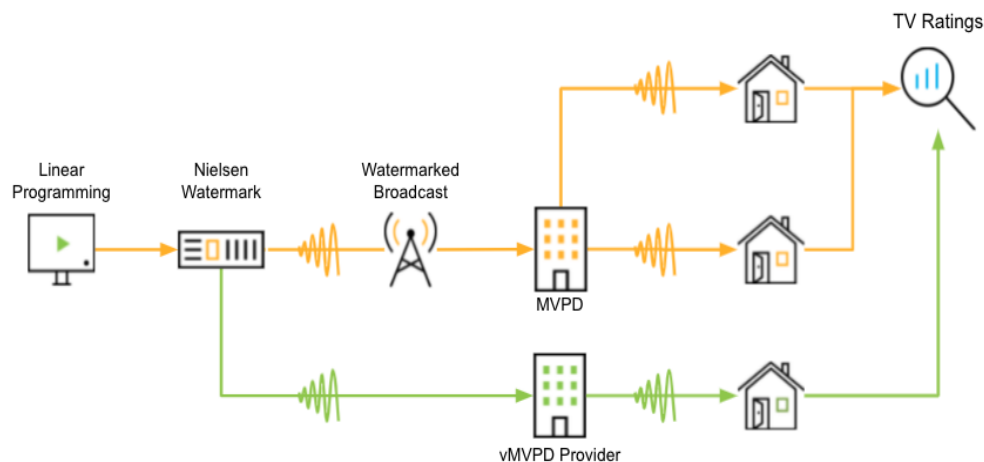
The second method, shown in the diagram below, displays that when using DAI on your OTT feeds, **it is imperative** that you encode your OTT/vMVPD content with a separate SID code which does not credit together with your primary SID, as the ad loads are different and can not credit to the Linear feed per Local policy. Please reach out to your Nielsen representative for SID code assignments, should they be necessary.
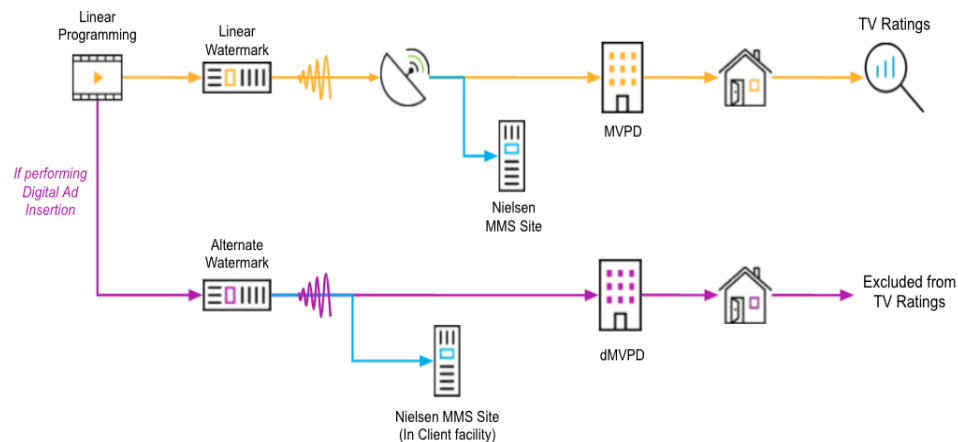
5.3.1. OTT with DTVR

In the diagram shown below, Nielsen watermarking will be present from the same Nielsen hardware solution on the Linear distribution, OTT Feeds (unless DAI) and the transcoder used for Mobile and Web distribution. For Mobile and Web Distribution, you will also be required to add a Nielsen SDK onto the transcoder for PCM to ID3 conversion, and a Nielsen SDK for your web and mobile browsers. All viewing will be captured and reported to your linear TV ratings.

And as with all DAI solutions, Nielsen requires a separate hardware solution with unique SID/CBET so the viewing can not be combined with your Linear ratings.
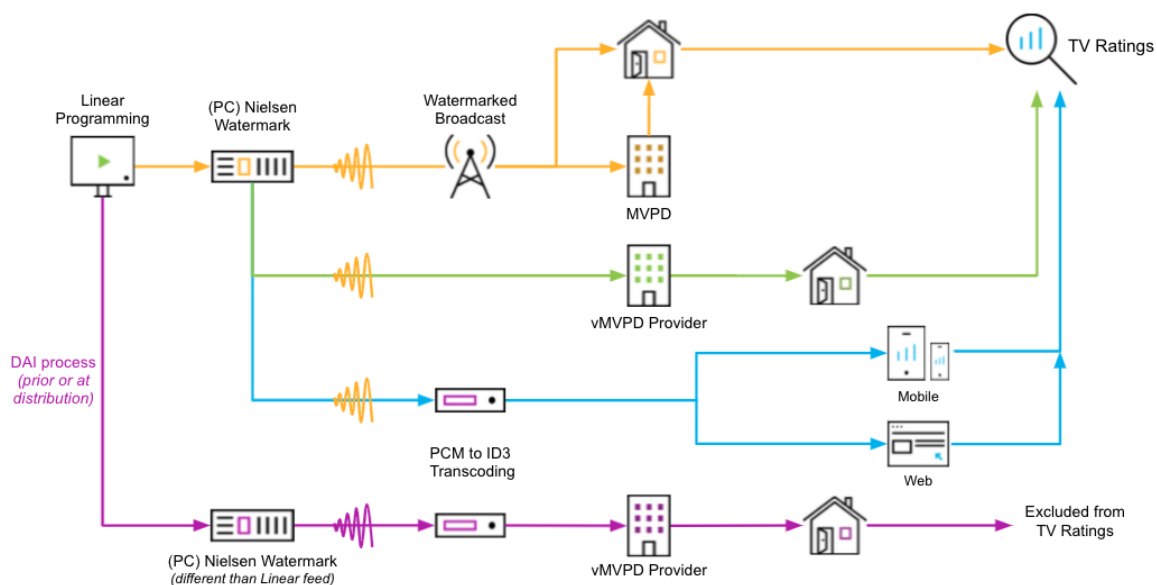
5.4. DECODER SOLUTIONS

Nielsen Audio Code Analysis Tool (NACAT)— is a software that captures audio, decodes Nielsen audio codes, logs and displays the information to the user. The Nielsen EVS department uses the NACAT application for decoding assistance in troubleshooting and verifying NAES and CBET encoder installations. The primary information that is decoded by NACAT are program content (PC), final distributor (FD), layer 2 CBET, layer 5 CBET, time stamp, encoded channel (left or right), source identification number (SID), type of encoding (commercial or non-commercial) and DST or standard time.

https://engineeringportal.nielsen.com/docs/Nielsen_Audio_Code_Analysis_Tool

The Nielsen Digital Code Extractor (NDiCE) tool is a stand-alone diagnostic tool that enables transcoding clients to test their pre-encrypted feeds. For developers, the application provides a snapshot of the current functionality of a specific ID3 transcoder. The tool shows the Elemental Data Units (EDUs) for each tag that it detects in HTTP Live Streaming (HLS) content at a URL to which the transcoder is streaming. It also reports the NAES 2 and NAES 6 watermarks that it extracts from the AAC audio-stream component of the HLS stream.

https://engineeringportal.nielsen.com/docs/Nielsen_Digital_Code_Extractor

6.   ENVIRONMENTAL FACTORS

This section describes how to manage a variety of environmental factors that exist in various facilities. Review those that apply to your facility.

6.1.   AUDIO PROCESSING

To maximize code insertion opportunities, audio processing must occur PRIOR to Nielsen Watermarks. On the output of a studio feed with a wide dynamic range, install an audio processor with AGC functionality, audio limiting, and dialog loudness control. A good quality audio processor slightly smoothes large variations in dynamic range, improves the audibility of quieter audio passages, and enhances the ability of the encoder to insert watermarks.

Digital audio facilities typically measure and monitor digital (AES) audio referenced to dBFS. This measure, dBFS, is the audio level in decibels relative to full scale (FS). Full scale is the point in digital audio where the audio signal goes into clipping, and there is no additional headroom to use for encoding the audio feed.

The audio coding algorithm used by the encoder only inserts an audio watermark if enough energy is present in the audio feed to mask the additional Nielsen audio bits being inserted into the program feed. Because of this, it is important to ensure that the digital audio going to the encoder is at the correct level. Audio that is considered hot causes severe and audible audio clip conditions.

Audio that is too low does not have enough masking energy present to mask the Nielsen audio codes being inserted into the audio program feed and reduces the number of opportunities the encoder would have to watermark the program feed. Therefore, it is important to ensure that the audio going to the encoder is in the correct operating range.

6.2.   MULTI-BAND AUDIO PROCESSING, NOISE GATES, AND LIMITERS

With the advent of digital audio technology, Broadcast facilities process their signal using a multi-band audio processor in order to meet broadcasting requirements.

The absence of audio means that the audio energy floor can fall so low that it is no longer possible to insert Nielsen SIDs in the compressed domain during silent periods in a program. Analysis has found that an audio processing device, called an audio noise gate, can cause low FDAC crediting percentages when aggressively used.

The use of a noise gate can push residual background audio energy between spoken words on programming, such as a talk show, below -80 dBFS (decibels below full scale) in the compressed domain—well below typical levels seen in analog studio mixes done in the past.

Nielsen audio watermarking technologies insert audio codes roughly -30 dB down from program audio to prevent audibility. This low, audio-energy level is beyond the usable dynamic range of the Dolby Digital AC3 audio encoding system used in ATSC over-the-air broadcasts. Thus, most Nielsen audio codes inserted during these periods can be lost.

Program creators, who are intent on using an audio noise gate to reduce background audio for live broadcasts, need to ensure enough audio energy remains for Nielsen audio watermarking to occur. Ensuring the audio energy is sufficient is especially important for program content that must be Nielsen-encoded in the Dolby Digital compressed domain further downstream in the distribution chain.

When using a noise gate or similar audio processing device, Nielsen recommends keeping audio energy during silence periods no lower than -48 to -50 dBFs.

6.3. AUDIO LIMITER

Audio Limiters can be used for an audio effect that allows signals below a specified input power or level to pass unaffected while attenuating the peaks of the stronger audio signal that exceed this threshold. The limiter serves as a ceiling which signals cannot pass. If the signal hits the adjustable threshold level referred to as the ceiling, it will be harshly compressed so that it does not pass above. Incorrect Limiter settings can impact Nielsen Watermark performance, including reduction or loss of Nielsen Watermarks.

Following Dolby AC3 audio processing recommendations, Nielsen requests you have the limiter set to no lower than -5dbfs.

6.4. ASI INPUT MODE (BURST/BYTE) NWE-TS SPECIFIC

ASI signals have 2 modes relating to how the data is spread within the constant-rate ASI signal:

Names	Description
Burst **(a.k.a. contiguous, packet)**	**All the bytes of each TS packet arrive consecutively, and fill characters (K28.5) are inserted between TS packets, and not inserted between bytes.**
Byte **(a.k.a. continuous, spread)**	**Fill characters (K28.5) are inserted between bytes within TS packets as well as between TS packets.**

For best compatibility, the NWE-TS should receive an ASI signal in byte mode. In some circumstances, burst mode is also acceptable, depending on the other equipment within the air chain.

If the equipment upstream of the NWE-TS has the option to set output ASI mode, it is recommended that it be set to byte mode.

Burst vs. Byte - The type of data being sent out from the Mux can be distributed evenly over time (byte/continuous mode), or through a big group once it builds up to a certain limit (burst mode). With burst mode, the Transport Stream Encoder can have trouble processing the "burst" of data and information, which has the potential to cause a glitch. Having a steady stream of data that the encoder is consistently getting prevents this issue from occurring.

6.5. DOLBY DIGITAL DIALNORM SETTINGS

Abnormally low audio fed to a Dolby encoder hinders the ability of downstream Nielsen encoding to properly insert codes. To optimize the encoding process, use the following settings and levels on the Dolby AC3 encoder:

- Dialnorm setting is −24.
- Dialog loudness is −24 LKFS (±2 LKFS)

These settings are based on recommendations found in ATSC Recommended Practice: Techniques for Establishing and Maintaining Audio Loudness for Digital Television (A/85:2013)

6.6. AUDIO CODE SURVIVAL WITH COMPRESSION

Nielsen encoders are designed and tested to optimally insert audio codes that survive industry-standard audio compression. To maintain the best possible performance, the following compression bit rates should be maintained:

Table 1 – Dolby AC-3 Compression Bit Rates

Type	Rate
Dolby AC3 Stereo	192 Kbps or higher
Dolby AC3 5.1	384 Kbps or higher
Enhanced Dolby AC3	192 Kbps or higher
MPEG audio (layers 2 and 3)	192 Kbps or higher
MPEG3 AAC audio	192 Kbps or higher

Table 2 - Dolby AC-4 Compression Bit Rates

Type	Rate
Stereo (2.0)	128 Kbps
Surround (5.1)	256 Kbps
Immersive (5.1.4)	512 Kbps

Audio watermarks are inserted in the frequency range 3.0 kHz to 8.2 kHz. Audio processing equipment must pass this frequency range to ensure optimal audio coding.

The minimum requirement of 96 Kbps for Mono, 192 Kbps for Stereo, and 384 Kbps for 5.1 Surround Audio specifications are found within the Encoder Policies and Procedures document, and are a Dolby specification (not a Nielsen Spec). Please note that the bit rate can be higher than the required minimum bit rate, just not lower. The Ross hardware uses the Dolby specs as our test threshold in order to make sure that the Nielsen Code will not be compressed out of the stream. It is possible that the encoder will still insert code at a lower bit rate level, however, it is not recommended, and code integrity may degrade due to compression.

6.7.   STUDIO EQUIPMENT

Because studio feeds such as news, live, and weather broadcasts, use equipment that offers flexibility in altering audio characteristics, you must ensure the equipment and its settings properly sustain the audio energy in the audio spectrum identified in section 6.6 "Audio Code Survival with Compression."

Caution! Failure to ensure the range meets this requirement minimizes the ability to watermark the content with Nielsen audio codes.

For example, a Client notified Nielsen about poor audio code insertion rates during news programming. Further investigation revealed that whenever the local news show for the TV station switched to the weather set, code insertion rates dropped to near zero.

In the diagram below, it shows severe audio abnormalities in the audio spectral plots for the microphone used at the weather set. These abnormalities are highlighted in the spectral plot at the top of the figure. Under these conditions, the audio energy was insufficient to support optimal Nielsen audio watermarking.

The Client replaced the microphones on the weather set and adjusted equalizers on the soundboard to their default positions. Following these changes, audio energy was restored to the Nielsen audio frequency band and audio code detection rates returned to normal level.

See also section 6.6 "Audio Code Survival with Compression."

6.8. ENCODING SAP, AAP AND DVS

All encoding media distributors are required to encode their secondary audio program (SAP), alternate audio program (AAP), and Descriptive Video Services (DVS) audio streams when they exist, with the same SID as their primary audio streams. This is true for program content providers, when the program contains SAP, AAP, or DVS, and for final distributors when transmitting SAP, AAP, or DVS.

Note: Encoding all the audio streams allows Nielsen to accurately credit tuning regardless of the audio selection made in the home.

Failure to properly watermark all audio streams may result in incorrect Nielsen credit when these audio channels are used for viewing.

6.9. SECONDARY OR BACKUP FEEDS

Many facilities have secondary or backup distribution feeds to remain on-air during equipment failure, maintenance, or upgrade of the primary feed. Encoders must also be installed in these secondary or backup distribution feeds to ensure continued insertion of Nielsen codes during these outages. Use the same SID for the backup encoder as the SID for the primary path that it bypasses.

6.10. DAYLIGHT SAVING TIME (DST)

DST transitions occur twice each year. Because the time stamp is critical to the encoding process, correct management of DST transitions is extremely important.

All time-related configurations must be verified when the following events occur:

1. Encoder software updates that affect time-related functions or features are installed. Such changes may affect the configurations set prior to installation of the update.
2. DST transitions are about to occur. Although encoders are designed to automate DST transitions, verification is strongly recommended.
3. Even if your external time reference source controls the DST transition, the encoder may need to be configured for the correct DST transition days. Refer to the documentation for your encoder and verify that the encoder is correctly configured for DST adjustments. See also section 6.10 "Clock (Time Synchronization)."
4. If DST transition adjustments are incorrectly handled, proper station, local cable origination channel, and regional cable network viewing credit rely on the Nielsen back-up process using MMS sites. In the event a monitoring site is down, a potential exists for miscrediting.

Note: Self-monitoring is required to verify the accuracy of the Nielsen time stamp after each DST transition.

6.11.   CLOCK (TIME SYNCHRONIZATION)

Caution! Inaccurate time synchronization can result in crediting errors such as miscrediting.

The encoding process inserts two primary pieces of information: the SID and a date and time stamp. The date and time stamp is an important element that supports the ability of Nielsen to track and credit Time-Shifted Viewing (TSV).

Although the encoder clock is accurate, as with any computer-based clock, it is subject to drift over an extended period. For this reason, the accuracy of the internal clock in the encoder must be synchronized to a highly stable reference standard within plus or minus 2 seconds.

All encoder products provide mechanisms for time synchronization that can be installed and configured according to the product's user manual.

6.11.1.   NTP REQUIREMENTS

The Network Time Protocol(NTP) interface requires a LAN connection to a Network Time Protocol Server. If the encoder is connected to a LAN, no other hardware connections are necessary for an external time reference source. The encoder, however, must be configured for NTP operation and connect to a single NTP server at an IP address that you specify.

Nielsen Policy recommends that you use NTP for your external time reference source whenever possible, since the addition of the hardware to your network for GUI configurations is already in place.

6.11.2.   LTC REQUIREMENTS

Nielsen has documented clock issues with some Nielsen Encoder solutions such as the NWE-3GA using LTC, and therefore recommends the use of an NTP source.

When using Longitudinal Time Code (LTC) for time synchronization, check the documentation for your encoder to verify whether its LTC input is balanced or unbalanced and that the encoder is correctly configured for LTC. Also, check that the LTC source provides the required input voltage range for the encoder.

If DST (Daylight Saving Time) is observed in the area where the signal is broadcast, the LTC data must reflect this. The time code must advance by one hour at the prescribed date and time in the spring and fall back by one hour at the prescribed date and time in the fall. Some LTC master clocks automatically adjust for DST transition while others do not. The "LTC observes DST" configuration in each of the encoders should be enabled or disabled according to the capabilities of the system in the facility.

The issue documented is with a 3GA on LTC, any manual change to the time, results in an unrequested change in the date, causing a different issue, please confirm when making manual changes

6.12.   REDUCTION OF STATION POWER LEVELS

An emergency may require a Client station to run at reduced power levels. Reduced power is defined as operating at power levels 3 dB or more below the FCC-authorized ERP (effective radiated power) level.

If a Client station must operate at a reduced power level for an extended period, the station must notify Nielsen Encoder Support. Low power levels may impair the ability of Nielsen to collect high-quality reference data for crediting.

Nielsen recognizes that operating at reduced power is rarely planned. Because such an operation affects the crediting of data for the Client, however, keeping Nielsen Encoder Support informed of such a condition is a critical factor in reducing that impact.

6.13.   CHANNEL SHARING

For various reasons, such as ATSC 3.0 Lighthouse, some stations are moving to new channel positions in advance of their originally mandated phase.

This had the potential of impacting many areas of TV reporting, however, several Nielsen teams performed work on the systems to prepare, and have been managing the process thus far without incident. 37 successful station changes have been completed thus far.

When the station moves the broadcast to a new channel and the channel number change is made, The station is required by the FCC to notify all OTA viewers on the upcoming changes and how to rescan for the new channel.

a.   Nielsen Field Reps are not allowed to rescan any TV or device or provide instructions or help.
b.   Homes that do not perform rescans will not have the new station location on their TV and will not be able to watch.
c.   It is the TV Stations responsibility to inform the consumer where and how to receive the signal.

During the actual transition, there can be an extended outage of OTA distribution while the transmitter changes are made.

6.14.   ATSC 3.0

ATSC 3.0 is the latest version of the Advanced Television System Committee (ATSC) standards for television broadcasts; these standards provide guidance for such technologies as High Efficiency Video Coding (HEVC, also known as H.265), Dolby AC-4, MPEG-H 3D Audio, targeted advertising and datacasting. The physical layer is built on Orthogonal Frequency-Division Multiplexing (OFDM) with a suite of Low-Density Parity-Check codes (LDPC), of which there are 2 code lengths and 12 code rates defined. Supported bit rates in a 6MHz channel range from <1Mbps to >57Mbps. For more detailed information on ATSC 3.0 standards please reference: https://www.atsc.org/standards/atsc-3-0-standards/

Nielsen Watermarking technologies are fully compatible with ATSC 3.0 standards, but Nielsen Local Monitoring technologies are not compatible with ATSC 3.0 at this time.

Nielsen requires that the same Nielsen Watermarks including SID and CBET from the **SAME TECHNOLOGY** used on the ATSC 1.0 Distribution be used and converted at this time. Currently no stations are providing unique programming, and Nielsen is not monitoring any ATSC 3.0 signals. If a unique Nielsen encoder solution is installed on your ATSC 3.0 Signal path, at this time Nielsen will not have monitoring in place, and will not be able to confirm correct data, which may result in a loss of viewing data to the ATSC 3.0 source.

ATSC 3.0 Continued

As stations move to unique programming and Nielsen adds the technical solution to monitor the ATSC 3.0 signals, then the use of unique SID/CBET codes can be deployed. Please refer to the NIelsen Encoder Solutions document for the best solution for your specific installation. If you have any questions, please contact the Encoder Support Team at Nielsen.

Compliant Installation:
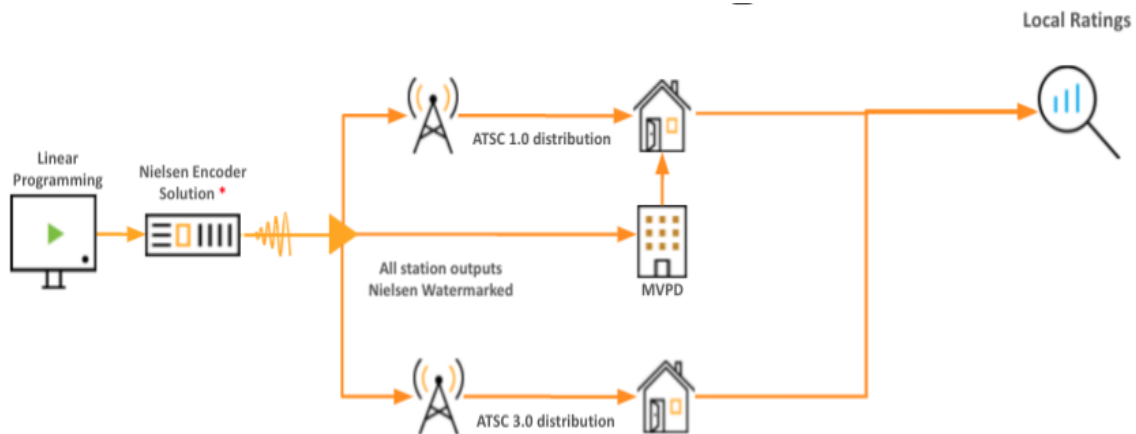
* Must use the SAME single Nielsen Encoder solution, unless there is a MVPD direct feed being broken out.

Non-Compliant Installation:
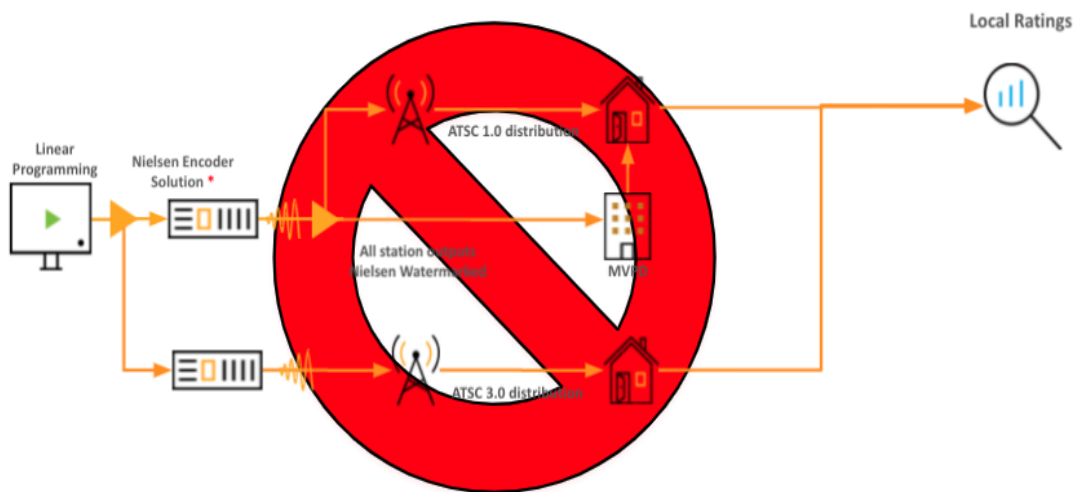
* Must use the SAME single Nielsen Encoder solution, unless there is a MVPD direct feed being broken out.

7.   OTHER INSTALLATION REQUIREMENTS

7.1.   SIMULCASTING AND REDISTRIBUTION

In the absence of encoding, the A/P meter uses its passive metering engine to detect what the household is viewing. Although the passive metering technology provides a reliable metering mechanism in the absence of code detection, under certain circumstances a possibility exists that the distribution source for simulcast or previously distributed cable network content cannot be properly credited.

Before simulcasting or redistributing cable network programming content through a station, local cable-origination channel, or regional cable network, do the following:

- Negotiate with the network to get a separate feed or alternate audio channel.
- Request a feed that,
- Contains a Nielsen-encoded program content (PC) code (syndicator code)
- Does not contain an FD code. After these conditions are met, the station can air the content.

In the diagram below, it depicts the proper conditions under which Nielsen-encoded simulcast program content is distributed and received at the local broadcast facility for final distribution. Both stations insert their respective codes and the content is distributed for viewing. The Nielsen A/P meter monitors and detects the codes in the content viewed by the household and credits accordingly.
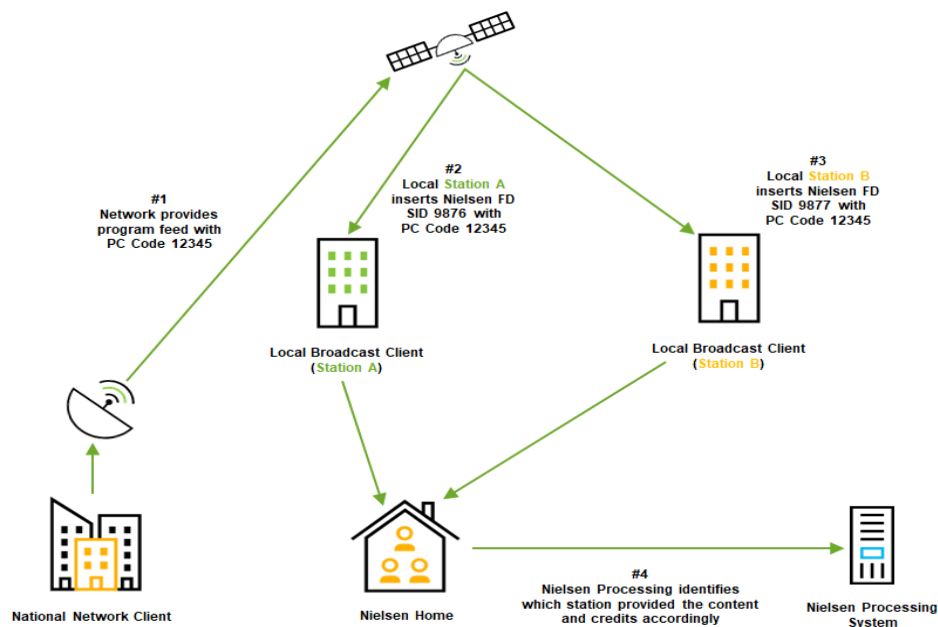
Compliant Scenario: Distribution of Content to Multiple Affiliates

7.2. NIELSEN ENCODING ON ALTERNATE FEEDS

Some facilities provide alternate feeds for programming such as sports events. To be considered as an alternate feed, the feed must have:

- Unique audio and FD code not used on any other feed
- Content for only a portion of a day and, in fact, might not have content again for one or more of the following days

When there is no feed, the content provider displays a network logo or color bars and accompanies the graphic with a tone. Nielsen Watermarks **will not** insert during "tones" so the feed will not have FD code at that point.

Nielsen Policy recommends that these Clients provide unique audio when not in programming, allowing the Nielsen encoder to generate audio code, and the Nielsen Media Monitoring Site (MMS) to alert on Nielsen code issues. Note that this audio must be unique, and not used for any other TV programming distributed to homes. An example of such audio is a network audio jingle. Nielsen can discuss options and then confirm code performance upon installation.

If the Client is not able to provide the needed audio, then audio codes would not be on the feed 24/7, and Nielsen will have to disable code alerts; therefore, none of the following are alerted:

- Code loss
- Nielsen encoder clock issue
- Loss of audio and video

7.3. CLIENTS PROVIDING BOTH CONTENT AND DIRECT DISTRIBUTION ENCODING

For a Client providing distribution of programming for both local affiliates and direct-to-home providers such as Cable MVPDs and DBS, it is mandatory that unique distribution of each type of feed be provided and that a separate Nielsen encoder be present on each of those feeds.

The local affiliates that receive this content need a Nielsen Program Content (PC) code to be present for Nielsen to provide credit to the content provider, as well as provide a location for the local station to add Nielsen Final Distributor (FD) code to be inserted in the local market.

The feed that cable VMPDs and DBS directly provide to homes needs a unique Nielsen FD code inserted prior to distribution, which enables Nielsen to credit the Client for the programming viewed in the homes.

In the diagram below, it shows the station signal flow for a compliant scenario. This layout provides two separate program streams and the Client incorporates two audio packet ID (PID) numbers. The Client installs two Nielsen encoders, one configured with a PC SID and one with a FD SID, and wired so there are two unique audio paths for distribution, utilizing the same video. As per policy, the PC encoder is always upstream of the FD encoder. The recipient of this content tunes to the correct audio PID and distributes the correct Nielsen code for crediting based on their distribution model.
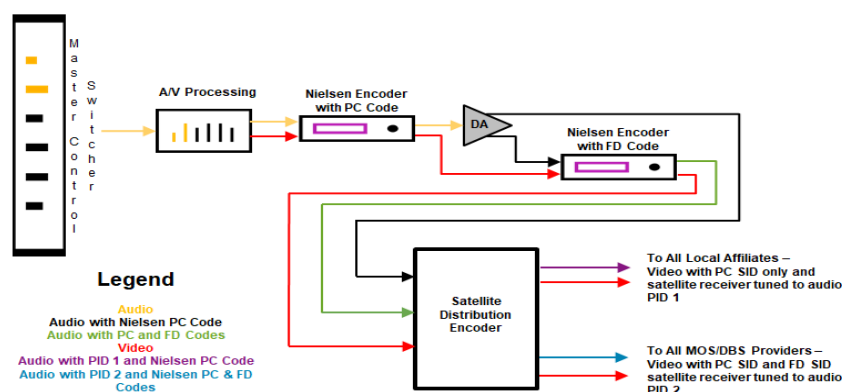
In the diagram below, it shows the overview of distribution through the different distribution facilities.

Audio PID 1 feed with the PC code Only will go to the local affiliates, who will pass along the content and code and insert their Unique FD. This allows the Broadcast homes to credit to the local market, and also render National credit (via PC code to the Network.

Audio PID 2 will be the source for all Direct to viewer distribution, allowing those homes to receive both the PC codes as well as the MVPD unique FD SID, which will render local credit to the MVPD, and the content back to National ratings.
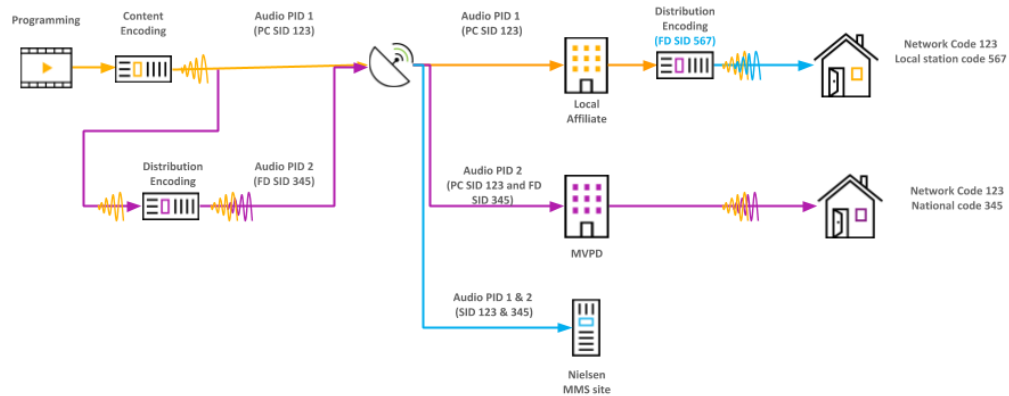
7.4. MVPD PROVIDED DIRECT FEEDS WITH REPLACED COMMERCIAL CREATIVE CONTENT

Multiple Video Program Distributors (MVPD) has requested local stations to insert unique 30 or 60 second commercials using a separate commercial server. Such creatives are specifically designed for distribution to local subscribers of the cable system, while non subscribers in the market would receive a different targeted commercial creative for that cable system. Nielsen has determined two solutions for this distribution to ensure correct Nielsen crediting.

7.4.1. USING THE SAME NIELSEN ENCODER

Solution One that Nielsen recommends is outlined below, and in this configuration the commercial server is installed downstream of the Nielsen encoder, inserting the unique commercials for distribution without Nielsen codes for the 30 second spots. If a market's sample home, subscribing to the particular cable system's services, views the station immediately before, during, and after these spots, and the station's SID is detected in the programming before and after this spot, Nielsen credits the station for all the tuning. If the same sample home tunes the station's programming immediately preceding the unencoded spot and during the vast majority of the spot itself but then changes the channel to another station or network, the Nielsen system's bridging rules are not triggered and the station does not always receive full credit for this partial tuning.

Same Nielsen Encoder for MVPD Commercial insertion feed
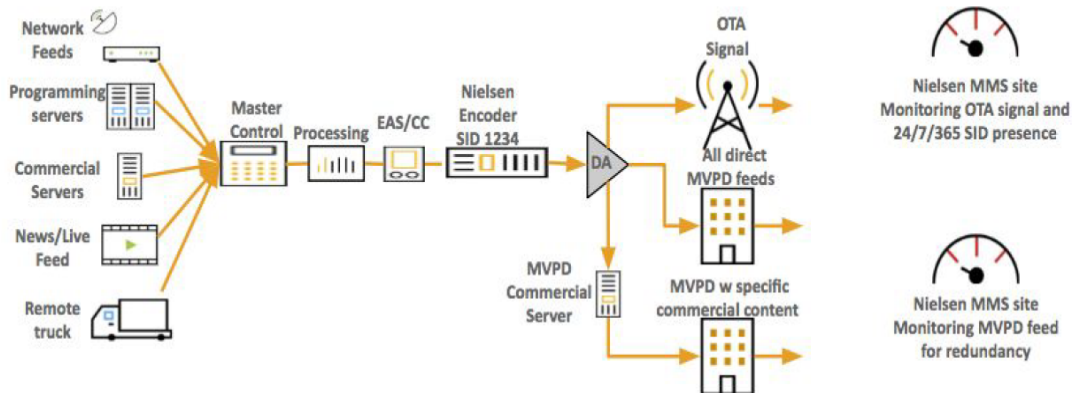
7.4.2. USING A SEPARATE NIELSEN ENCODER

The second solution recommended by Nielsen includes a separate Nielsen encoder and unique SID for the separate MVPD path with the commercial server. This separate path would NOT have both Nielsen watermarks present, only the unique SID for this feed. Nielsen Encoder Policy expects all Nielsen encoders to be installed on a "clean feed", one that does not have an upstream Nielsen Encoder already present at your facility.

This solution will ensure that Nielsen is able to identify and credit tuning by Nielsen codes during these commercial durations. Nielsen will also install and maintain a new Media Monitoring site (MMS) to allow us to monitor and alert for any encoder issues or outages. This solution will require a separate discrete Nielsen encoder and MMS equipment, along with associated costs for monitoring the new source.


Unique Encoder for MVPD Commercial insertion feed
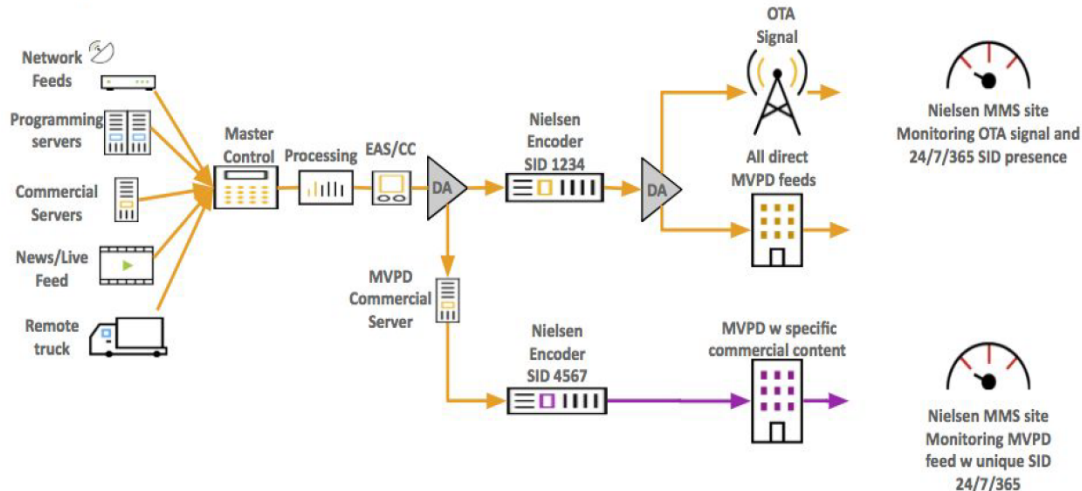
7.4.2.1.   USING A NON-COMPLIANT SOLUTION

The following figure shows a NON Compliant solution, this is the same Nielsen SID on two encoders. The SID on the Nielsen encoder for the MVPD output cannot be the same as the SID for the Over the Air (OTA) output in a separate Nielsen encoder. For multiple encoders with the same SID, the only exception is for redundant feeds (X/Y or A/B output chains, for example), where only a single encoder is online at any one time.

The Risks here are multiple and will result in lost data for the Client, Since Nielsen will be unaware of this encoder, it will likely not have MMS equipment to alert of any issues with the encoder. For example, without the MMS equipment to assist in time corrections for encoder clocks, if the clock is behind time, all viewing will be credited as Time Shifted Viewing (TSV), if the clock however goes forward, that time does not exist in the Nielsen crediting system, and all data from this encoder will be lost.

To achieve compliance and eliminate this risk, the station's Research Director must contact their Nielsen Client Service Representative for complete details regarding VMPD commercial insertion direct feeds, as additional costs are involved. The Nielsen Client Service Representative submits a Change Request with the station call letters, Nielsen encoder serial numbers, feed information, and Chief Engineer or equivalent for each encoder. Nielsen then provides a new SID and assistance in configuring the encoder.

Incorrect Nielsen encoder installation and configuration
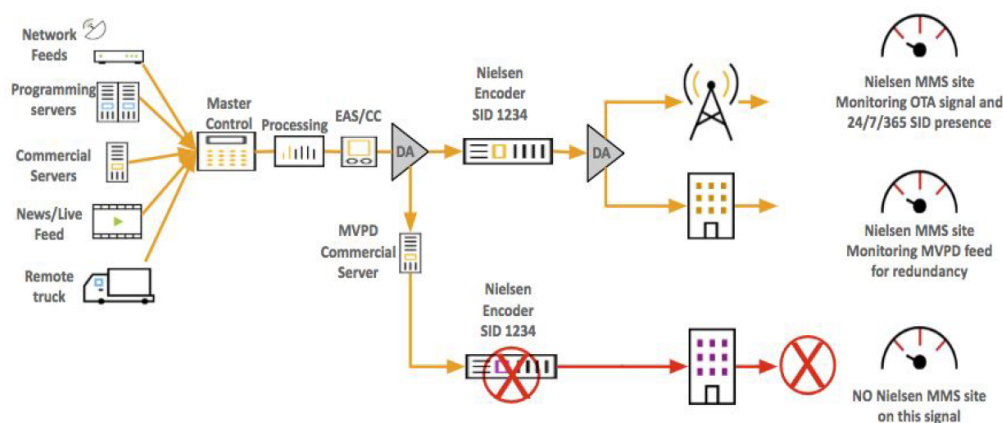
7.5.   SOLUTION FOR MVPD DELAYED FEEDS

Delayed distribution of a channel provides a new, alternate tuning source that allows any home to view programming at a later time, adding to the Live + Same Day ratings and affecting the C3 ratings. For this programming to be Nielsen-compliant, the viewing must be credited to the National Client, not to the Local Affiliate. To accomplish this, the delayed feed to the MVPD must meet the following criteria:

●   The Station MUST provide a unique Nielsen Final Distributor (FD) encoded feed and not a feed with the same FD SID as is sent to the Local Affiliate.
●   The encoder clock must be offset to match the delayed feed so programming and Nielsen FD code are delayed by the same amount of time.

Nielsen does the following:

●   Provides the new Source ID (SID) for proper crediting to the National Client.
●   Prior to the launch of the feed, installs a MMS reference site for the MVPD, unique channel.
●   Processes clock and encoder alerts as is done with the primary feed and in agreement with our service-level agreement.

To implement the necessary procedures, ask your Nielsen Client Service Executive to submit a Change Request. The high level diagram below represents the needed solution, please contact Nielsen Encoder Support for clarification if this solution meets your network needs.
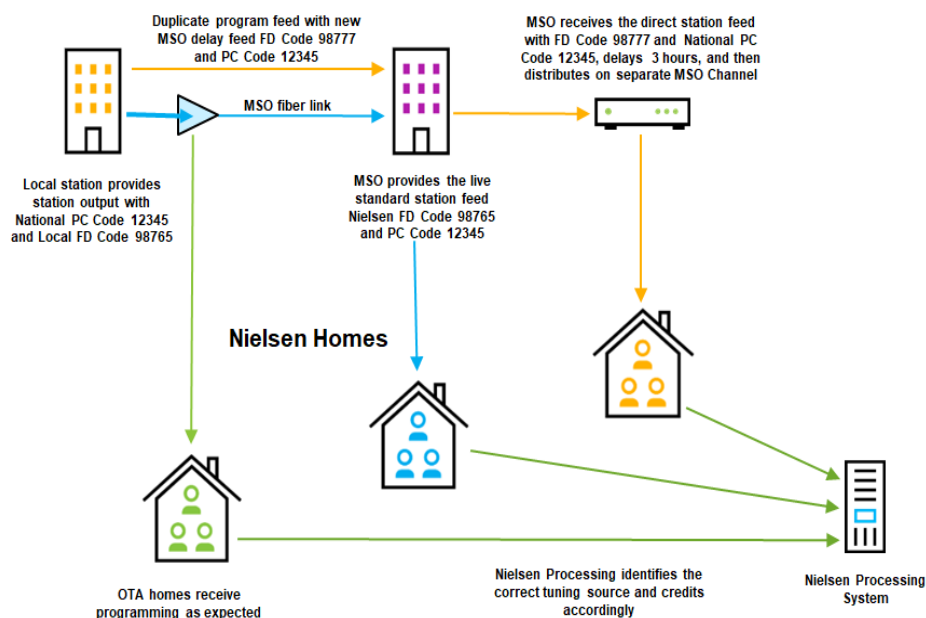
Compliant Scenario: VMPD Delayed Feed

8.   NON-COMPLIANT INSTALLATIONS

8.1.   CASCADED NIELSEN ENCODING - ENCODERS IN SERIES

Each unique signal path must contain a unique SID and CBET code that aligns with Nielsen policy and assigned to your specific station feed, which means that two encoders must not be installed in series in the same physical distribution path. Following this rule prevents bleed-through of an upstream SID.

Having 2 Nielsen encoders in the same stream (one as a backup), where one of them is not in bypass mode. To provide Nielsen with correct and accurate code, cascaded Nielsen encoding must be avoided.

Potential issues that can occur with Cascaded Nielsen Encoders (Encoders in Series) are:

○   <u>Bit Flipping</u> - The upstream SID Code can bleed through, or toggle in, causing a mis-credit
○   <u>Cascaded Encoders online</u> - It is possible that the upstream encoder may have a time issue. If the downstream encoder doesn't show any time issue, we would not get an alert. If we lose monitoring, and the downstream encoder has an issue, the station would credit by code using the incorrect date/time stamp causing crediting issues

Examples of cascaded installations are listed below

SD to HD or HD to SD

Any upconvert or downconvert where there is a second Nielsen encoder with its own SID to overwrite the original HD code is not correct and will lead to erroneous data. The installation of a Distribution Amp (DA) prior to the Nielsen encoding will provide separate paths to avoid this issue. If you have any questions, please contact encoder support directly.

OTA to Cable direct

In this instance where a station is providing a Cable direct unique feed (with different commercial content) Nielsen requires that the Cable direct feed path is a clean, non Nielsen watermarked feed, which will avoid cascaded Nielsen encoders. A diagram on the correct execution of this is located in this policy in section 7 - MVPD PROVIDED DIRECT FEEDS WITH UNIQUE COMMERCIAL CONTENT

East / West feeds

Nielsen Policy for correct East / West distribution requires a unique clean path for both the East and West distribution, which will incorporate individual SID/CBET codes. It is important that if a delay server is used, that the source be a "clean source" with no Nielsen watermark insertion, so the West (delay) feed is not cascaded onto the East feed.

The exception to this is to use a single SID for both the East and West feed, the West feed having a 3 hour delay, and both feeds Nielsen encoder clock set for the local time in that time zone. There is a reporting exception for this, please review section 4 - Cable Network Distribution.

SAP, AAP or DVS audio that is Nielsen encoded in an SD domain and then up-converted and distributed with the HD video service will also cause problems, and it is imperative that the same rules are followed with all audio streams, making sure there are no cascaded watermarks on any audio source.

Never install two encoders in series of the same SID and SID type. In this example, codes on the SD distribution are consistent. Codes on the HD distribution path, however, are a mixture of HD (SID=999) and SD (SID=255) audio codes.

The diagram below shows encoders in series. This situation can produce reduced or no crediting.
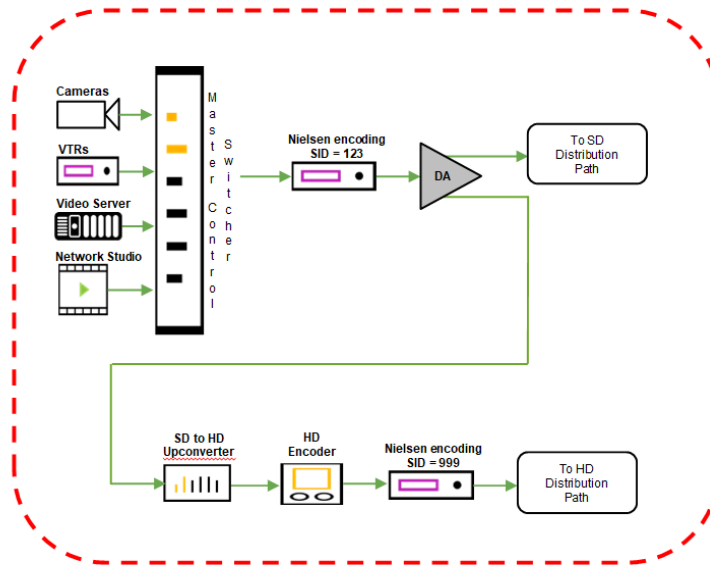

Scenario: NON COMPLIANT - Encoders In Series Installation

8.2. UNENCODED DIST PATHS AND AUDIO STREAMS

When a panelist is tuned to an Unencoded Path, there can be no code identification by our systems. Our systems would then rely on Audio Signature Matching for crediting. Please note that this is only the case for Primary Audio, and Signatures will not match if the SAP is in a different language (We cannot match English audio to a HH (House Hold) listening to the SAP, if the audio is in Spanish, which is why encoding SAP is important). If we can't match the programming by Code or by Signatures (due to an issue or maintenance at our monitoring facility), reduced crediting can result.

The example below shows an unencoded path. Unencoded paths rely on Audio Signatures for crediting, and if there is an issue at the Nielsen Monitoring site, it can result in reduced or no crediting.
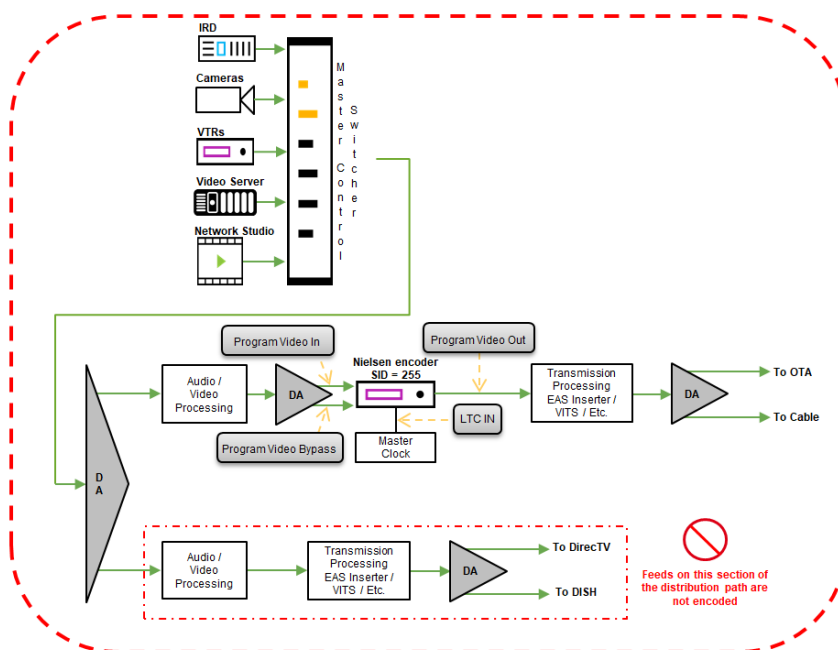

Scenario: Unencoded Distribution Path Installation

8.3. SECONDARY OR BACKUP FEEDS

Many facilities have secondary or backup distribution feeds to remain on-air during equipment failure, maintenance, or upgrade of the primary feed. Encoders must also be installed in these secondary or backup distribution feeds to ensure continued insertion of Nielsen codes during these outages. Use the same SID for the backup encoder as the SID for the primary path that it bypasses.

The example below shows a backup path that is not encoded. The result is that the content on their Backup path contains no audio code. This situation can produce reduced or no crediting.
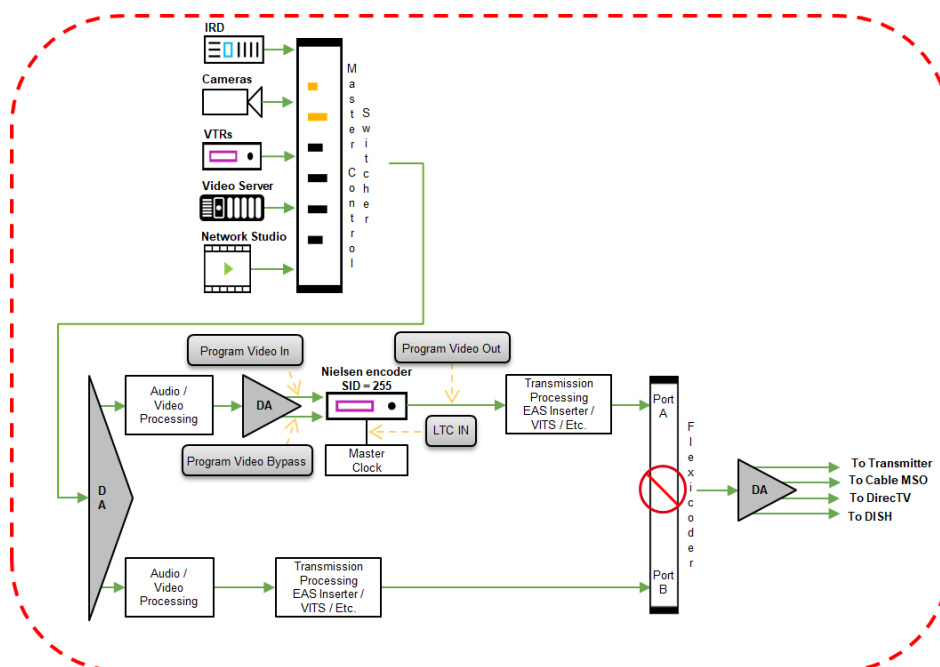
Scenario: Unencoded Backup Path

9. CUSTOMER SUPPORT CONTACTS

Nielsen Support	Location
Encoder Support	Nielsen 501 Brooker Creek Blvd Oldsmar, FL 34677 800-537-4872 option 2 Encoders@Nielsen.com
This Policy	http://nielsen-encoder-forum.com/public/documentation/Encoding_Install_Config_Policy.pdf
Engineering Client Portal	https://engineeringportal.nielsen.com/docs/TV

10. ENCODING AND MONITORING COMPLIANCE CHECKLIST

Section	Item	Confirmed
Encoder portal link for latest SW based on encoder solution https://engineeringportal.nielsen.com/docs/TV	All Nielsen encoders are updated with the most recent software and firmware installed	
Section 4	All Nielsen encoders are installed downstream of program switchers, routers, and processing equipment and prior to any compression encoders and all signal distribution from the facility.	
Section 4	Audio processing is implemented upstream from Nielsen encoding equipment.	
Section 8	All Nielsen encoders are not installed in series in the same physical facility.	
Section 7	Nielsen encoders are installed in all secondary or backup signal processing distribution paths.	
Section 4	All mandatory Nielsen encoder configuration settings have been confirmed.	

Nielsen

Section	Item	Confirmed
Section 6	Dolby Digital settings adhere to the settings specified in this document.	
Section 6	Dialnorm is set to −24 and dialog loudness is set to −24 LKFS (±2 LKFS). The EAS insertion system uniformly passes all audio channels as outlined in this document.	
Section 6	All audio processing conforms to the minimum compression bit rates outlined in this document.	
User manual for the encoder and SMPTE specification.	The audio level on all audio channels being processed is in the correct operating range (not peaking) in accordance with SMPTE specifications.	
Section 6	Unprocessed audio is in the operational dynamic range of the Nielsen encoder and frequency range is preserved.	
Section 7	Each unique signal processing feed (channel) has a dedicated encoder and a unique SID.	
Section 4	All Nielsen encoders are configured with the proper code type: program content (PC), final distributor (FD), and CBET (layer 2 or layer 5, if applicable).	

Nielsen

Section	Item	Confirmed
Section 4	All signals leaving the facility are properly encoded per the instructions outlined in this document	
Section 6	All SAP, AAP, and DVS audio streams are encoded.	
Section 6	The clocks in all Nielsen encoders; both primary and backup, are synchronized to an external time source. Nielsen highly recommends NTP as the preferred method.	
Section 6	DST configuration settings have been properly configured and stored in the Nielsen encoder.	
Section 4	For new Nielsen encoder installations, Nielsen recommends verifying compatibility with other equipment in the facility by operating the Nielsen encoder on an off-air feed for at least one day (24 hours).	
Section 4	No performance issues identified during off-air testing OR issues were identified. If issues are identified, we notify the Nielsen Encoder Support Group to resolve any performance issues that were identified during off-air testing.	

Section	Item	Confirmed
Section 4	Encoder alert distribution list has been created and shared with Nielsen.	
Policy Agreement	We (the encoding party) will contact Nielsen Encoder Support to request Code Verification subsequent to any changes to the audio streams (i.e. reducing transmission power levels, changes in audio bit rate, etc).	