# NIELSEN ENCODER INSTALLATION AND CONFIGURATION POLICY

**Applicable to
US Television and Streaming
Audience Measurement**

**Revision I**

**Jan 2025**

# TABLE OF CONTENTS

# 1.  INTRODUCTION

## 1.1.  PREFACE

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

## 1.2.  STATEMENT OF POLICY

This document establishes the policy by which Nielsen watermarking solutions will be installed and configured. Its aim is to ensure proper operation and performance of Nielsen watermarking devices for Nielsen television measurement to accurately detect and report household and out-of-home viewing. Nielsen clients are required to actively watermark using the Nielsen watermarking methodology per their service agreements with Nielsen. Any deviation from this policy is the sole responsibility of the client, Nielsen personnel will not be held accountable.

**Warning:  Failure to comply with the Watermarking 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 clients, third party watermarking facilities and  any others who are responsible for overseeing the execution of this watermarking policy. Clients and engineers should have a thorough knowledge of the equipment and its functions in their signal path.

## 1.4.  RELATED DOCUMENTATION

Please refer to your Nielsen client agreement as well as the documentation listed in section 9 of this policy, as they contain important information about encoders and watermarking.

# 2. OVERVIEW OF DEVICE INSTALLATION

Nielsen watermarking technologies are critical to the Nielsen metering solution for accurately measuring TV content viewing behaviors on all platforms.

**Step One**: Select a watermarking device that is appropriate for your signal path and workflow. Please refer to this link for related documentation: https://engineeringportal.nielsen.com/wiki/TV

**Step Two**: Select a location in your signal path for the watermarking device. The facility design and your unique workflow are important factors to consider. The most convenient location may not be the optimal location. See section 4, "Nielsen Watermarking by Distribution Type." If you have technical questions or your particular installation is not addressed, contact Nielsen by email at encoders@nielsen.com or by phone at 1- 800-537-4872 option 2. The watermarking device 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.

**Step Three**: Install the watermarking device per the instructions in this document, the device-specific user manual, and support from Nielsen. All distribution paths and all audio streams must include the same Nielsen Watermark information from the same unique watermarking solution. The use of multiple devices using the same SID/CBET information is  strictly prohibited (except for backup devices, see section 6.9) and may result in incorrect Nielsen Ratings.

<p style="text-align:center"><strong>Warning: Never install multiple watermarking devices<br>with the same SID type in series.</strong></p>

Install a second watermarking device in the backup air chain. Each backup distribution path must contain a watermarking device 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 code insertion and clock time accuracy offline in both the primary and backup paths to confirm compatibility with other equipment in the signal path. If performance issues arise during off-air verification, contact Nielsen at 800-537-4872 option 2 or by email at encoders@nielsen.com. All clients performing Nielsen watermarking must monitor their watermarked feed for proper code insertion and clock time accuracy.

<p style="text-align:center"><strong>Warning:</strong> Any changes to the facility configuration that can impact the performance of Nielsen watermarking must be communicated to encoders@nielsen.com for code verification. This includes, but is not limited to, repack changes, station frequency changes, temporary low power exemptions, multicast distribution, simulcasting, Dynamic Ad Insertion, extended off the air or outage and Nielsen watermarking hardware or SDK platform changes. Without communication to encoders@nielsen.com, Nielsen cannot validate the delivered data and will not be responsible for reprocessing data as a result of undocumented changes that have not been re-qualified.</p>

# 3.   NIELSEN WATERMARKING TECHNOLOGIES

Nielsen Watermarking is the name for technology using a patented, perceptual-masking technology that utilizes Psychoacoustic Auditory Masking, where information is inserted into an audio signal that is rendered 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. Watermarking devices include dedicated hardware devices (a type of encoder) or the Nielsen Software Development Kit (SDK) incorporated into an audio processor.

There are two Nielsen Audio Encoding System (NAES) watermarking types, NAES 2 and NAES 6 (also referred to as Nielsen Watermarks or NW), plus the Critical Band Encoding Technology (CBET) type.

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 watermarking to all be enabled on the watermarking device. Note that Bypass mode disables both NAES 2 and Nielsen Watermark insertion, and should never be configured, unless as instructed and documented by Nielsen watermarking 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 Watermarking - Devices 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 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. A second FD time slot exists to prevent corruption in case encoders are accidentally cascaded (see section 8.1).

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 2.99 kHz to 4.8 kHz.



3 Slot design
Codes are cumulative



The RTVOD Flag or DAI Flag (see section 5.5), if used, will occupy an FD code slot for NAES 6.  This is not applicable to NAES 2.  The RTVOD Flag and the DAI Flag can be inserted only by a Nielsen SDK, not by a physical hardware encoder; **and must be inserted after the FD code is inserted**.

## 3.3. CBET

A third type of Nielsen code called CBET must be inserted for all national and local clients. 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.



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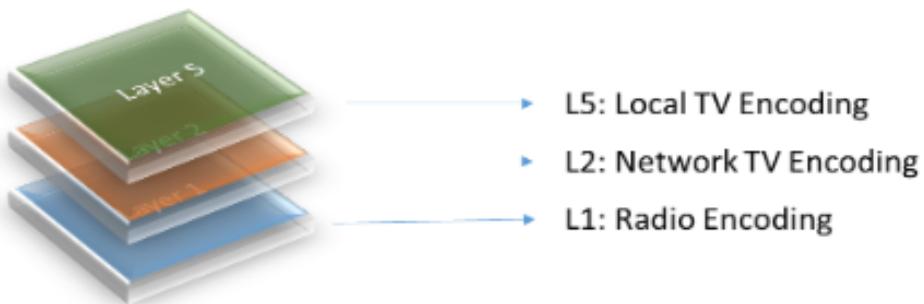
## 3.4. NAES AUDIO CODE TYPES (PROGRAM CONTENT AND FINAL DISTRIBUTOR)

**Program Content, or PC code**, is used by broadcast networks, syndicators, live streamers with local distribution, 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 device, 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 an external time source and be as accurate as possible to live. FD code tells us 'where' someone is watching.

## 3.5. CBET AUDIO CODE TYPES

**CBET Layer 1**, or L1, is the code used for radio stations, and for television outside the United States. Non-US stations are assigned a mixture of L1 and L2 codes.

**CBET Layer 2**, or L2, is the code used by National Broadcasters, National Cable Networks, Regional Sports Networks, and Local Cable Originating stations in the United States, as well as television outside the United States.

**CBET Layer 3**, or L3, is not used,independently, as it is necessary to enable Layer 4.

**CBET Layer 4**, or L4, is used for Canadian radio and television content VOD, and in the future for the Unified Commercial Code (UCC).

**CBET Layer 5**, or L5, is the code used by Local stations in the United States, and by national broadcasters for distribution to MVPDs.

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 WATERMARKING 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 must 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 watermarking device 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.   NIELSEN SOFTWARE DEVELOPMENT KIT (SDK)

Nielsen has created a software development kit for integrating Nielsen watermarking technology into existing television broadcast equipment. Clients and vendors who integrate Nielsen watermarking technology undergo a rigorous certification process which has been audited 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](https://engineeringportal.nielsen.com/docs/Nielsen_Encoder_Certified_Vendors))


## 3.8.   NIELSEN WATERMARKING DOCUMENTATION

All relevant Nielsen Encoding and Watermarking information including certified hardware and software devices, documentation, current software versions as well as diagnostic tools can be found here: [https://engineeringportal.nielsen.com/wiki/TV](https://engineeringportal.nielsen.com/wiki/TV)

If you have any questions please feel free to contact us at encoders@nielsen.com

**Nielsen Watermarking devices are shipped with a default SID, failure to enter the correct Production 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.**


## 3.9.   END OF LIFE HARDWARE

- NUE (Nielsen Universal Encoder)
- DNUE (Digital Nielsen Universal Encoder)
- NAVE (Nielsen Audio Video Encoder)
- NAVE II - Direct Replacement is a Ross NWE-3GA
- NAVE IIc - Direct Replacement is a Ross NWE-TS
- Media Encoder for TV - Replaced by Converged Encoders (NWE-3GA or NWE-TS) or SDK
- Spottrac - Replaced by SDK compliant facilities.  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.
- Harmonic ElectraX (Nielsen SDK) - Harmonic has announced End of Life and will not update this product with the Nielsen SDK 2027 Clock Rollover fix.  All clients using the ElectraX must migrate to a supported watermarking solution before 1 Jan 2027.  Certified Nielsen SDK vendors are listed here:
  [https://engineeringportal.nielsen.com/wiki/Nielsen_Encoder_Certified_Vendors](https://engineeringportal.nielsen.com/wiki/Nielsen_Encoder_Certified_Vendors)

# 4. NIELSEN WATERMARKING BY DISTRIBUTION TYPE

## 4.1. General Device Placement Guidelines

For all facilities, the Nielsen Watermarking device must be installed after all programming sources and switching or routing and prior to any program distribution. There must be no unwatermarked program streams leaving your facility; all distribution paths must contain Nielsen audio code insertion. Failure to comply will jeopardize your ratings integrity.

Watermarking devices (including hardware or SDK implementations) can insert either PC or FD watermarks, but not both in the same device. Likewise for CBET, they can insert either Layer 2 or Layer 5, but not both. Likewise for RTVOD and DAI flags, which must be inserted by a separate SDK instance from the normal PC, FD, or CBET instance.

### Warning: Never Cascade Watermarking Devices:
You may not install multiple Nielsen watermarking instances of the same code type, in any combination of PC/FD/CBET, on the same signal path (cascaded watermarking devices).

### Warning: Never Duplicate SID/CBET Codes:
You may not install multiple watermarking instances with the same SID/CBET code on separate viewer-consumable signal paths (unless solely used for disaster recovery).

**Note:** For special installations not discussed in Section 4, please refer to Section 7.

**Disclaimer:** The diagrams in this policy document are meant to be high level representations of distribution scenarios; all possible combinations of workflows are not represented. The Nielsen team can review your specific signal path and installation requirements to assist in designing a solution that complies with policy guidelines.

## 4.2.    NATIONAL BROADCAST NETWORK (Including "Diginets")

### 4.2.1.    Distribution Over The Air (OTA)

National Broadcast Networks must insert **Program Content (PC)** and **Layer 2 CBET** codes in their OTA distribution to their Owned and Operated and Local Affiliate Stations. All clients distributing PC/Layer 2 watermarked content must provide feedpoint data to Nielsen that indicates programming information, SID/CBET codes and date/timestamps to allow Nielsen to match the code details to a specific program. All Program Content code must be time synced to the Eastern time zone while all CBET code must be time synced to Coordinated Universal Time (UTC).
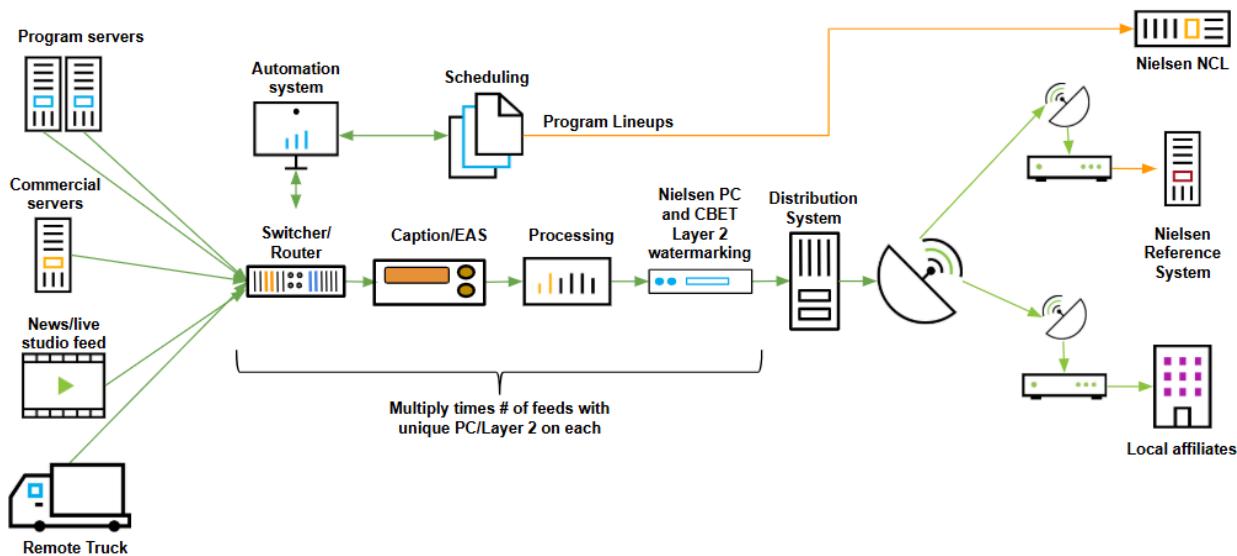
## 4.2.2. Distribution to a Multichannel Video Programming Distributor (MVPD)

National Broadcast Networks must insert **Final Distributor (FD)** and **Layer 5 CBET** codes after the  PC and Layer 2 CBET code insertion in their distribution directly to Multichannel Video Programming Distributors (MVPDs). In this scenario the network itself acts as the final distributor, rather than a local affiliate station. All Final Distributor watermarking at the national level requires the NAES code time to be synced to the Eastern time zone while the CBET code time is synced to Coordinated Universal Time (UTC).
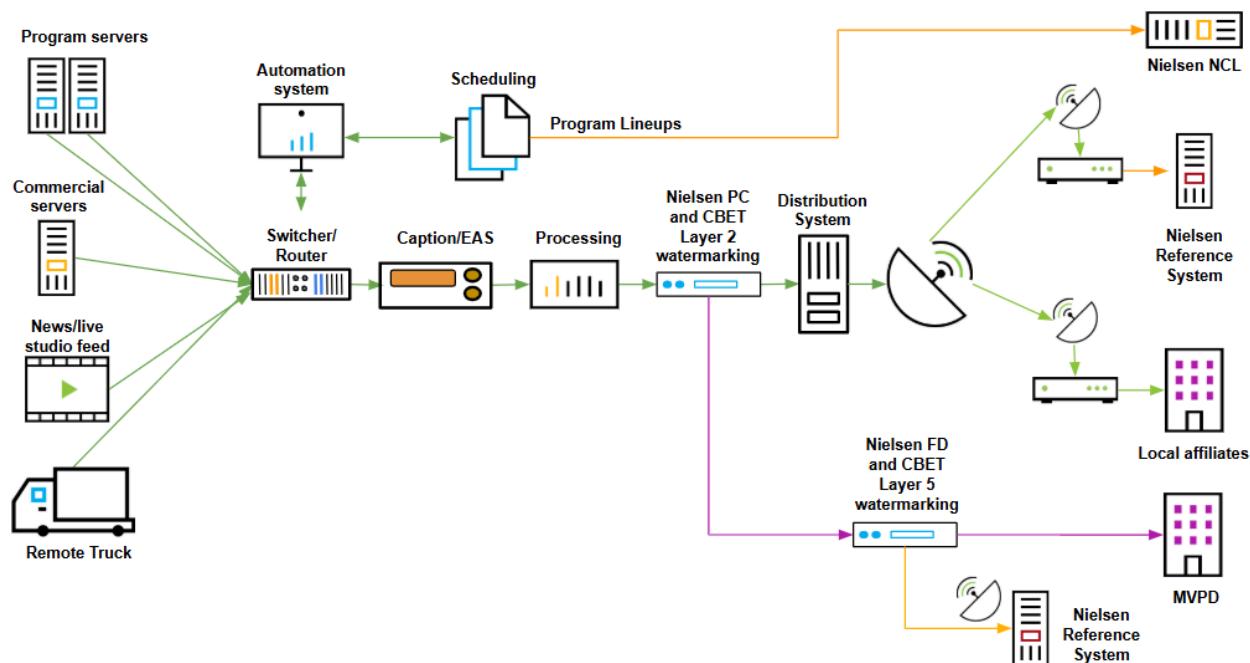


The diagram below shows the overview of distribution using separate audio PIDs.

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.
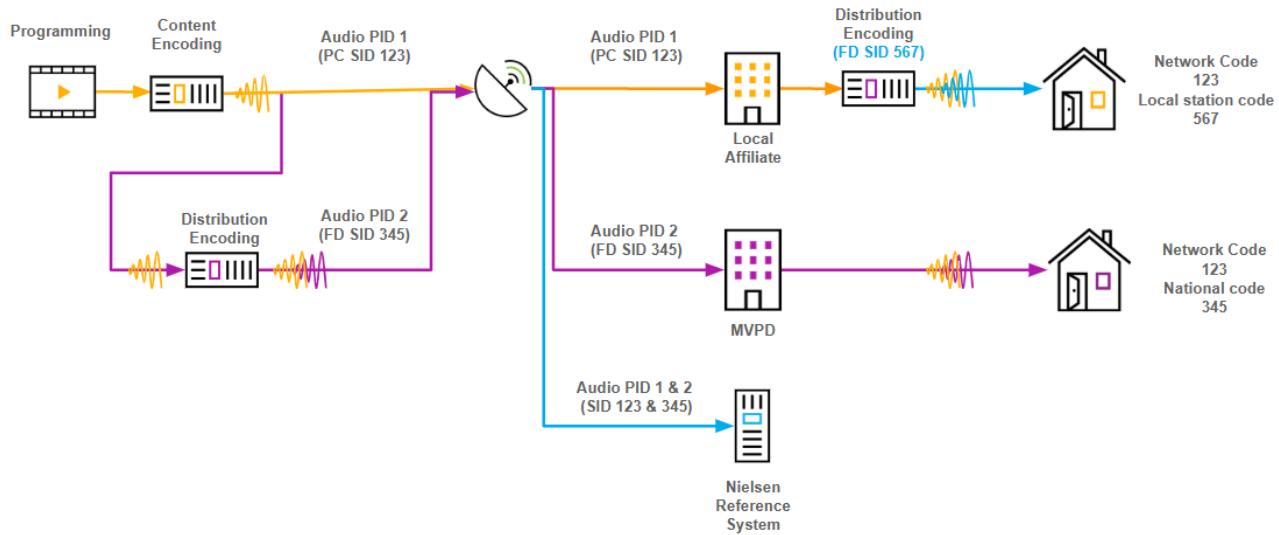
## 4.2.3. Distribution to a Virtual Multichannel Programming Distributor (vMVPD)

National Broadcast Networks must insert **Final Distributor (FD)** and **Layer 5 CBET** codes after the PC and Layer 2 CBET code insertion in their distribution directly to Virtual Multichannel Video Programming Distributors (vMVPDs). In this scenario the network itself acts as the final distributor, rather than a local affiliate station. All Final Distributor watermarking at the national level requires the NAES code time to be synced to the Eastern time zone while the CBET code time is synced to Coordinated Universal Time (UTC).
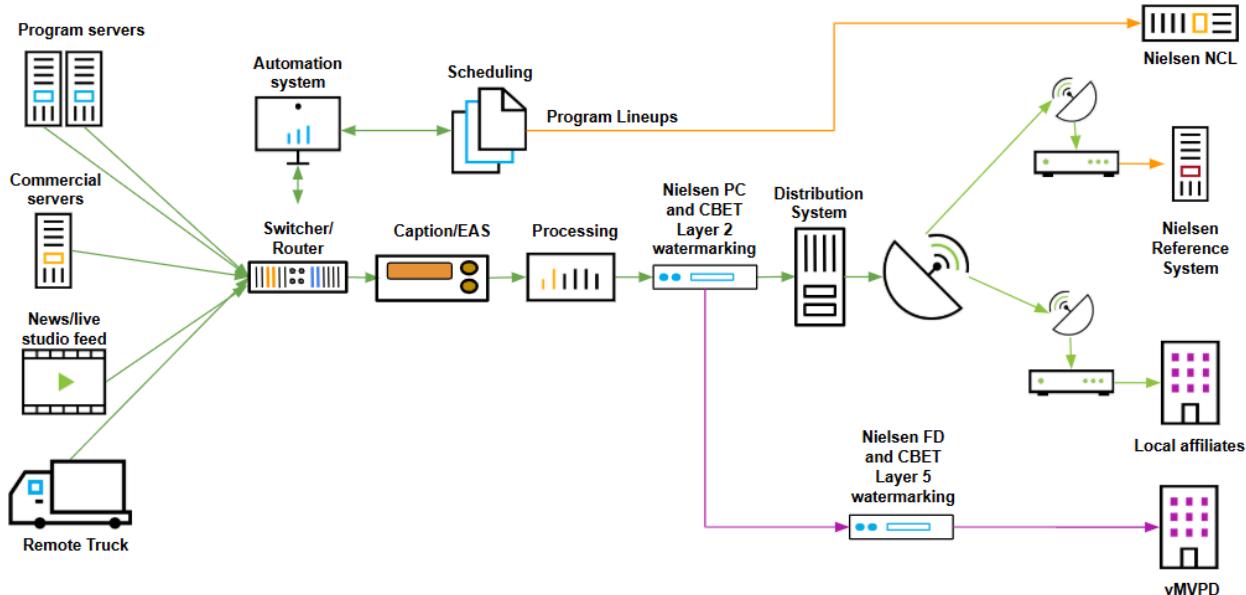
## 4.2.4. Distribution by Streaming Direct to Consumer

National Broadcast Networks must insert **Final Distributor (FD)** and **Layer 5 CBET** codes after the PC and Layer 2 CBET code insertion in their distribution directly to consumers. This includes but is not limited to the distribution paths to apps, browsers, smart TVs, FAST channels, game consoles as well as any other internet connected devices. In this scenario the network itself acts as the final distributor, rather than a local affiliate station. All Final Distributor watermarking at the national level requires the NAES code time to be synced to the Eastern time zone while the CBET code time is synced to Coordinated Universal Time.
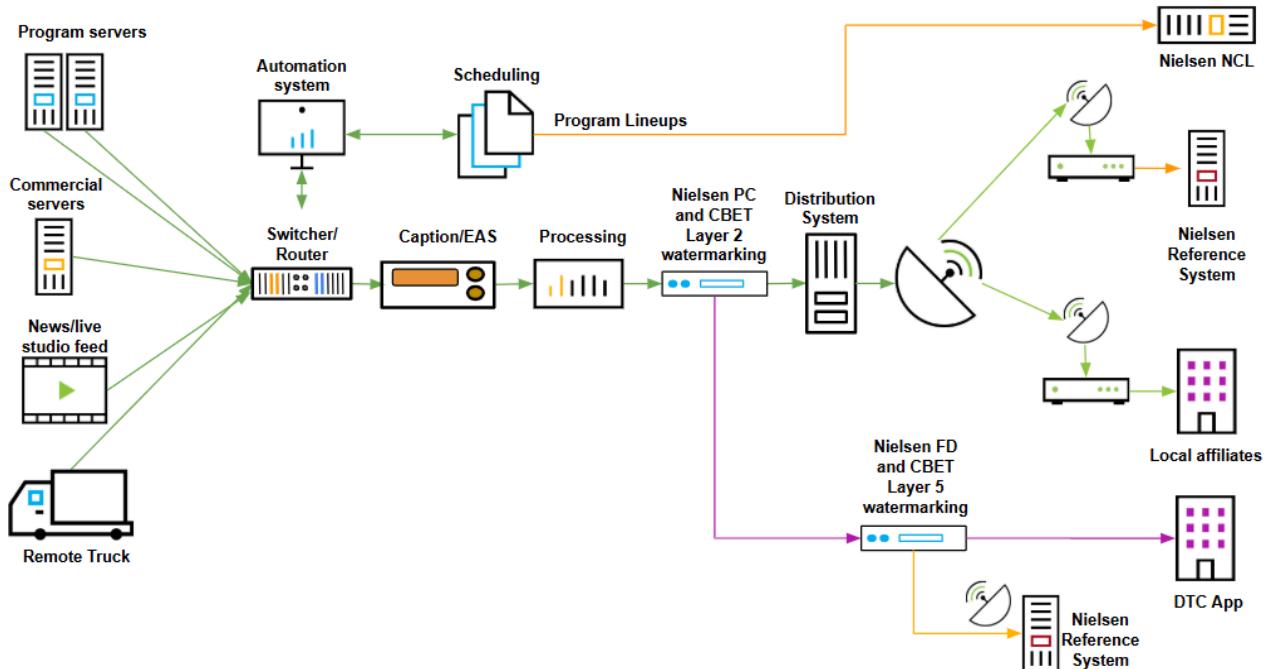


### Distribution for Nielsen Streaming Platform Ratings

For watermarking that is intended specifically to aid in crediting for Nielsen's Streaming Platform Ratings, Final Distributor (FD) and Layer 5 CBET codes may be used as a special purpose "SPR SID". This may be a linear or VOD watermark. This enables streaming that reaches the viewer via a host device or app to be credited to the appropriate SPR viewing source. For example:

- For viewing on a streaming app that is available via a set top box, the streaming app would receive the viewing credit
- For viewing on an app subscribed within another host app, both the streaming app and the host app would receive viewing credit.

## 4.2.5. Distribution by Video On Demand (VOD)

Please refer to Section 5.

## 4.2.6.   Broadcast Distribution using Dynamic Ad Insertion (DAI)

When a National network is using Dynamic Ad Insertion (DAI) for their national ad load on any of their outgoing signal paths, these DAI enabled feeds MUST be watermarked uniquely using a Nielsen issued **Final Distributor (FD)** and **Layer 5** CBET code combination designated for DAI and inserted after the  PC and Layer 2 CBET code.  Only one unique DAI SID/CBET combination is required for any DAI feeds which share the same programming, even if they differ in specific ad load.

When using DAI on certain platforms,it is imperative that you watermark your DAI content with a separate SID code, as the ad loads are different and cannot credit to the Linear Program, Time Period, and C3/C7 ratings.  This separate DAI code may be used across multiple platforms providing it originates from the same single watermarking device. The DAI Flag feature (see section 5.5.2) is not applicable to this scenario, as the DAI Flag cannot be added to a PC SID.   However, as of Sep 29, 2025, Nielsen offers a DAI Inclusion product, for which clients can opt-in.  This product will include DAI viewing in National Program and Time Period ratings, but not in C3/C7; and the DAI FD SID itself will suffice for this product.

All Local and National Programming sources must maintain either Linear ad loads and associated Nielsen SID/CBET data or DAI ad loads with Nielsen SID/CBET codes on a 24/7 basis.  Nielsen Reporting systems do not allow for switching between the two different ad load platforms based on programming or day of week.
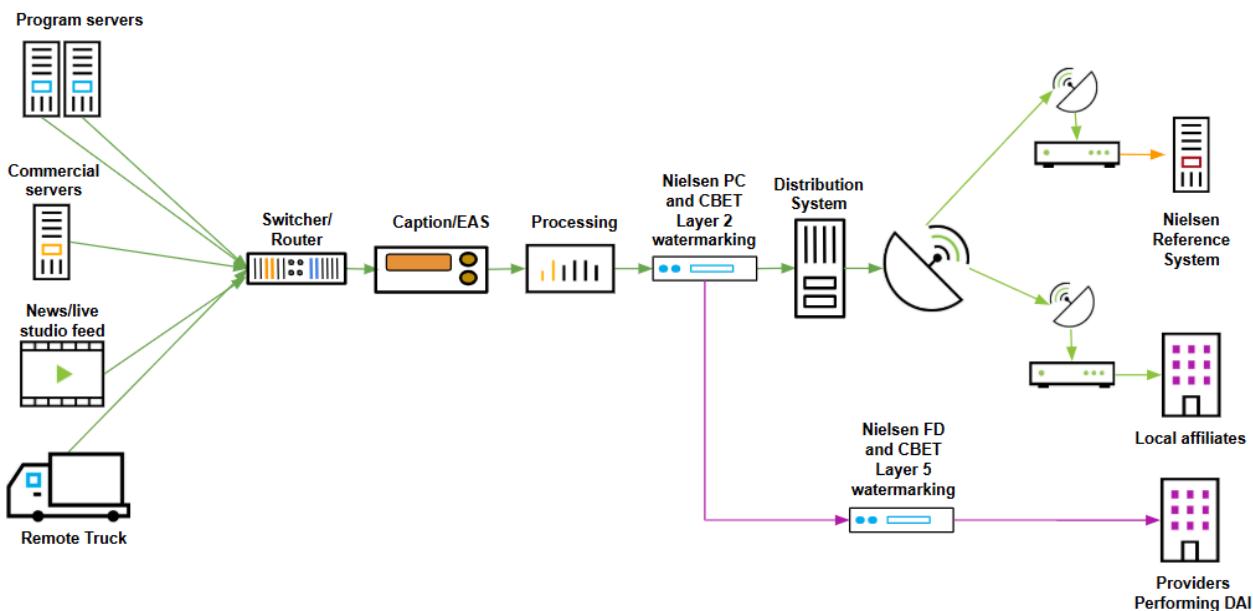
## 4.2.7.  Simulcasting to Other National Broadcasters or Cablenets

Four situations will be discussed below:

- Broadcast Network to Another Broadcast Network
- Broadcast Network to Cable Network
- Broadcast Network Simulcasting 24/7 to a FAST channel with DAI Ad Load
- Broadcast Network Sending Partially Simulcast DAI Ad Load to a FAST channel

### Broadcast Network to Another Broadcast Network

An example of this situation is a special event, such as a presidential election debate, in which it may be necessary for the originating broadcast network with the rights to the event to provide a feed to other networks.

The originating broadcast network must pass a clean, unwatermarked feed to the receiving broadcast network.  The receiving broadcast network must PC and Layer 2 watermark as if they were the originator.  Each broadcasting network must provide lineups and feedpoint entries and thus each will receive program credit.  This applies regardless of whether the national ad load is pass-through from the originator or unique from the receiving network.
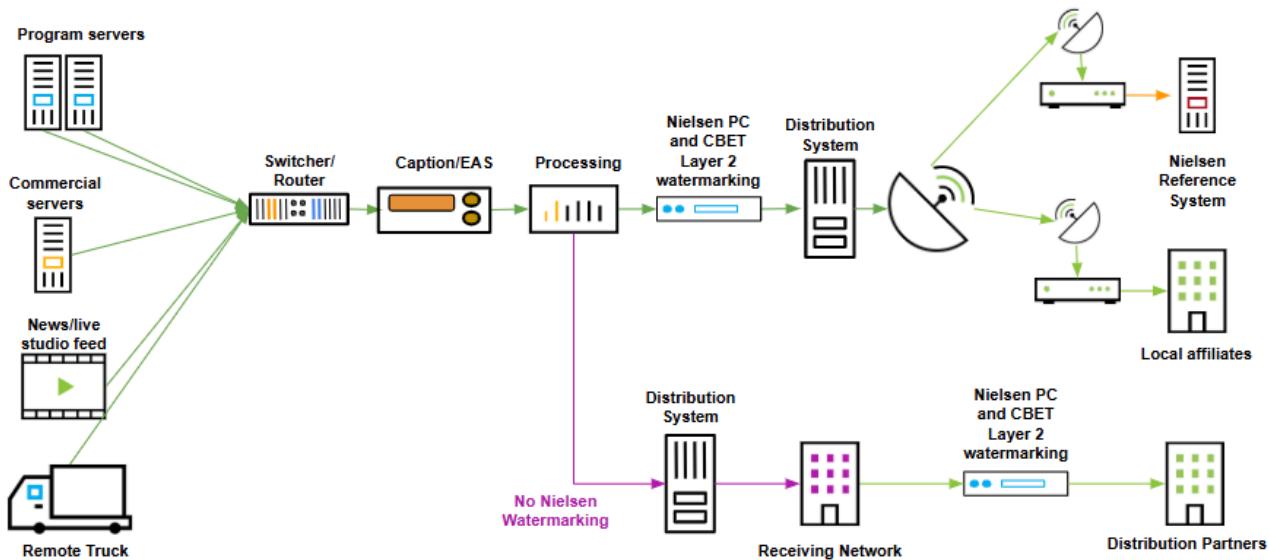
## Broadcast Network to Cable Network

An example of this situation is a special event, such as a live awards program, to be simulcast on one or more cable networks, in which it may be necessary for the originating broadcast network with the rights to the event to provide a simulcast feed to those cable networks.

The originating broadcaster should provide a PC and Layer 2 watermarked feed to the receiving cable network. The receiving cable network would pass through the originating PC, insert their FD and Layer 2 (overwriting the originating broadcaster's Layer 2) code. The originating broadcaster thus will receive program credit, while the cable network will receive credit as a final distributor credit. The broadcasting network must put the receiving cable network's call letters in the broadcasting network's program lineups to receive PPM OOH credit.
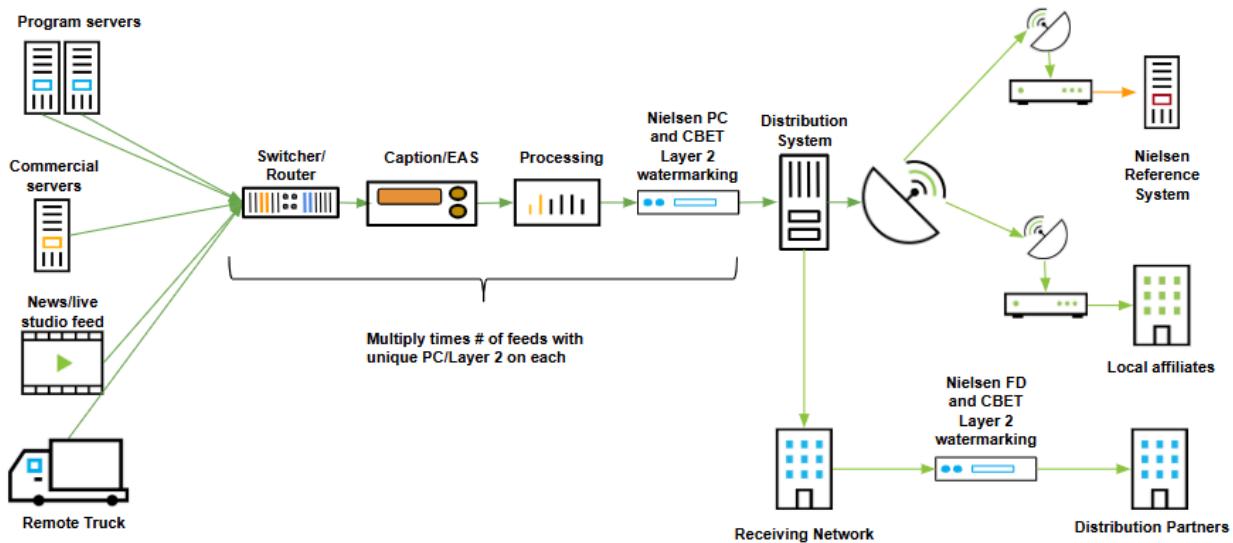
### Broadcast Network Simulcasting 24/7 to a FAST channel with DAI Ad Load

A broadcast network has the option of separately watermarking the entire FAST channel with a distinct FD DAI SID and still getting program credit for that DAI viewing by opting into DAI Inclusion (see paragraph 4.2.6 above).  In the diagram below, the broadcast network is providing a 24/7 simulcast to the FAST channel.

The DAI Flag only works with FD, and therefore cannot be inserted directly after the PC watermark in this scenario.  A separate DAI FD SID must be used.
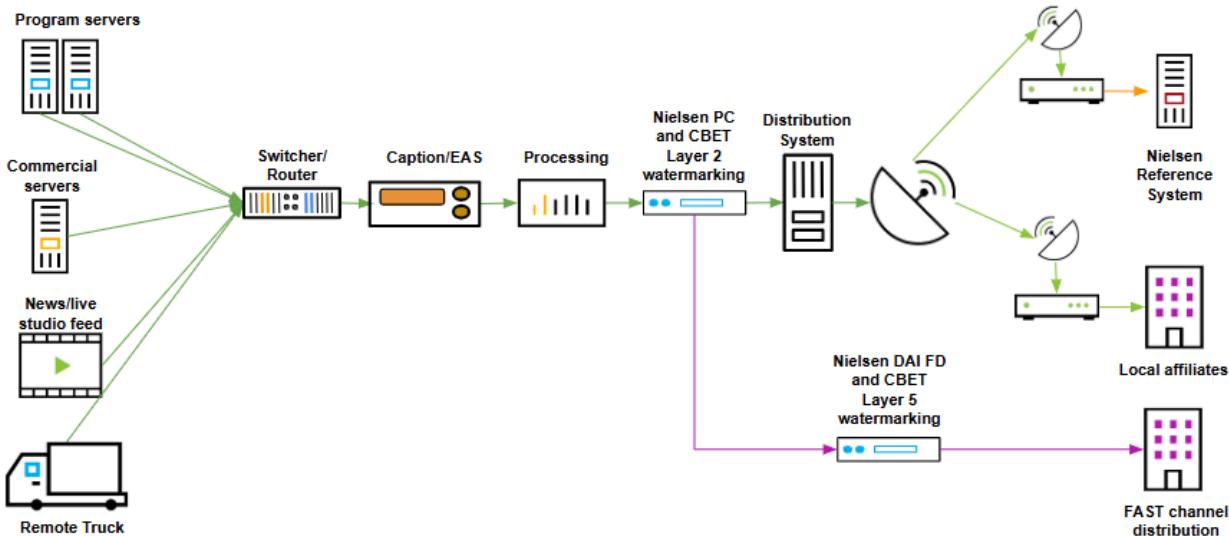


### Broadcast Network Partially Simulcasting to a FAST channel with DAI Ad Load

A broadcast network has the option of separately watermarking the entire FAST channel with a distinct FD DAI SID and still getting **program credit** for that DAI viewing by opting in to DAI Inclusion.  In these cases, the feeds would be considered DAI exclusives since the entire FAST channel would not be a 24/7 simulcast of a linear network. The broadcast network would not be able to get **time period credit** in this scenario since the FAST channel feed would not be a complete simulcast of the broadcast network.

The only way for a broadcast network to get both program and time period credit in this scenario is for a separately encoded feed of the network with a FD SID to be utilized on that FAST channel only during the simulcast period with the linear ad load.  The diagram below illustrates this situation, and is only valid if the client has opted in to DAI Inclusion.  The DAI Flag cannot be used in this scenario.

Broadcast networks must use new distinct PC linear and DAI SIDs for these types of scenarios so that credit to these feeds does not interfere with credit to local station affiliates.
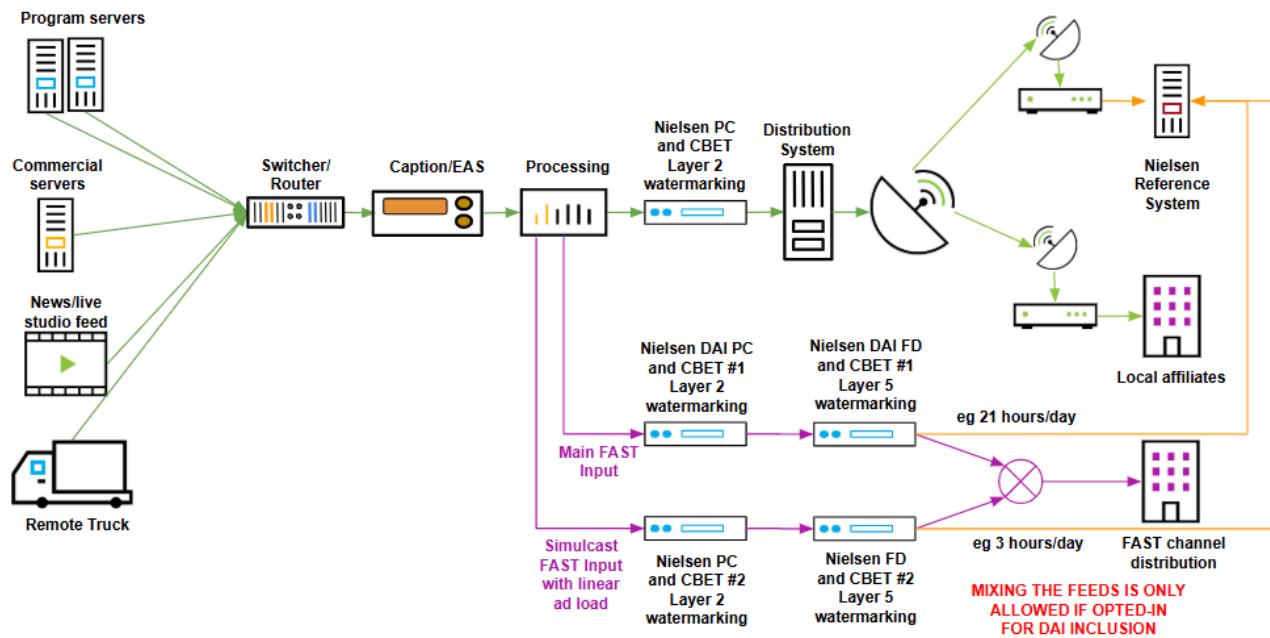
## 4.3.   NATIONAL CABLE NETWORKS

### 4.3.1.   Distribution to MVPDs, vMVPDs, or Streaming App/Website

National Cable Networks must use **Final Distributor (FD)** and **Layer 2 CBET** codes only in their distribution directly to MVPDs, vMVPDs, or via Streaming to Apps and Browsers. All Final Distributor watermarking at the national level requires the NAES code time to be synced to the Eastern time zone while the CBET code time is synced to Coordinated Universal Time (UTC). This is mandatory to provide accurate live and time shifted viewing breakout reporting. All national cable network distribution paths using the same SID/CBET codes are required to carry the same national ad load. Differentiation in national ad load requires differentiation by SID code using a uniquely assigned DAI SID code as described in section 4.3.5 below. The DAI Flag feature (see section 5.5.2) may be used as an alternative to an assigned FD DAI SID and separate feed.  The DAI SID or DAI Flag are used to exclude the viewing credit from the linear ratings.

The diagram below shows the use of aRoss Video NWE-3GA in the signal path prior to the satellite or IP distribution.

#### East / West Distribution to MVPDs

For East / West distribution (Dual Feed) it is important that the cascading of Nielsen Watermarks must not be performed. The East feed will be assigned a unique SID/CBET code, with the FD code time synced to the Eastern time zone. The West feed will be assigned a separate unique SID/CBET code, with the FD code time synced to the Pacific time zone. All CBET code must be time synced to Coordinated Universal Time (UTC).

The East feed SID/CBET should not be present on the Nielsen watermarked West feed. If based on distribution requirements, there is no way to uniquely watermark the East and West feeds, an exception can be implemented using a single SID/CBET for both the East and West feed. The East feed would have the SID/CBET code, which is distributed, as well as delayed for West distribution, with the West feed having a 3 hour delay. For this exception, the Final Distributor code must be time synced to the Eastern time zone while all CBET code must be time synced to Coordinated Universal Time (UTC).In this exception, 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.
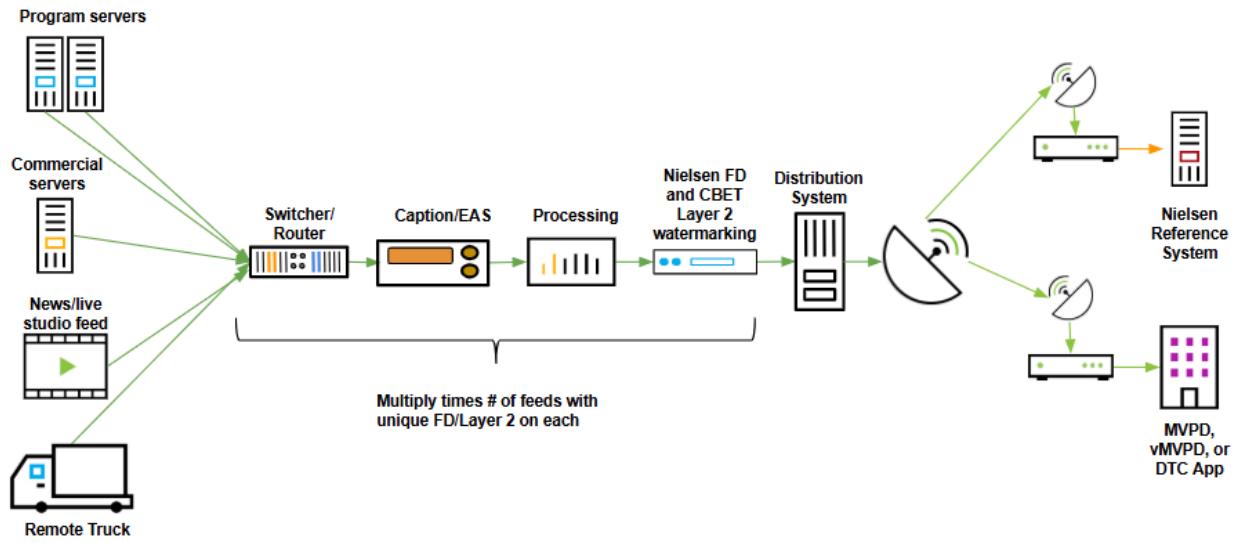
## 4.3.2.  Simulcasting to Local Television Stations

National Cable networks simulcasting their programming on local stations MUST use a **Program Content (PC)** and **Layer 2 CBET** code provided by Nielsen for the sole purpose of simulcasting content. National Network Final Distributor (FD) and Layer 5 CBET may not be used, as local Television stations insert their own FD/Layer 5 watermark information. The use of PC/Layer 2 in this instance allows for code credit to both cable network and local station.
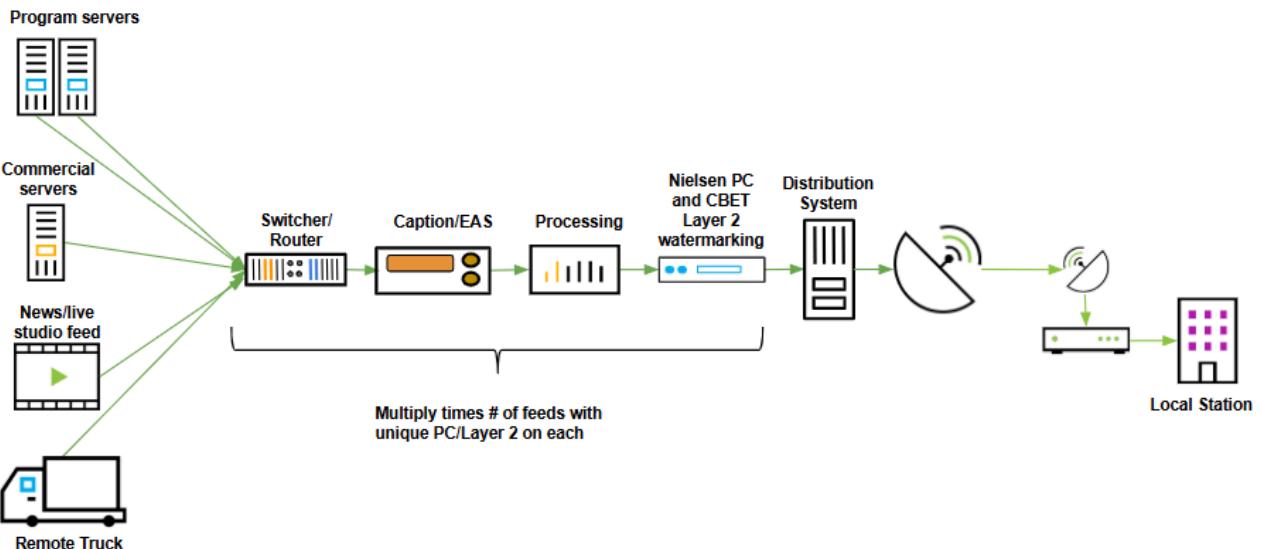
### 4.3.3. Hybrid Distribution to Local Stations for OTA Transmission

Hybrid Networks use **Final Distributor (FD)** watermarks and **Layer 2 CBET** codes in their distribution to Local Stations for OTA transmission. The local stations affiliated with the Hybrid Network will pass through 100% of the cable network's program and ad load and may not at any time become Nielsen Local Television clients for that channel; they may not insert their own Nielsen watermark information as it would interfere with the Hybrid Network code information. Failure of a Local Station affiliated with a Hybrid Network to comply with these polices may result in incorrect Nielsen measurement information.
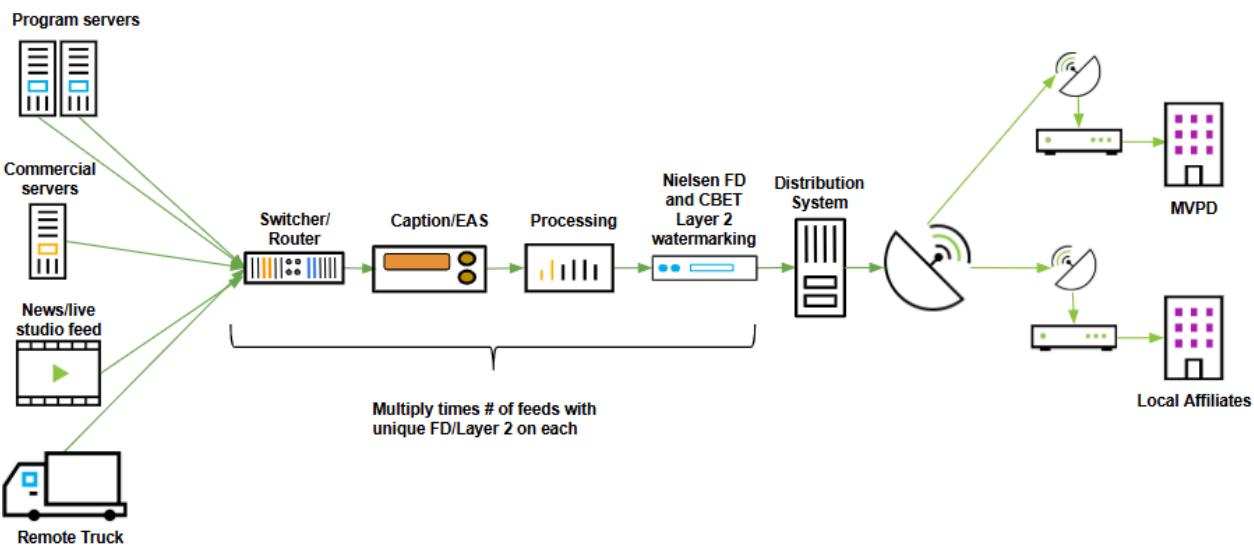


### 4.3.4. Distribution by Video On Demand (VOD)

Please refer to Section 5.

## 4.3.5.  Cable Distribution Using Dynamic Ad Insertion (DAI)

When a National cable network is using Dynamic Ad Insertion (DAI) for their national ad load on any of their outgoing signal paths, these DAI enabled feeds MUST be watermarked uniquely using a Nielsen issued **Final Distributor (FD)** and **Layer 2** CBET code combination designated for DAI and assigned to your network specifically. Only one unique DAI SID/CBET combination is required for any DAI feeds which share the same programming, even if they differ in specific ad load.

When using DAI on your feeds, it is imperative that you watermark your DAI content with a separate SID code, as the ad loads are different and cannot credit to the Linear Program, Time Period, and C3/C7 ratings. This separate DAI code may be used on multiple platforms provided it originates from the same single watermarking device.  The DAI Flag feature (see section 5.5.2) may be used as an alternative to an assigned FD DAI SID and separate feed. The DAI SID or DAI Flag are used to exclude the viewing credit from the linear ratings. However, as of Sep 29, 2025, Nielsen offers a DAI Inclusion product, for which clients can opt-in.  This product will include DAI viewing in National Program and Time Period ratings, but not in C3/C7; and either the DAI Flag or the DAI FD SID will suffice for this product.

All Local and National Programming sources must maintain either Linear ad loads and associated Nielsen SID/CBET data or DAI ad loads with Nielsen SID/CBET codes on a 24/7 basis.  Nielsen Reporting systems do not allow for switching between the two different ad load platforms based on programming or day of week.

Optionally, a single linear watermarked feed can be provided from the cable network to the MVPD, and the DAI Flag inserted by the MVPD along with DAI Ad Load.
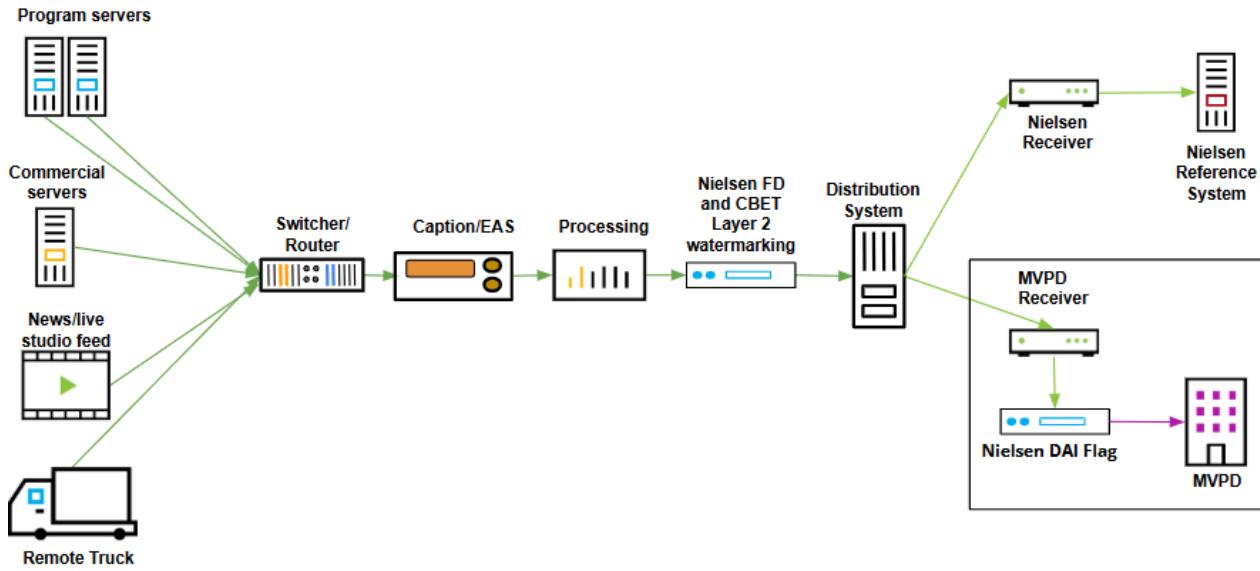


### 4.3.6.   Simulcasting  to other Cable Networks or National Broadcasters

#### Cable Network to Cable Network

In this situation, the originating cable network cannot receive program credit from the receiving cable network.  The originating cable network should provide a clean, unencoded feed to the receiving cable network. The receiving cable network should PC and Layer 2 watermark as if they were the originator.
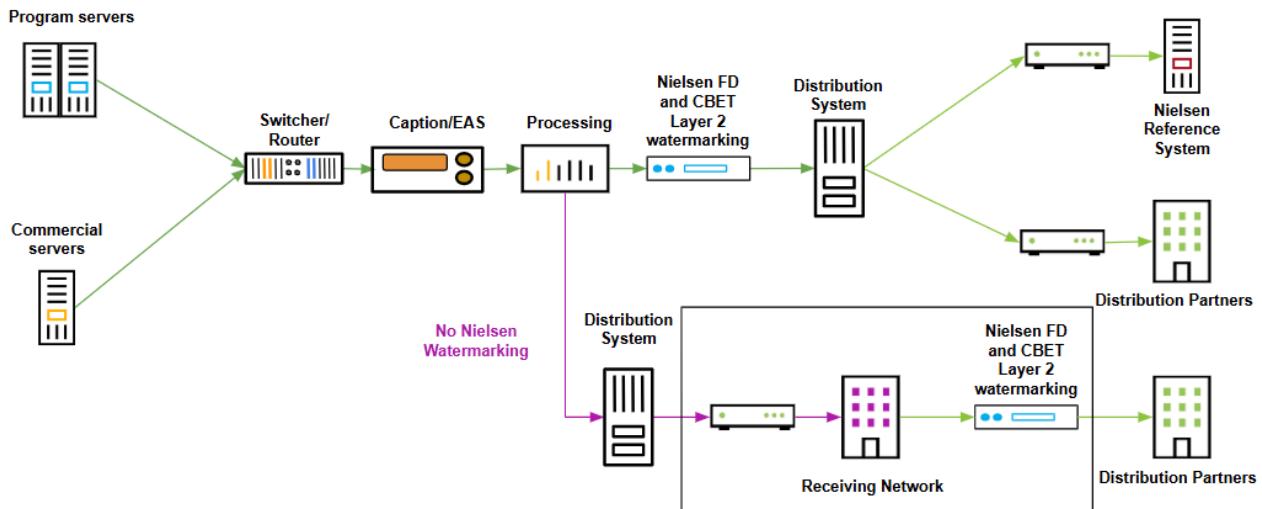
## Cable Network to Broadcast Network

In this situation, the originating cable network cannot receive program credit from the receiving broadcast network.  The originating cable network should provide a clean, unencoded feed to the receiving broadcast network. The receiving broadcast network should PC and Layer 2 watermark as if they were the originator.
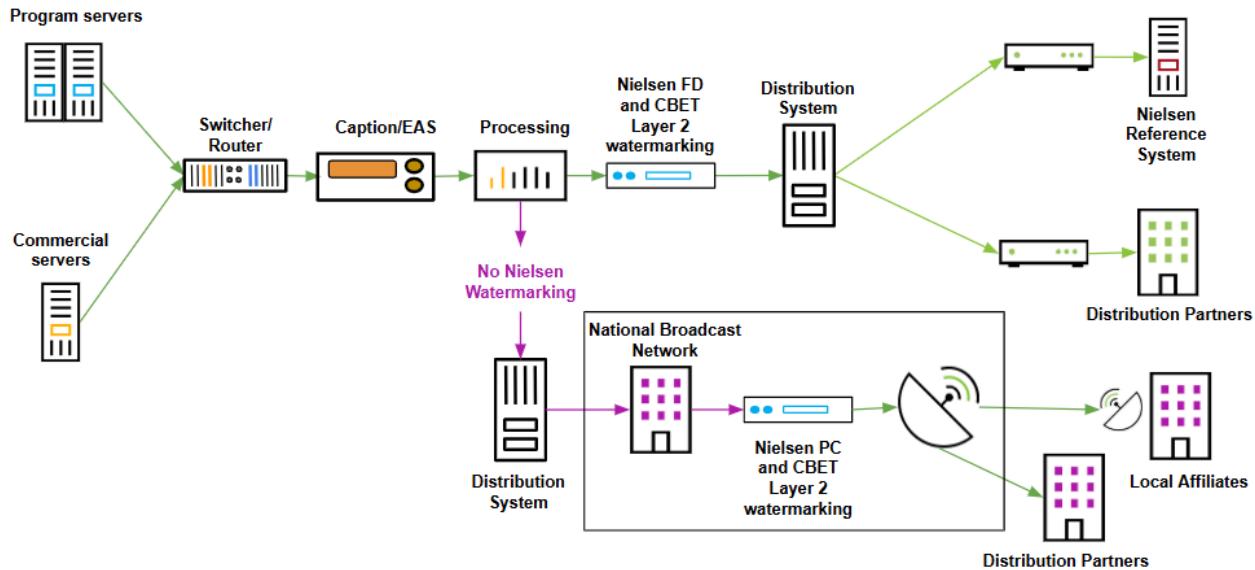


## Cable Network Simulcasting a DAI Ad Load 24/7 to a FAST channel

If a cable network simulcasts a DAI ad load on a FAST channel, there are two options to properly watermark the FAST channel.  The DAI Flag can be used after the original linear FD / L2 watermarking; or a completely separate FD / L2 DAI SID may be used.

Either method also enables the cable network to opt-in for DAI Inclusion for the FAST channel (see paragraph 4.3.5).
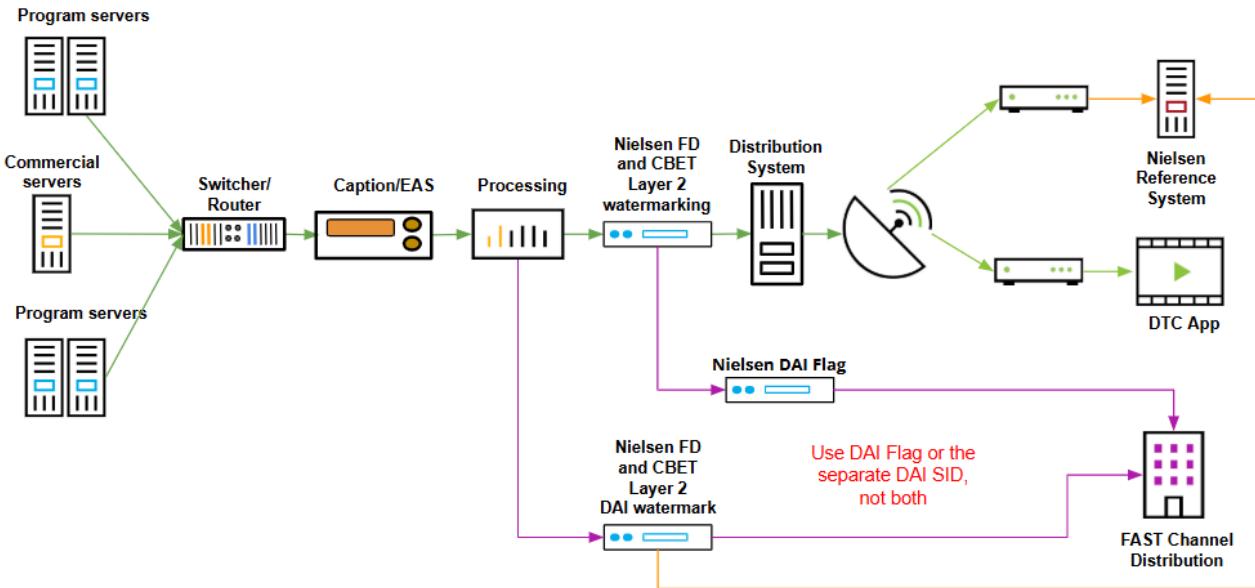
### Cable Network Partially Simulcasting a DAI Ad Load to a FAST channel

If a cable network partially simulcasts a DAI ad load on a FAST Channel, this channel must be watermarked with a FD DAI SID so that it can be excluded from the linear ratings, as in the diagram above.

The only way for the cable network to get program credit for this DAI viewing (assuming they opt in to DAI Inclusion, see paragraph 4.3.5) is to provide a separate feed, watermarked with a FD SID, to that FAST channel during the simulcast period only with the linear ad load. This is shown in the diagram below.

The client will not be able to separately watermark the FAST channel with one watermark over both simulcast and non simulcast periods and have the viewing during simulcast periods credit back to the cable network's linear ratings. This is because there is no station lineup process for cable to identify that simulcast period.
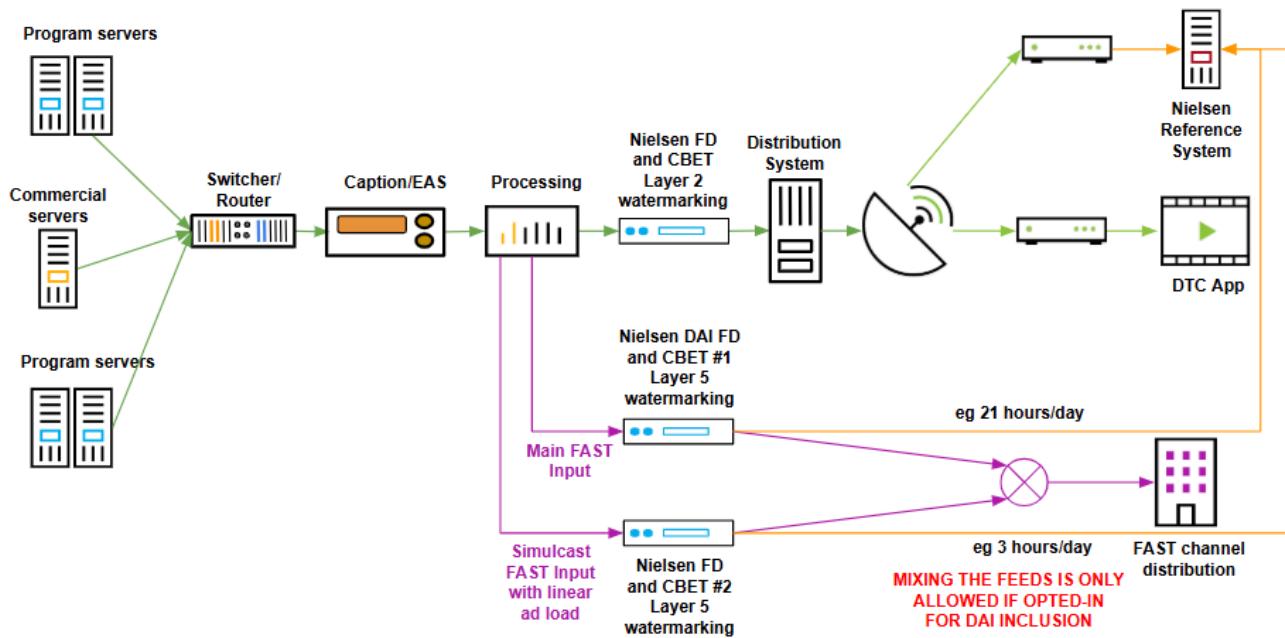
### 4.3.7. Nielsen Watermarking on Alternate Feeds

Some facilities provide alternate feeds for programming such as sports events. An alternate feed is defined as having:

- Unique audio and FD and Layer 2 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 and Layer 2 code at that point.

These feeds should provide unique audio when not in programming, allowing the Nielsen watermarking device to generate audio codes 24/7.  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.

## 4.4.    NATIONAL DIRECT TO CONSUMER STREAMING PROVIDERS

### 4.4.1.    National DTC Streaming Distribution Without DAI

National Direct to Consumer (DTC) Streaming Providers originate content and use a Nielsen issued **Final Distributor (FD)** and **Layer 2** CBET code combination in their distribution to all partners airing their content.

This includes but is not limited to the distribution paths to apps, browsers, smart TVs, FAST channels, game consoles as well as any other internet connected devices.  If your distribution includes local television stations, please contact Nielsen directly for a custom solution.

All Final Distributor watermarking at the national level requires the NAES code time to be synced to the Eastern time zone while the CBET code time is synced to Coordinated Universal Time (UTC).
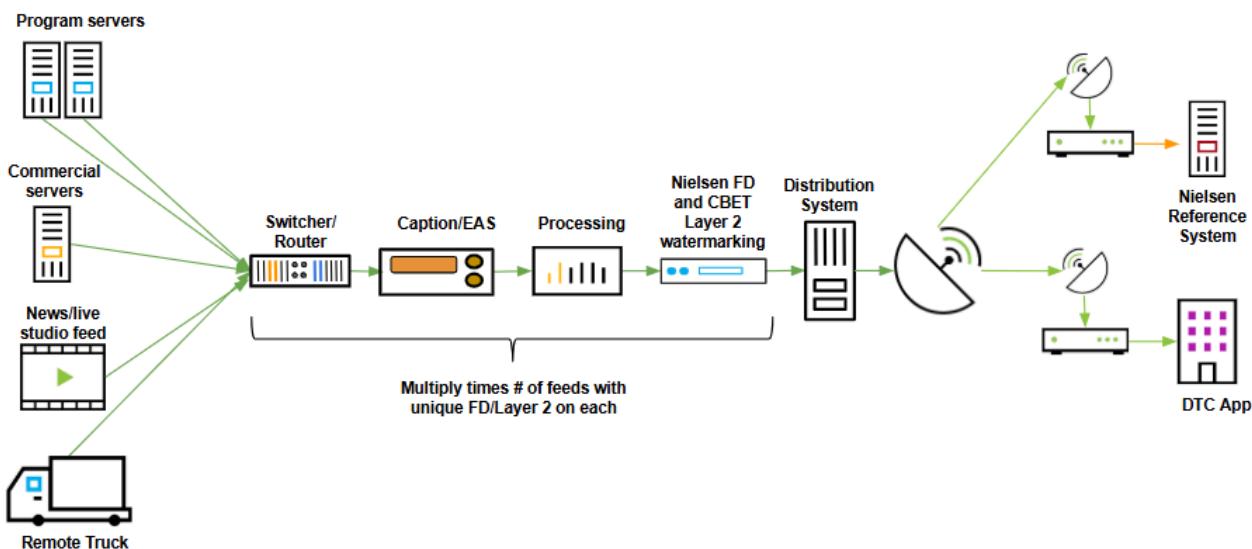
## 4.4.2. National DTC Streaming Distribution Using DAI

When a National Direct to Consumer (DTC) Streaming Provider is using Dynamic Ad Insertion (DAI) for their national ad load on any of their outgoing signal paths, these DAI enabled feeds MUST be watermarked uniquely using a Nielsen issued **Final Distributor (FD)** and **Layer 2** CBET code combination designated for DAI and assigned to your network specifically. Only one unique DAI SID/CBET combination is required for any DAI feeds which share the same programming, even if they differ in specific ad load.

When using DAI on your feeds, it is imperative that you watermark your DAI content with a separate SID code, as the ad loads are different and cannot credit to the Linear Program, Time Period, and C3/C7 ratings. This separate DAI code may be used on multiple platforms provided it originates from the same single watermarking device.  The DAI Flag feature (see section 5.5.2) may be used as an alternative to an assigned FD DAI SID and separate feed. The DAI SID or DAI Flag are used to exclude the viewing credit from the linear ratings. However, as of Sep 29, 2025, Nielsen offers a DAI Inclusion product, for which clients can opt-in.  This product will include DAI viewing in National Program and Time Period ratings, but not in C3/C7; and either the DAI Flag or the DAI FD SID will suffice for this product.

All Local and National Programming sources must maintain either Linear ad loads and associated Nielsen SID/CBET data or DAI ad loads with Nielsen SID/CBET codes on a 24/7 basis.  Nielsen Reporting systems do not allow for switching between the two different ad load platforms based on programming or day of week.

## 4.5. NATIONAL SYNDICATOR

National Syndicators use **Program Content (PC)** and **Layer 2 CBET** codes in their distribution to all partners airing their content. As with all Nielsen watermarking, the date and timestamp at the time of PC watermarking should be locked to an external source so there is never a duplication of SID/CBET/Date/Timestamp on any programming, even though the content may be aired hours or years later. All Program Content code must be time synced to the Eastern time zone while all CBET code must be time synced to Coordinated Universal Time (UTC).

All clients watermarking with syndicated Program Content code must provide feedpoint data to Nielsen identifying the programming information which corresponds to the encoded date and timestamps.
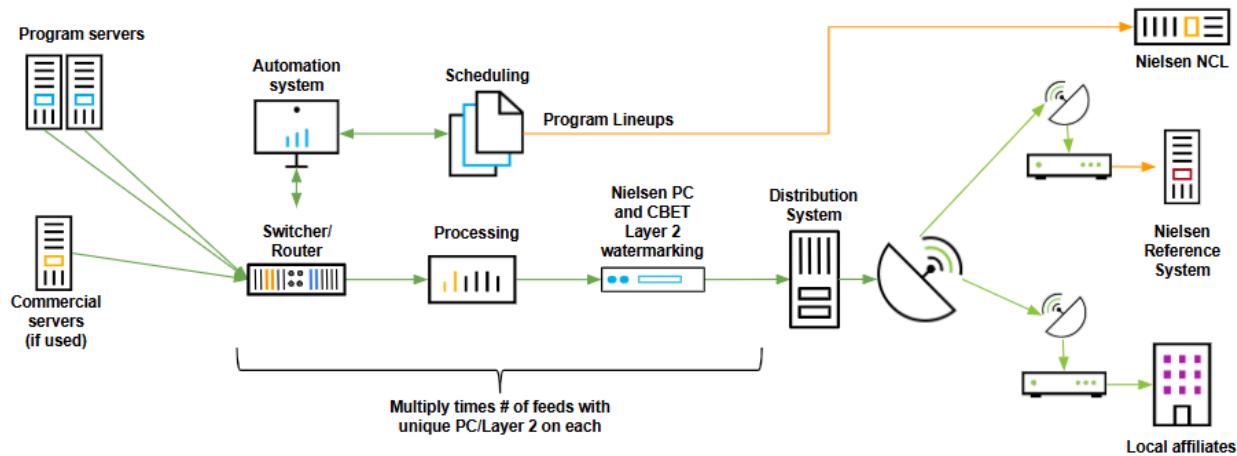
## 4.6.    REGIONAL SPORTS NETWORK

### 4.6.1.    Distribution to MVPD, vMVPD, or Streaming App/Website

The diagram below shows a Nielsen watermarking device configured for Final Distributor (FD) Watermarks and Layer 2 CBET codes.  A Regional Sports Network must not distribute to local affiliates.  If your distribution does not conform to this model, please contact Nielsen at encoders@nielsen.com for a solution.
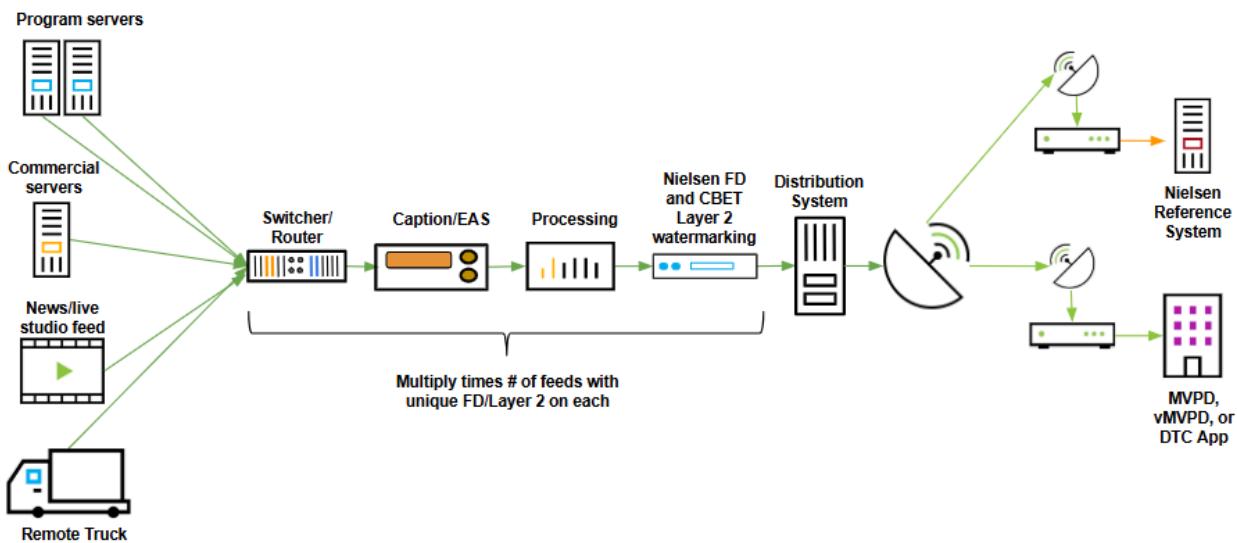


### 4.6.2.    Nielsen Watermarking on Alternate Feeds

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 and Layer 2 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 and Layer 2 code at that point.

These feeds should provide unique audio when not in programming, allowing the Nielsen watermarking device to generate audio codes 24/7.  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.

### 4.6.3. RSN Distribution Using Dynamic Advertising Insertion (DAI)

When a RSN is using Dynamic Ad Insertion (DAI) on any of their outgoing signal paths, these DAI enabled feeds MUST be watermarked uniquely using a Nielsen issued Final Distributor (FD) and Layer 2 CBET code combination designated for DAI and assigned to your station specifically. Only one unique DAI SID/CBET combination is required for any DAI feeds which share the same programming, even if they differ in specific ad load.

When using DAI on your feeds, it is imperative that you watermark your DAI content with a separate SID code, as the ad loads are different and cannot credit to Linear Program, Time Period, and C3/C7 ratings. This separate DAI code may be used on multiple platforms providing it originates from the same single watermarking device. The DAI SID is used to exclude the viewing credit from the linear ratings.

There is no option at present to include DAI viewing in Local Linear ratings.

All programming sources must maintain either Linear ad loads and associated Nielsen SID/CBET data or DAI ad loads with Nielsen SID/CBET codes on a 24/7 basis. Nielsen Reporting systems do not allow for switching between the two different ad load platforms based on programming or day of week.
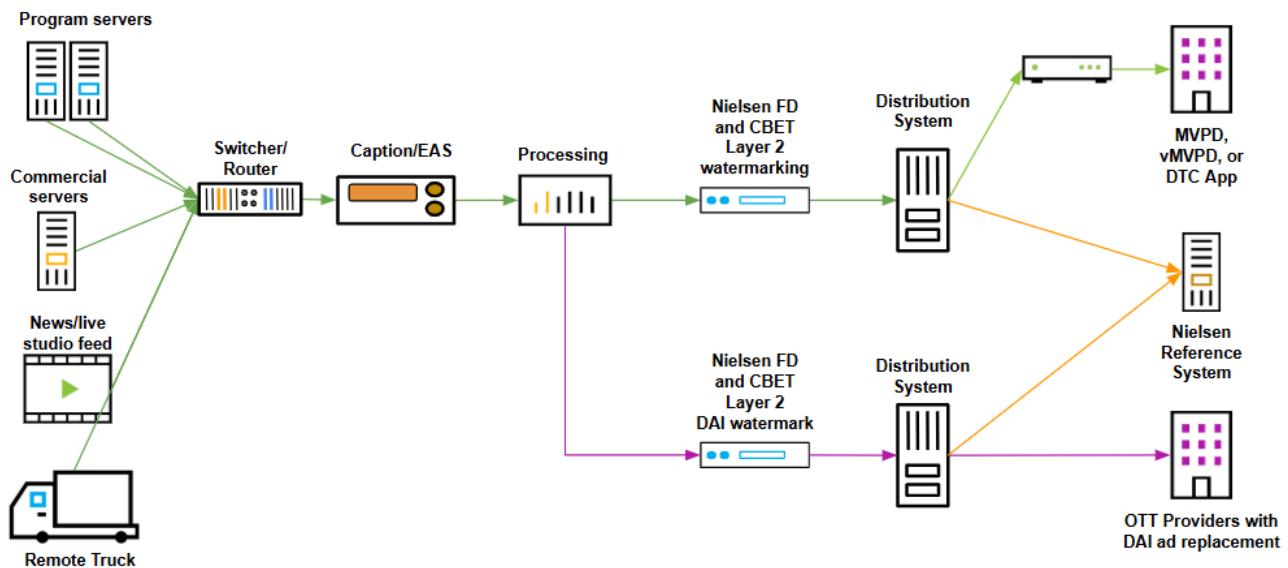
## 4.7.    LOCAL STATION

### 4.7.1.    Distribution as:

- **a National Broadcast Network (including "Diginets") Affiliate**
- **or as a National  Cable Network Affiliate**
- **or as a Local Cable Originator**
- **or as a Sports Network Affiliate**

Local Stations use **Final Distributor (FD)** Watermarks and **Layer 5 CBET** codes only in their distribution via Over-The-Air, MVPDs, vMVPDs, or via Streaming to Apps and Browsers. All FD code must be time synced to the local time zone while all CBET code must be time synced to Coordinated Universal Time (UTC). 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 devices for the same FD/L5 watermarks is against policy.

As with all Nielsen watermarking installations, the Nielsen watermarking device must be installed after all programming sources and switching for the distribution path, and prior to any distribution points.

The diagram below shows the placement of a Ross NWE-3GA in the signal path prior to the digital ATSC encoder.
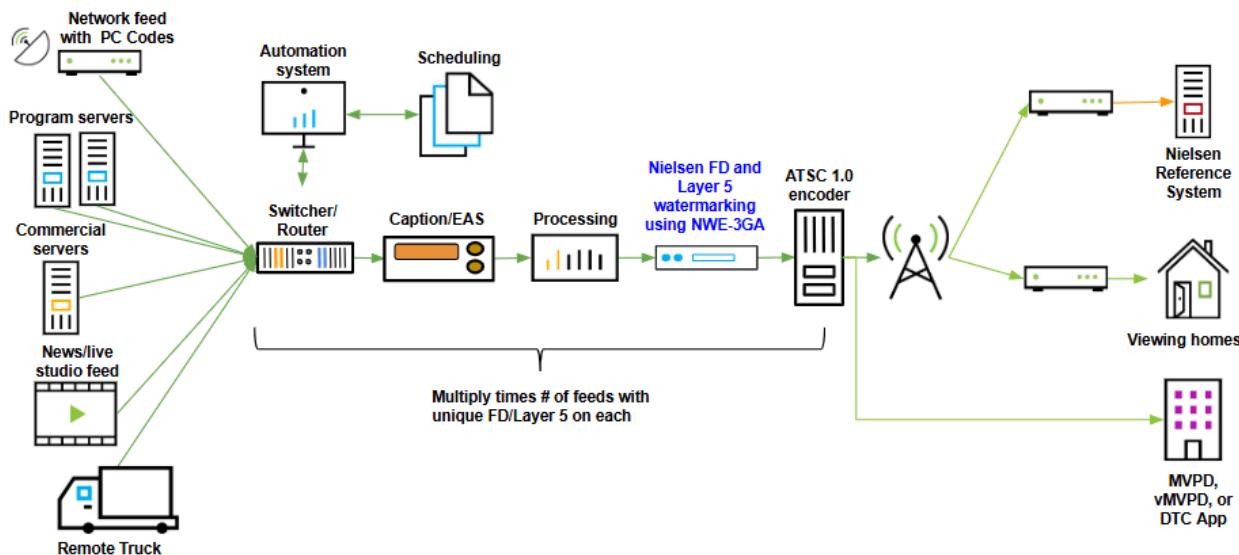
The diagram below shows the integration of the Nielsen watermarking SDK into your processing equipment, in the signal path prior to the digital ATSC encoder. The solution will provide both audio processing and Nielsen Watermarks.
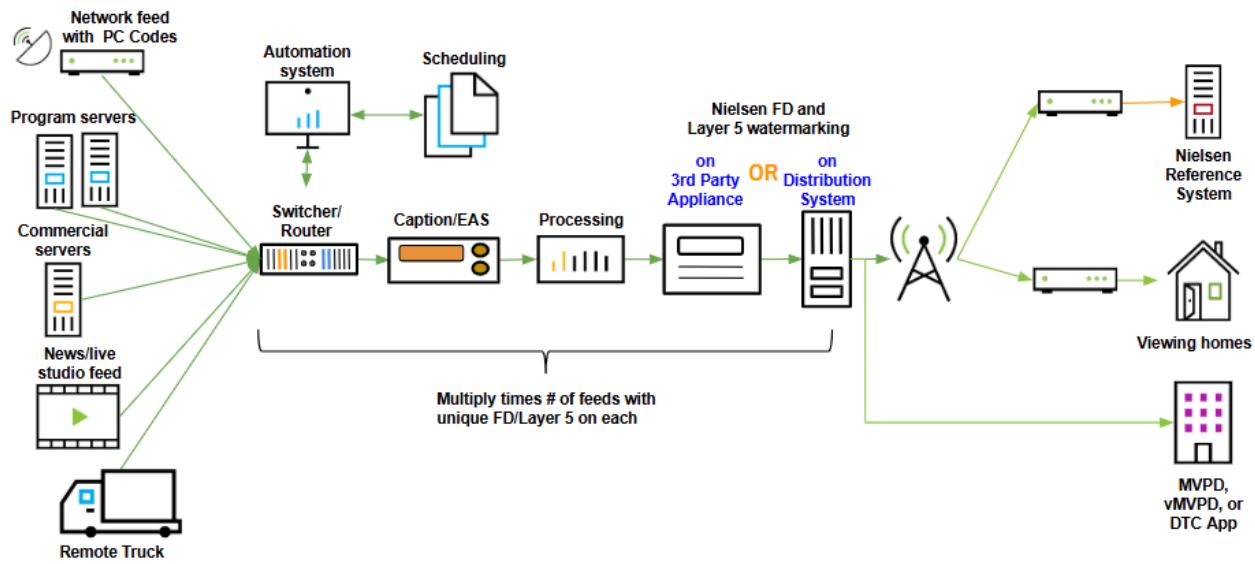


In the diagram below the placement of a Ross NWE-TS in the signal path after the digital ATSC encoder.
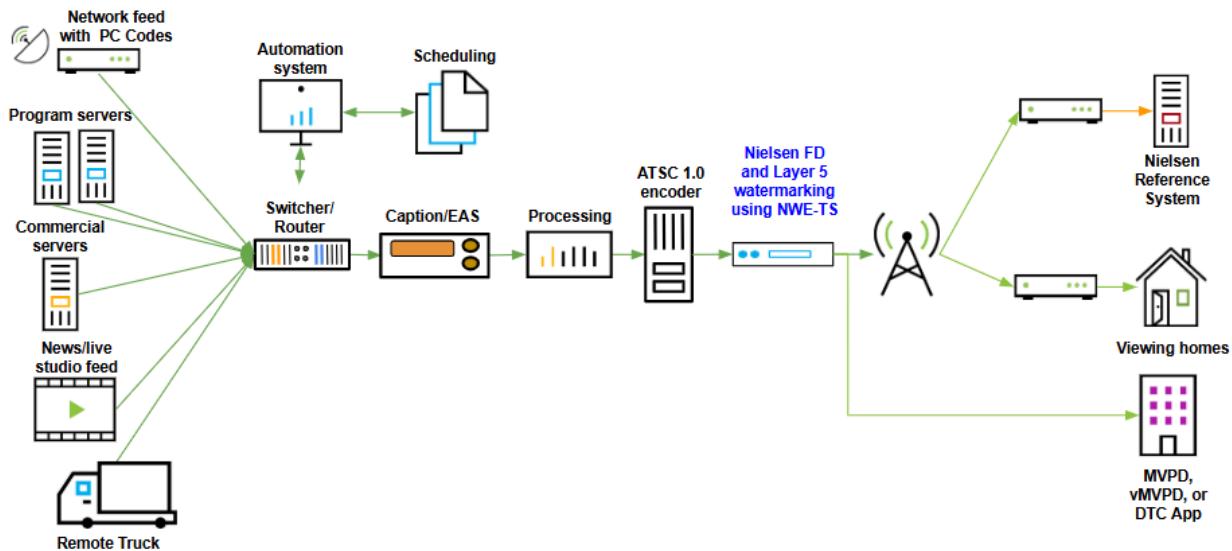
## 4.7.2. Distribution as Parent-Satellite Station

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 watermarking device and SID/CBET codes. This partial Satellite feed from the Parent to the Satellite station 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.

## 4.7.3.  Local Distribution Using Dynamic Advertising Insertion

When a Local Station is using **Dynamic Ad Insertion (DAI)** on any of their outgoing signal paths, these DAI enabled feeds MUST be watermarked uniquely using a Nielsen issued **Final Distributor (FD)** and **Layer 5 CBET** code combination designated for DAI and assigned to your station specifically. Only one unique DAI SID/CBET combination is required for any DAI feeds which share the same programming, even if they differ in specific ad load.

When using DAI on your feeds, it is imperative that you watermark your DAI signal path with a separate SID code, as the ad loads are different and cannot credit to Linear ratings.  This separate DAI code may be used on multiple platforms providing it originates from the same single watermarking device. The DAI SID is used to exclude the viewing credit from the linear ratings.

There is currently no option to include DAI viewing in Local Linear ratings.

**WARNING**:  Changing SIDs on a distribution path is a violation of this policy.  For instance, you may not watermark your content as linear but watermark your DAI ad load as DAI on that same signal path. This would inaccurately attribute viewing of the DAI signal path to the linear signal.

All Local and National Programming sources must maintain either Linear ad loads and associated Nielsen SID/CBET data or DAI ad loads with Nielsen SID/CBET codes on a 24/7 basis.  Nielsen Reporting systems do not allow for switching between the two different ad load platforms based on programming or day of week.
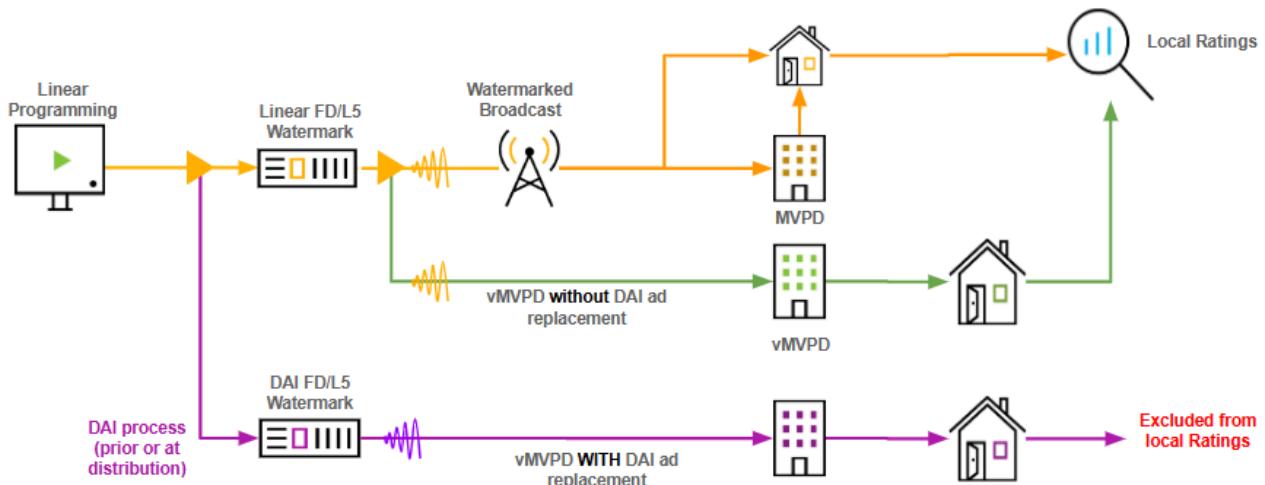
## 4.7.4. Simulcasting and Redistribution

In the absence of watermarking, the Nielsen meters use their passive metering engine (i.e. audio signatures) 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:

- Obtain a separate feed or alternate audio channel from the network that
- Contains a Nielsen-watermarked  program content (PC) code (syndicator code)
- Does not contain an FD code. After these conditions are met, the station can air the content.

The diagram below depicts the proper conditions under which Nielsen-watermarked 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 meters detect the codes in the content viewed by the household.
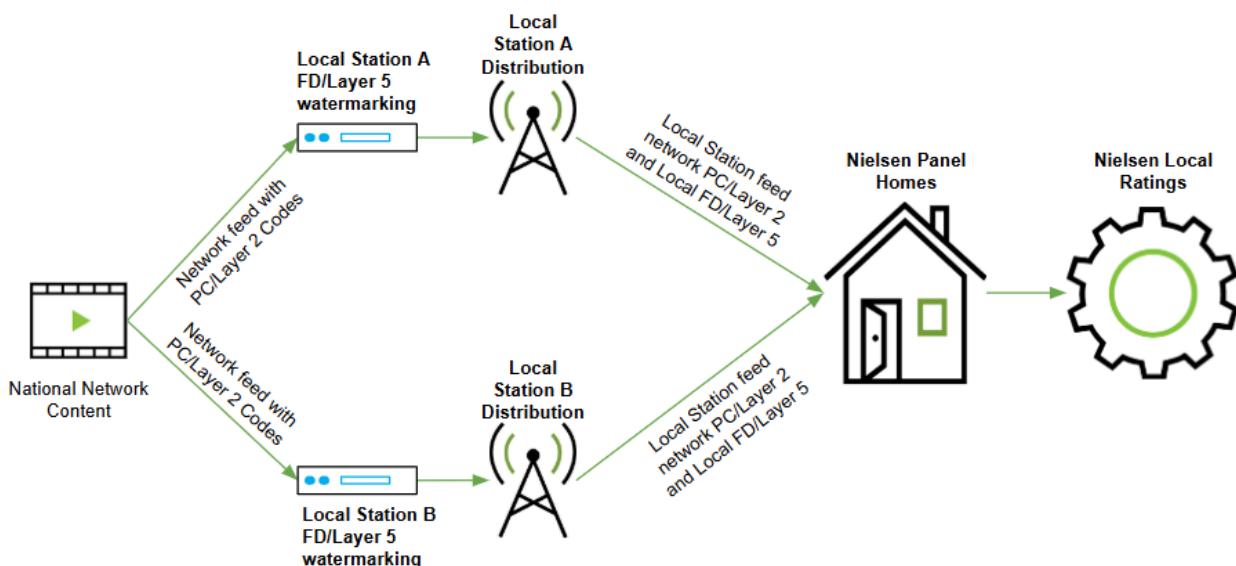


Compliant Scenario: Distribution of Content to Multiple Affiliates

# 5. VOD, OTT, and COMMERCIAL

## 5.1. VOD IN TV RATINGS

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. 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.  The legacy separate RT VOD FD SID still used by a few clients functions in the same manner, but is no longer supported for new installations.
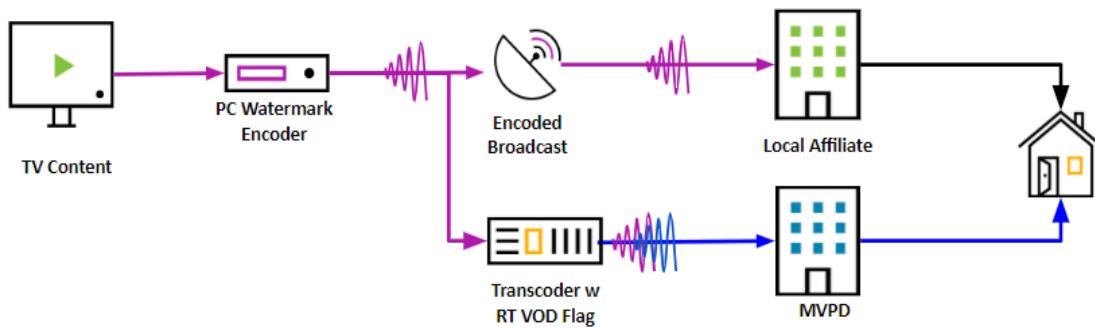


## 5.2. VOD CONTENT RATINGS

Nielsen's solution for VOD Content Ratings, for VOD scenarios that are not eligible to credit back to linear C3/C7 ratings because the linear ad load is not present, uses a file based software encoding approach. Unlike other Nielsen watermarking 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 watermarking process, which is vital to matching asset viewing to SID/TIC data for reporting.
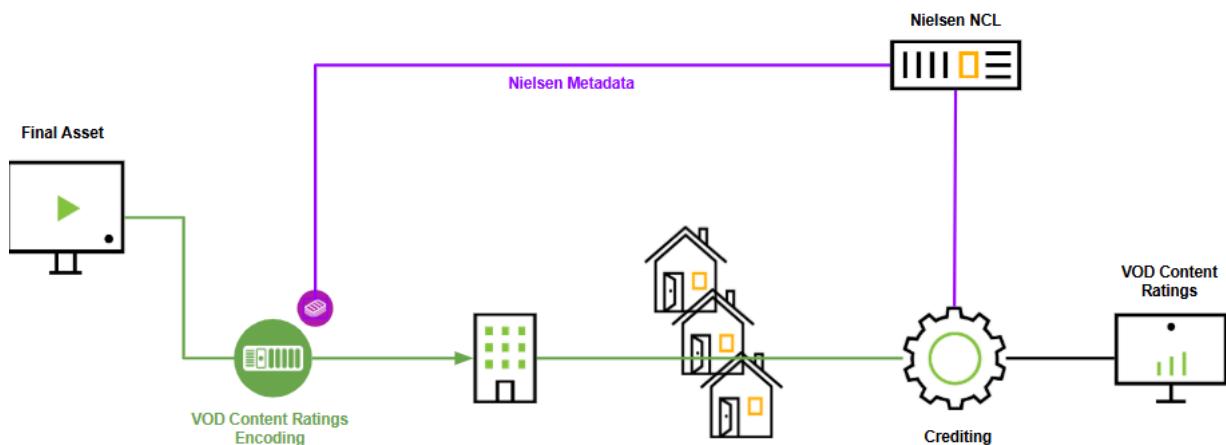
## 5.3.    DIGITAL TELEVISION RATINGS (DTVR)

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 are translated into ID3 tag information which is then read by our Software Development Kit (integrated into client applications available through web browser and connected devices). Demographic breaks are then assigned and calibrated using 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.    Watermark 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

## 5.3.1.    OTT with DTVR

The diagram below shows Nielsen watermarking present from the same Nielsen watermarking device 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.
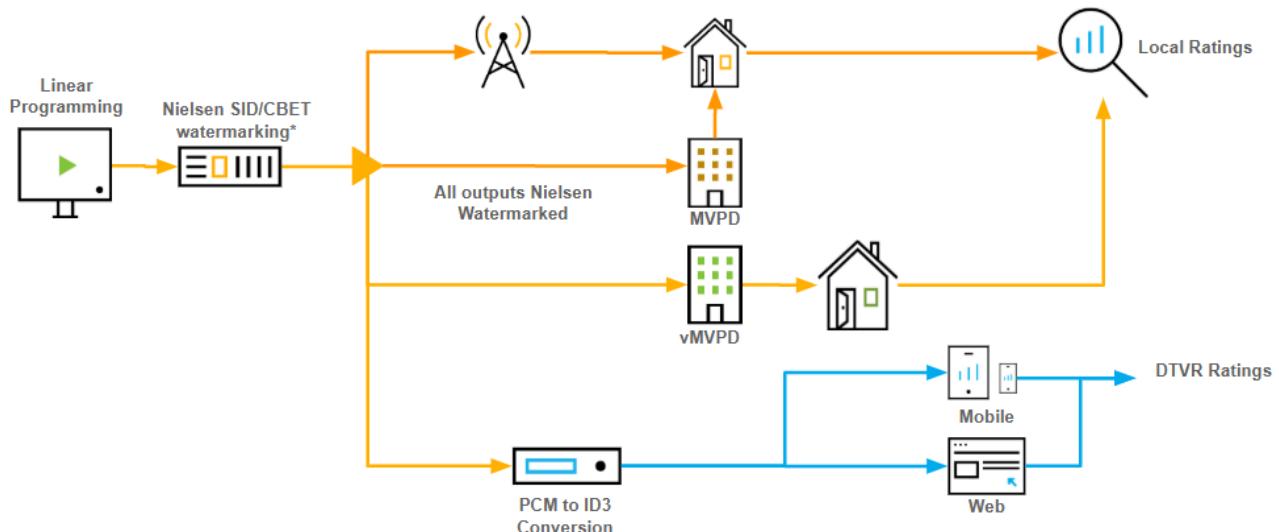


\* Must use the SAME single Nielsen Watermarking solution, unless there is a MVPD direct feed being broken out.

## 5.3.2. Dynamic Ad Insertion (DAI) with DTVR

And as with all DAI solutions, Nielsen requires a separate watermarking device with your uniquely assigned DAI PC/FD SID and Layer 2/Layer 5 CBET combination, as the ad loads are different and cannot credit to Linear Program, Time Period, and C3/C7 ratings.  As of Sep 29, 2025, Nielsen offers a DAI Opt-In product for National ratings that will include DAI viewing in Program and Time Period ratings, but not C3/C7.  This option is not available for Local ratings.



* Must use the SAME single Nielsen Encoder solution, unless there is a MVPD direct feed being broken out.
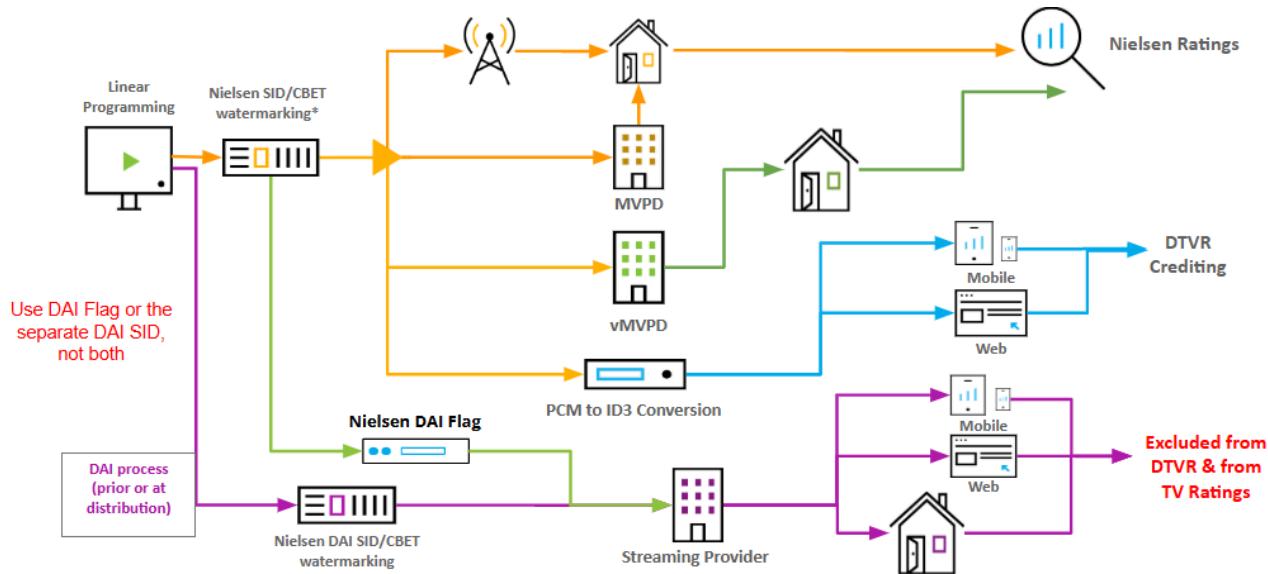
When using DAI on a feed, it is imperative that you indicate the ad loads are different. There are two options for accomplishing this:

- The first option is to watermark your DAI content with an assigned DAI SID code and its appropriate CBET layer. This DAI SID code should be inserted on an unencoded feed, illustrated by the purple path in the diagram above.
- The second option is to utilize our DAI Flag feature (see section 5.5.2) on a feed which contains your primary Nielsen FD SID code and its appropriate CBET Layer, illustrated by the green path in the diagram above.  The DAI Flag is not available for Local.

All Local and National Programming sources must maintain either Linear ad loads and associated Nielsen SID/CBET data or DAI ad loads with Nielsen SID/CBET codes on a 24/7 basis.  Nielsen systems do not allow for switching between the two different ad load platforms based on programming or day of week.

## 5.4. COMMERCIAL WATERMARKING

Nielsen has developed a method whereby clients of both N1 Ads and Nielsen Tracking Services can upload their commercial creatives to be encoded with the Nielsen watermark, at no cost.

Using the Nielsen Commercial Encoding Portal (NCEP), clients can upload the final version of their commercial (audio & video) in either MP4 or .MOV format, along with a metadata information such as ISCI, Brand Name, and Duration. Nielsen will then encode the commercial with the Nielsen commercial watermark technology (N2HF and NWCC codes) using our non-linear SDK and return it to the client to be downloaded and distributed at the client's discretion.  Nielsen will process the encoded commercial with no further action needed by the client.

This feature will be available starting April 2025.  For questions and to obtain access to the NCEP, please contact ncep@nielsen.com.

## 5.5. SPECIAL WATERMARK FLAGS

Certain watermark codes are reserved for use as flags.  These flags are generic to all stations and feeds that have opted in for the associated product and are to be used in conjunction with the linear FD Watermark.

| Purpose | NAES PC | NAES FD | CBET L2 | CBET L5 |
|---|---|---|---|---|
| RTVOD Flag (C3) | n/a | 32755 (N6 only) | n/a | 0003 (not used) |
| RTVOD Flag (C7) | n/a | 32756 (N6 only) | n/a | 0007 (not used) |
| DAI Flag | n/a | 32757 (N6 only) | n/a | 000b (not used) |
| Factory Default / Test SID | 255 | 9001 | 0x21234 | 0x51234 |
| Nielsen Use | n/a | 9002-9050 | n/a | n/a |
| InfoSID 1 | n/a | 32762 (N6 only) | n/a | n/a |
| InfoSID 2 | n/a | 32763 (N6 only) | n/a | n/a |
| InfoSID 3 | n/a | 32764 (N6 only) | n/a | n/a |
| Reserved | n/a | 32748 | n/a | n/a |
| Reserved | n/a | 16403 | n/a | n/a |

## 5.5.1. RTVOD Flag

The RTVOD Flag is used to break out the contribution to C3/C7 coming from VOD assets viewed with their national commercial load intact within the first 3 days (C3) or 7 days (C7) from the initial air date.

## 5.5.2.  DAI Flag

The DAI Flag can be used as an alternative to a separate DAI FD SID for National Broadcast and Cable networks.  It is not available for Local, Syndication, or Regional Sports Networks.  When the DAI Flag is used, the feed is encoded with the station's normal linear NAES 6 FD SID by either a hardware or SDK watermarking device.  Then the NAES 6 DAI Flag is inserted by another SDK watermarking device (hardware devices cannot insert the DAI Flag).  Note that the DAI Flag applies to FD only, not to PC SIDs.  The DAI Flag feature may be labeled as such in a watermarking device's user interface, or labeled as "N6 Only".

For example, a station providing a feed to a MVPD that has both traditional set top boxes (linear) and internet devices (DAI) normally would have to provide two feeds:  the linear for the set top boxes, and the DAI feed for the internet devices.  With the DAI Flag, the station can provide just the single linear feed.  The MVPD routes that to their set top boxes, but the MVPD inserts the DAI Flag on a second route to their internet devices.

For ratings purposes, Nielsen interprets the DAI FD SID and the DAI Flag identically:

| Ratings Product | Station Opts-In to DAI Inclusion | No Opt-in to DAI Inclusion |
|---|---|---|
| **National Program Ratings** | DAI viewing included | DAI viewing excluded |
| **National Time Period Ratings** | DAI viewing included | DAI viewing excluded |
| **National C3 / C7 Ratings** | DAI viewing excluded | DAI viewing excluded |
| **Local Ratings** | Not Applicable | Not Applicable |

## 5.6.  Streaming Content Ratings (SCR)

Streaming Content Ratings is a solution for measuring non-linear content on streaming services.  Nielsen identifies programs and episodes viewed through the TV glass via the National TV panel.

Assets which carry a linear watermark will be excluded from Nielsen's Streaming Content Ratings.

Assets which carry a VOD watermark will be included in Nielsen's Streaming Content Ratings.

## Streaming Platform Ratings (SPR)

Streaming Platform Ratings measures streaming at the individual app level using the Nielsen Streaming Meter, which captures streaming activity in Nielsen National TV Panel homes that occurs on the in-home network.

No enablement is required for an app to be measured for SPR.  However, the presence of linear and VOD watermarks associated with a specific streaming app are used for the following scenarios:

- For viewing on a streaming app that is available via a set top box,  the streaming app would receive the viewing credit.
- For viewing on an app subscribed within another host app, both the streaming app and the host app would receive viewing credit.

# 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 Automatic Gain Control (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 device 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 Nielsen watermarking device 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 Nielsen watermarking device 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 Nielsen watermarking device would have to watermark the program feed. Therefore, it is important to ensure that the audio going to the Nielsen watermarking device is in the correct operating range.

## 6.2. MULTI-BAND AUDIO PROCESSING, NOISE GATES, 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-watermarked 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.

**WARNING:  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

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.

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.

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

| Names | Description |
|---|---|
| **Burst** <br> **(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** <br> **(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 NWE-TS is consistently receiving 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 watermarking to properly insert codes. To optimize the watermarking 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 watermarking devices 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.

Please note that the bit rate can be higher than the required minimum bit rate, just not lower. It is possible that the watermarking device 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."

**<span style="color:red">WARNING: Failure to ensure the range meets this requirement minimizes the ability to watermark the content with Nielsen audio codes.</span>**

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.

The diagram below 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.   WATERMARKING SAP, AAP AND DVS

All media distributors using Nielsen watermarking are required to watermark 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**: Watermarking all the audio streams allows Nielsen to accurately credit tuning regardless of the audio selection made in the home.

**WARNING:  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. Nielsen watermarking devices 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 Nielsen watermarking device 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 watermarking process, correct management of DST transitions is extremely important.

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

1.   Watermarking Device 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 Nielsen watermarking devices are designed to automate DST transitions, verification is strongly recommended.
3.   Even if your external time reference source controls the DST transition, the Nielsen watermarking device may need to be configured for the correct DST transition days. Refer to the documentation for your Nielsen watermarking device and verify that the device 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 audio signatures. If these are unavailable, a potential exists for miscrediting.

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

## 6.11. CLOCK (TIME SYNCHRONIZATION)

**WARNING: Inaccurate time synchronization can result in crediting errors such as miscrediting.**

The watermarking 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 Nielsen watermarking device 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 device must be synchronized to a highly stable time reference standard within plus or minus 2 seconds. Failure to do so could result in inaccurate ratings and Nielsen will not reprocess for station clock synchronization errors.

All Nielsen watermarking devices 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 Nielsen watermarking device is connected to a LAN, no other hardware connections are necessary for an external time reference source. The device, however, must be configured for NTP operation and connect to a single NTP server at an IP address that you specify.

You should 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 Watermarking 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 Nielsen watermarking device to verify whether its LTC input is balanced or unbalanced and that the device is correctly configured for LTC. Also, check that the LTC source provides the required input voltage range for the watermarking device.

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 watermarking devices should be enabled or disabled according to the capabilities of the system in the facility.

The issue documented is with a NWE-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 your 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 your station must operate at a reduced power level for an extended period, your station must notify Nielsen at encoders@nielsen.com.

Nielsen recognizes that operating at reduced power is rarely planned. Because such an operation affects the crediting of your data, however, keeping Nielsen 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.

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 refer to:
https://www.atsc.org/standards/atsc-3-0-standards/

Nielsen Watermarking technologies are fully compatible with ATSC 3.0 standards and survive ATSC 3.0 compression. 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.

**WARNING:  Do not uniquely watermark your ATSC 3.0 signal.  This will result in a loss of viewing data  to the ATSC 3.0 source.**

# ATSC 3.0 Compliant Installation:
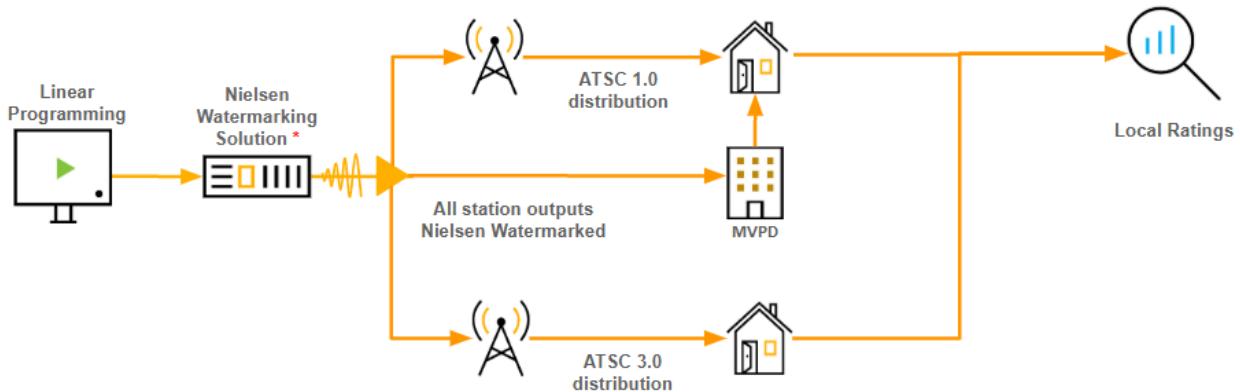


Linear Programming → Nielsen Watermarking Solution * → ATSC 1.0 distribution → MVPD → Local Ratings

All station outputs Nielsen Watermarked

ATSC 3.0 distribution

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

# ATSC 3.0 Non-Compliant Installation:
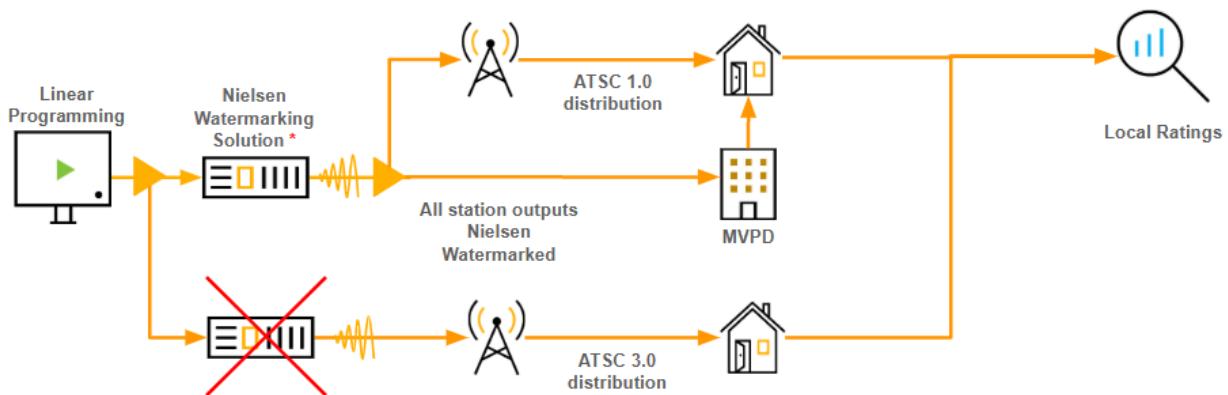


Linear Programming → Nielsen Watermarking Solution * → ATSC 1.0 distribution → MVPD → Local Ratings

All station outputs Nielsen Watermarked

ATSC 3.0 distribution

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

# 7. SPECIAL REQUIREMENTS FOR UNIQUE INSTALLATIONS

## 7.1. MVPD PROVIDED DIRECT FEEDS WITH REPLACED COMMERCIAL CREATIVE CONTENT

Multiple Video Program Distributors (MVPD) have 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.

### 7.1.1. USING THE SAME NIELSEN WATERMARKING DEVICE

Solution One is outlined below. In this configuration the commercial server is installed downstream of the Nielsen watermarking device, 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 unwatermarked 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.
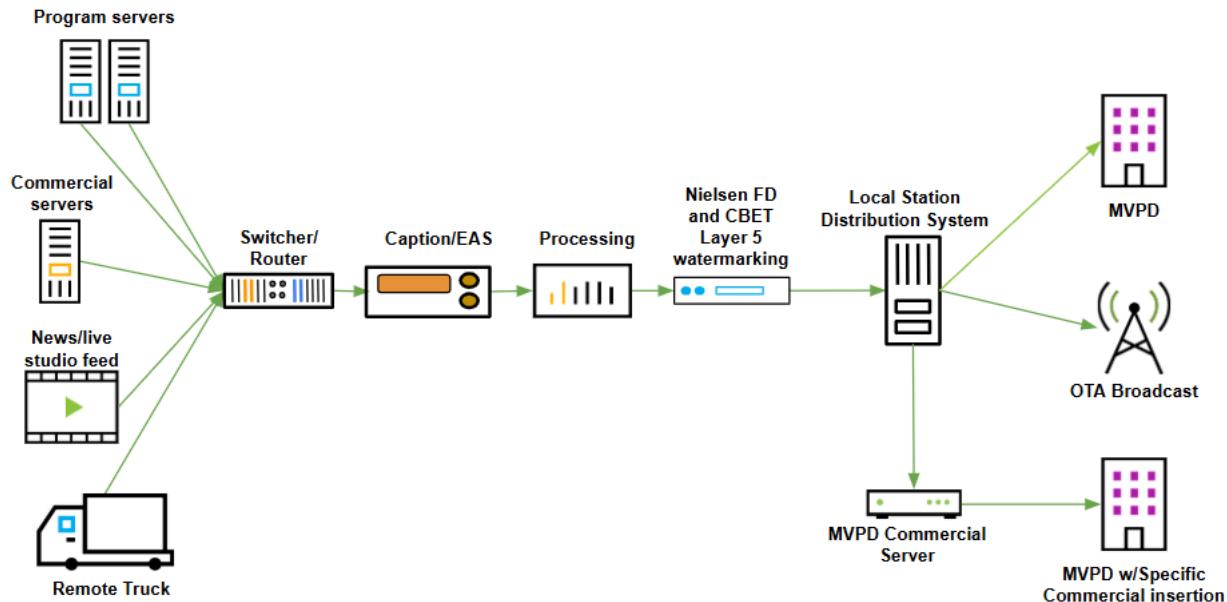
## 7.1.2. USING A SEPARATE NIELSEN WATERMARKING DEVICE

Solution Two includes a separate Nielsen watermarking device 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. This solution will ensure that Nielsen can identify and credit tuning by Nielsen codes during these commercial durations.
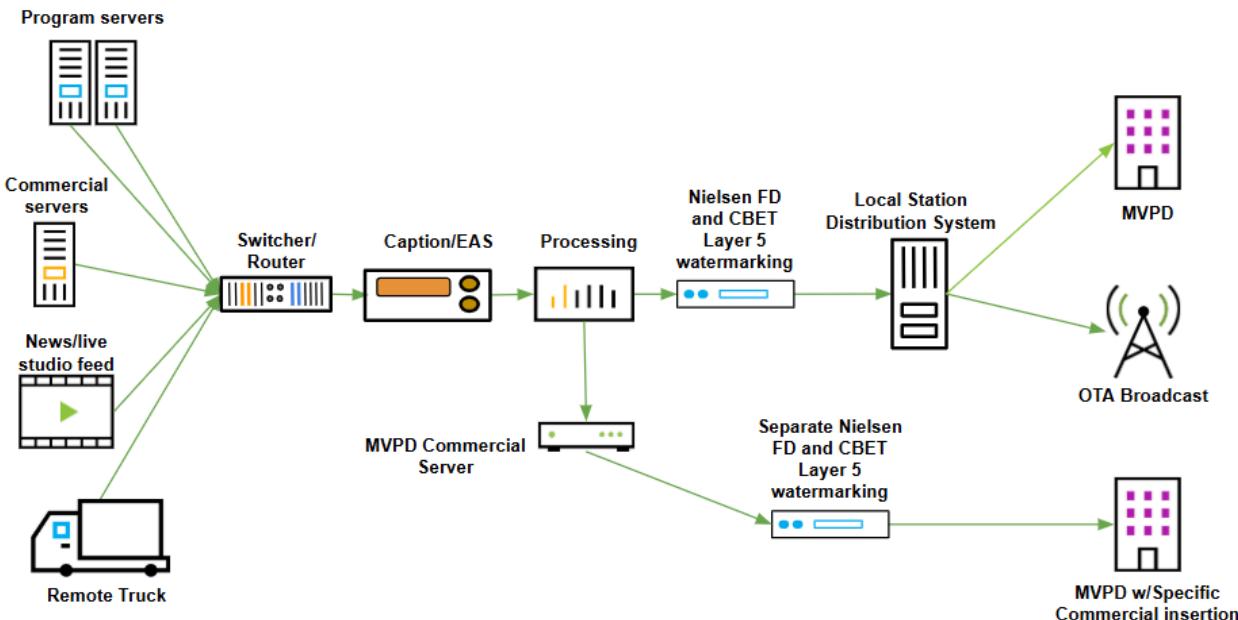


Solution Three allows the use of a single SDK instance, but encoding the separate watermarks on separate audio PIDs.
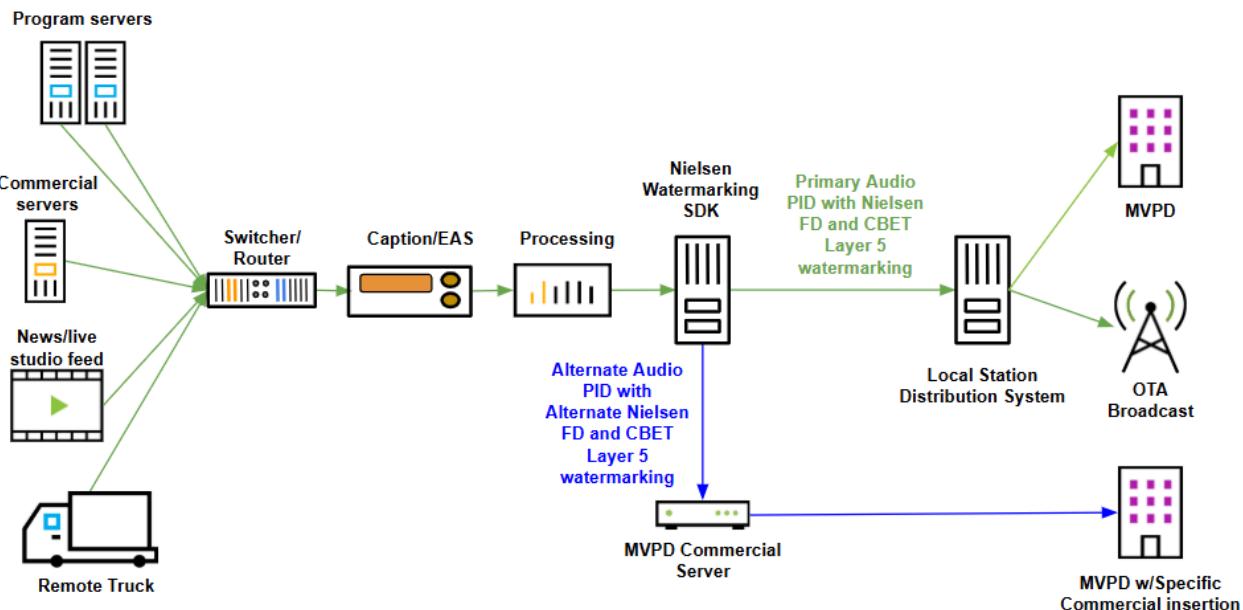
## 7.1.3. NON-COMPLIANT INSTALLATION

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

The risks here are multiple and will result in lost or mis-credited data for the client. Since Nielsen will be unaware of this watermarking device, we will be unable to recommend corrective action.

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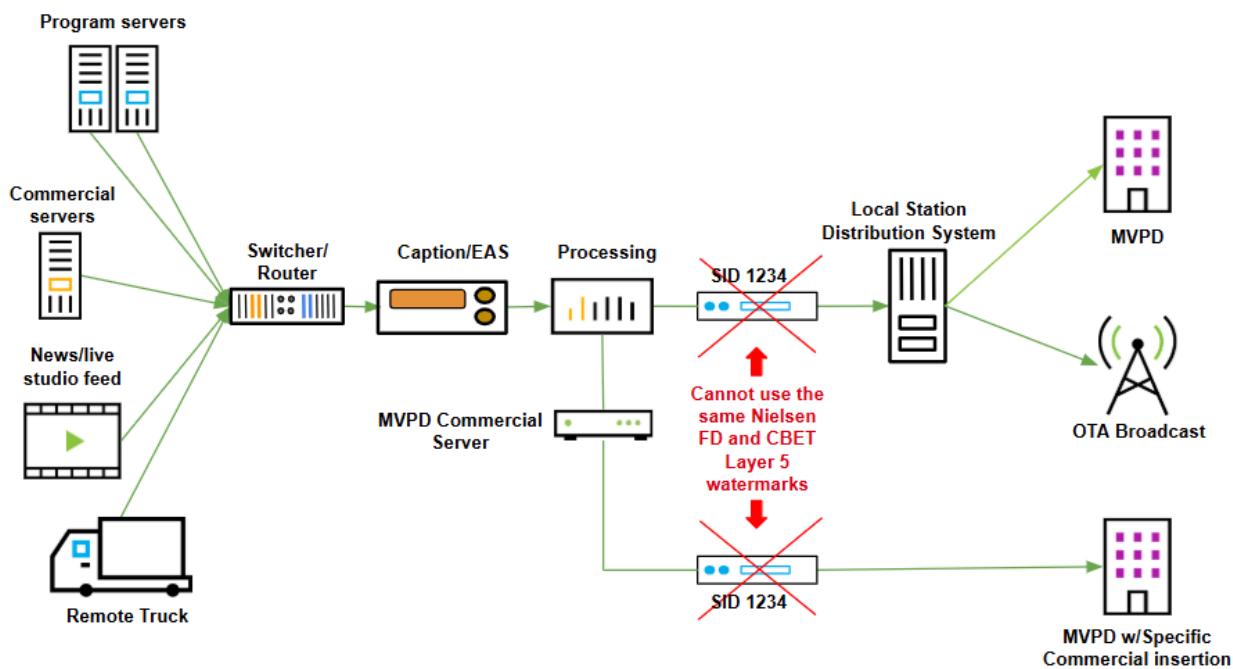
## 7.2.  SOLUTION FOR MVPD DELAYED FEEDS

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 local station MUST provide a unique Nielsen Final Distributor (FD) watermarked feed to the MVPD and not a feed with the same FD SID used for Over The Air transmission.
●        The watermarking device clock on the unique feed must be offset to match the delayed feed so programming and Nielsen FD code are delayed by the same amount of time.

To implement the necessary procedures, ask your Nielsen Client Representative to submit a Change Request. The high level diagram below represents the needed solution, please contact Nielsen at encoders@nielsen.com  for clarification if this solution meets your network needs.
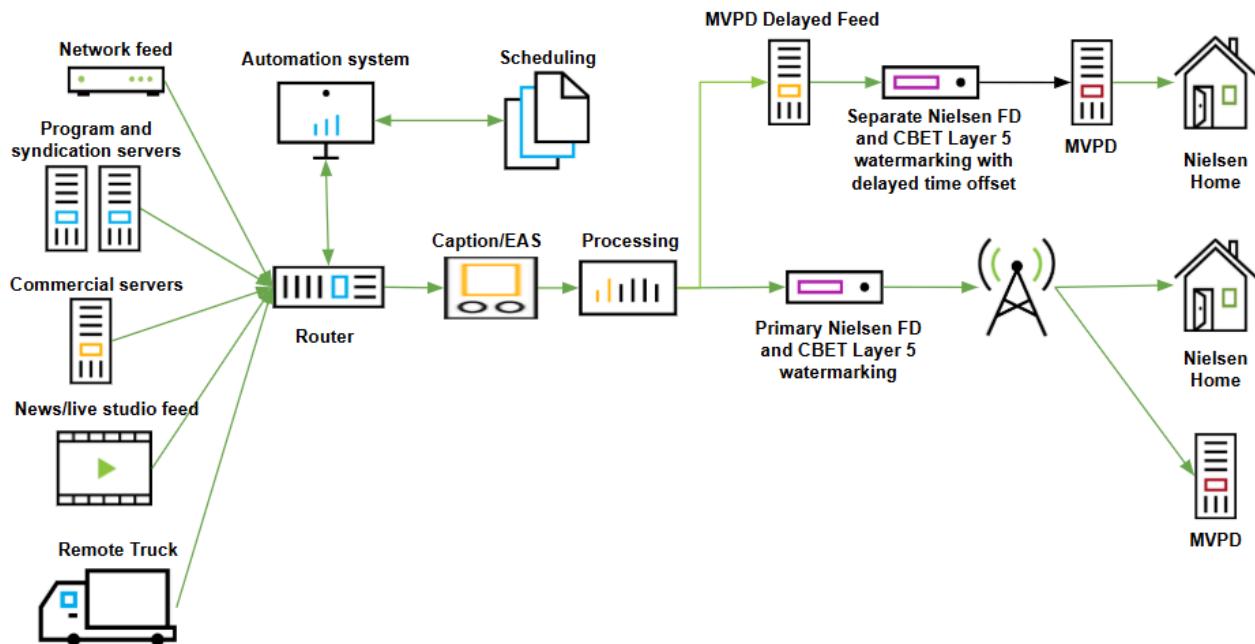


Compliant Scenario: MVPD Delayed Feed

# 8. NON-COMPLIANT INSTALLATIONS

## 8.1. CASCADED NIELSEN WATERMARKING - DEVICES 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 Nielsen watermarking devices must not be installed in series in the same physical distribution path. Following this rule prevents bleed-through of an upstream SID.

To provide Nielsen with correct and accurate code, cascaded Nielsen watermarking must be avoided.

Potential issues that can occur with Cascaded Nielsen Watermarking are:

○ Bit Flipping - The upstream SID Code can bleed through, or toggle in, causing a mis-credit

○ Cascaded Devices online - It is possible that the upstream watermarking device may have a time issue.  If the downstream device has an issue, the station could credit using the incorrect date/time stamp.

Examples of cascaded installations to be avoided:

### 8.1.1. DUPLICATE SID/CBET CODES ONLINE

Having two watermarking instances both online at the same time in the same stream (such as a primary and a backup where one is not in bypass mode) creates a cascading watermarking situation.

Two watermarking instances with the same SID/CBET code on separate viewer-consumable signal paths (unless solely used for disaster recovery) also creates a cascading watermarking situation.

### 8.1.2. SD to HD or HD to SD

Any upconvert or downconvert where there is a second Nielsen watermarking device 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 watermarking will provide separate paths to avoid this issue. If you have any questions, please contact Nielsen at encoders@nielsen.com  directly.

### 8.1.3. SAP, AAP or DVS

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

### 8.1.4. FD WATERMARKING FOLLOWED BY PC WATERMARKING

FD watermarking must never precede PC watermarking.  FD watermarking performed first fills all available PC code slots.  The subsequent PC watermarking device is then unable to insert PC code.

### 8.1.5. TWO WATERMARKING DEVICES IN SERIES OF THE SAME SID AND SID TYPE

You may not install  multiple Nielsen watermarking instances of the same code type, in any combination of PC/FD/CBET, on the same signal path.

## 8.2. UNWATERMARKED DISTRIBUTION PATHS AND AUDIO STREAMS

The example below shows an unwatermarked path.  When a panelist is tuned to an unwatermarked path, our meters cannot identify code. 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 (For instance, we cannot match English audio to a HH (Household) listening to the SAP in Spanish, which is why watermarking SAP is important).  If we can't match the programming by code or by signatures, reduced crediting can result.  Also note that audio signature matching is not available for DTVR credit on mobile and PC devices.
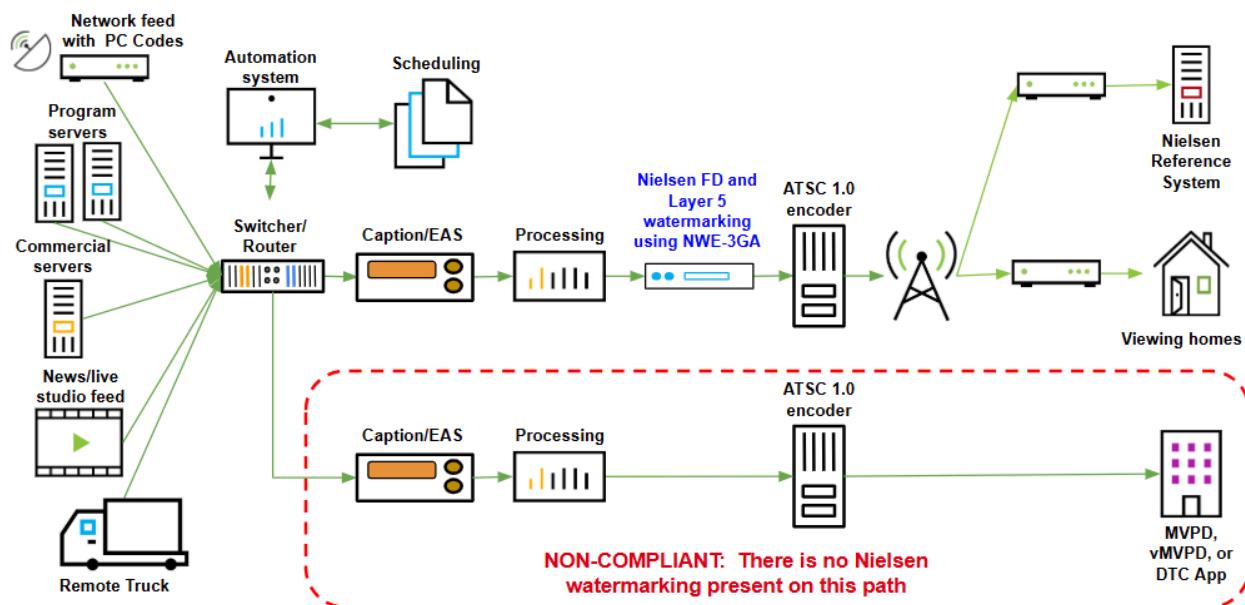
## 8.3. UNWATERMARKED DISASTER RECOVERY FEEDS

Many facilities have disaster recovery feeds to remain on-air during equipment failure, maintenance, or upgrade of the primary feed. Nielsen watermarking devices 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 watermarking device as the SID for the primary path that it bypasses.

The example below shows a backup path that is not watermarked. The result is that the content on their backup path contains no audio code. This situation can produce reduced or no crediting.
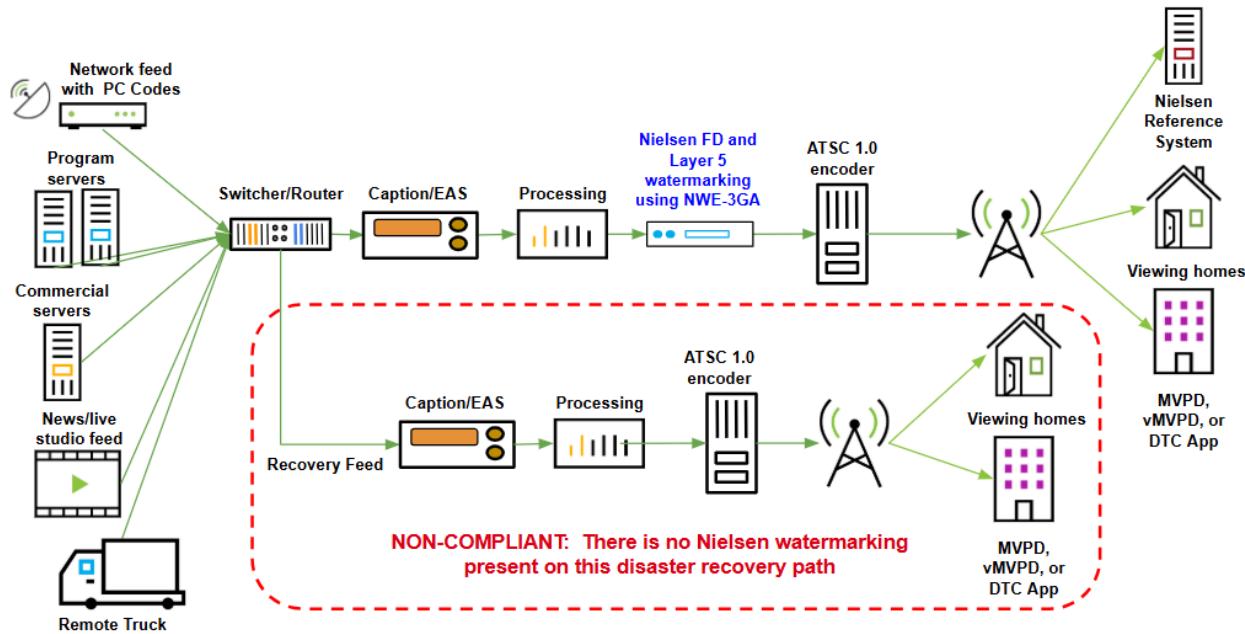
# 9.   WATERMARK VERIFICATION AND ALERTING

## 9.1.   REFERENCE FEEDS

National Broadcasters, national cable networks, regional sports networks, syndicators, and Direct- to-Consumer streaming networks must provide a 24/7 watermarked signal reference feed to Nielsen for each uniquely watermarked signal.  This enables Nielsen to:

- Validate your watermarks upon implementation for correct code and timestamps.
- Notify you if an issue in your watermarks is detected.
- Build a reference data library for watermark and audio signature matching during the crediting process.

**NOTE:**  It is the client's responsibility to ensure properly watermarked signals are leaving their facility.

## 9.2.   WATERMARKING ALERT CLIENT NOTIFICATION

The Nielsen Company requests all Nielsen Watermarking clients to create and maintain a Watermarking 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 who need to receive notifications for watermarking failures. Nielsen will use this distribution list to send all watermarking-related notification emails to the client.

When the absence or inaccurate watermarking information is detected on a signal received by the Nielsen Reference system, the system generates alerts to notify Nielsen personnel that the watermarking device's information was missing from or incorrect on the signals.  Nielsen will triage these alerts and notify clients if client action is necessary to resolve the situation.

**Please follow the steps below to produce and send a Watermarking Alert Distribution List to Nielsen.**

1.  Identify the individuals who need to be contacted for all watermarking-related alert notifications. Nielsen suggests 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

2.  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.

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

## 9.3.  NIELSEN AUDIO CODE ANALYSIS TOOL (NACAT)

NACAT is an application that captures audio, decodes Nielsen audio codes, logs and displays the information to the user.  The primary information that is decoded by NACAT are program content (PC), final distributor (FD), layer 2 CBET, layer 5 CBET, time stamp, watermarked channel (left or right), source identification number (SID), type of watermarking (commercial or non-commercial) and DST or standard time. NACAT is available for download at

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

## 9.4.  NIELSEN CONTACT INFORMATION AND RESOURCES

| Nielsen Support | Location |
|---|---|
| **Client Engineering Watermarking and Encoders** | Nielsen<br>501 Brooker Creek Blvd Oldsmar, FL 34677<br>800-537-4872 option 2<br>encoders@nielsen.com |
| **Engineering Client Portal** | https://engineeringportal.nielsen.com/docs/TV |
| **ATSC Documentation** | https://www.atsc.org/documents/ |
| **All Other Questions** | Nielsen Client Help Desk<br>clientsupport@nielsen.com<br>1-800-423-4511. |

# 10. GLOSSARY

| Term | Definition |
|---|---|
| AAP | Alternate Audio Program |
| ATSC | Advanced Television System Committee |
| Broadcast Network | A broadcast network is a program distributor contractually engaging with stations or cable outlets to carry the network programming to secure national carriage of programming. A narrower FCC definition states that a network distributes at least 15 hours of original programming per week to affiliates. |
| Broadcast Network Affiliate | A broadcast network affiliate is a broadcast station or local cable channel (including network-owned and -operated stations) that airs network programs and national commercials. |
| CBET | Critical Band Encoding Technology |
| CSID | CBET Source Identifier, a colloquial term for a CBET media code. |
| DAI | Dynamic Ad Insertion.  In DAI, the national ad load is different than the linear ad load, or modified from it,, before being passed to the viewer, either by a MVPD, vMVPD or in a Direct to Consumer (DTC) stream. |
| DST | Daylight Savings Time |
| DTC or D2C | Direct to Customer.  A stream provided over the internet to the viewer by an originator, within using an intermediate MVPD or vMVPD.  FAST channels are a subset of DTC. |
| DTVR | Digital TV Ratings |
| DVS | Descriptive Video Service |
| Encoder | A physical device or set of software that inserts an identifying code in the audio or video content of distributor events to identify those events as a specific program, commercial, or other item. Hardware encoders are manufactured by outside vendors. Nielsen also provides watermarking software to vendors and content providers that places the identifying code on the audio or video content for future retrieval and use by Nielsen. Nielsen frequently uses the term "watermark" as a synonym for "encode." |
| FAST | Free Ad-Supported Television.  FAST channels are distributed via the internet directly to customers (viewers) and are as-supported rather than subscription-based. |
| Final Distributor (FD) | A television broadcaster or network that aggregates and distributes television content to TV viewers. |
| Final Distributor Code | Identifies the last distribution outlet for the content. Examples of such outlets include cable networks such as ESPN and CNN and local broadcast stations such as WFLA and WABC. Cable and satellite MSOs are not final distributors because they simply receive content from a final distributor and distribute it to viewers. |
| HD | High Definition |

| | |
|---|---|
| **Hybrid Networks** | Networks that have both over-the-air broadcast station distribution and direct cable/DBS distribution. |
| **Local Cable Origination** | Local cable origination refers to sources typically used by cable services for originating signals that are not satellite-fed. The signals may be local weather, local sports, or other programming and may be aired on a single head end or a service of regional interest. These sources are initiated by a multiple service operator (MSO) and aired on multiple head ends. They are also the sources that represent the cable channels that carry network programming, but may insert some of their own programming. |
| **Linear** | Linear programming traditionally referred to Over the Air (OTA) broadcast or cable, wherein the national ad load was passed through unchanged to the viewer. That meaning has persisted even for streaming (which technically speaking is digital, not linear) to indicate that the national ad load is passed through unchanged to the viewer over the stream. When the national ad load is changed via Dynamic Ad Insertion (DAI), we refer to the feed or stream as a "DAI feed" or "DAI stream". Thus the term "linear" has come to essentially mean "non-DAI". |
| **LTC** | Longitudinal Time Code |
| **MVPD** | Multichannel Video Programming DIstributor |
| **NACAT** | Nielsen Audio Code Analysis Tool |
| **NAES** | Nielsen Audio Encoding System |
| **NTP** | Network Time Protocol |
| **OTA** | Over The Air |
| **OTT** | Over The Top, referring to media content that is delivered over the internet, without the involvement of traditional cable or satellite TV providers. |
| **Parent / Satellite Relationship** | A parent station provides source programming for rebroadcast on a nearby station, which is called the satellite. For a station to receive FCC-sanctioned satellite status, it must meet the following criteria:<br>There is no City Grade overlap between the parent and the satellite.<br><br>The proposed satellite would provide service to an underserved area.<br><br>No alternative operator is ready and able to construct or to purchase and operate the satellite as a full-service station. |
| **Program Content Code (PC)** | Code that identifies the distribution sources for the program content prior to final distribution. Video content can pass through many distribution sources prior to final distribution, such as a national broadcast network distributing content to all of its affiliates. Broadcast networks, syndicators, and television studios may each add program content codes to show their places in the distribution chain. |
| **SAP** | Secondary Audio Program |
| **SD** | Standard Definition |

| | |
|---|---|
| **Service Carried** | Service carried refers to the distribution source of a service being re-broadcast over the air through a broadcast digital signal of a broadcast digital transmitter; for example, ESPN on WFLA-DT3. It is assigned to digital channels when 100% of their signal (programming and commercials) is simulcast from another source. For a broadcast digital signal, this source is something other than its analog feed—these would be identified as analog/digital simulcast. Service carried is also assigned to cable outlets that carry 100% of a network-supplied signal. |
| **SID** | Source Identification Code. A unique number assigned to each programming stream and which is encoded into the audio signal. |
| **US** | United States |
| **vMVPD** | Virtual Multichannel Video Programming Distributor |
| **VOD** | Video On Demand |

# 11. REVISION HISTORY

| Date | Revision | Changes Made |
|------|----------|--------------|
| Nov2025 | I | Authors:  Mike Gorham, Justin Manley, Kevin Rini<br>Approver:  Mike Gorham<br><br>Added policy regarding the DAI Flag feature (released in Sep 29, 2025) to various sections and description of flags in section 5.  Clarified simulcasting policy in section 4.2.7 and 4.3.6.  Added descriptions of all CBET layers for completeness. |
| Mar 2025 | H | Authors:  Joseph Belflower, Mike Gorham,  Justin Manley, Mark Newcomer, Adam Pinney, Korie Robertson<br>Approver:  Mike Gorham<br><br>Restructured document for easier use.  Added specific sections for streaming and DAI.  Removed duplication and redundant statements.  Applied consistent look and feel for diagrams. |
| Apr 2022 | G | Authors:  Justin Manley, Korie Robertson, Tom Welch<br>Approver:  John Magdziasz<br><br>Added instructions for DAI. Incorporated the Internet Distribution Policy Supplement (which is hereby deprecated) into the main document. |
| 2012-03-09 | F | Replaced "The Nielsen Company" with "Nielsen" except in the copyright and trademark statements. Reworded introduction. Extracted encoder comparison and selection charts to a separate document, Encoder Selection Chart. Removed Installation Scenarios and Noncompliant Encoder Setups sections, encoder placement in different facilities sections, NAVE II- and NAVE IIc-specific sections. Extracted information specific to the NAVE II and created the document, Supplement to the Encoding and Configuration Policy—NAVE II. Substituted "Nielsen encoding technology (or solutions) for NAVE," as appropriate. Created "Basic Diagrams" section. Added "Cascaded Nielsen Encoding" to "Non-Compliant Installations" section. Added link to new documentation section on Encoder Forum. Moved remaining installation considerations and Reduction of Station Power Levels to the new Compliant Installations section. Rewrote summary of steps for installing an encoder. Removed all but the introductory paragraphs from the Monitoring of Encoded Data and Alarms section, checklist items that referred to deleted sections, and contact information for third-party vendors. Per input from the Legal Department, updated the paragraph on confidentiality of information during support conversations. Added the supplement, Internet Distribution Policy. Replaced Figure 9 with the correct figure for Neural MultiMerge. |
| Feb 2012 | Supp | Author and Approver:  David Wright<br><br>Supplement to Encoding Installation and Configuration Policy - Internet Distribution Policy |
| 2011-01-20 | E | Added section on noise gates. |
| 2010-04-28 | D | Revised DialNorm and Dialog loudness values in Audio Processing section. Added new Transmission Considerations section with policy information on reduction in power levels. Removed "amol" email address from contacts. Added reference to the Nielsen Encoder Forum. Added new items to the checklist for reduction in power levels and "All mandatory encoder configuration settings have been confirmed." |

| | | |
|---|---|---|
| 2009-11-18 | C | Updated simulcast section to reflect current policy on overwrite. Added sections on audio processing, studio equipment, and EAS audio processing and new checklist items for audio processing and EAS audio processing, and for optimizing and proofing an OTA transmitter on a regular schedule. Added a glossary. |
| 2008-11-13 | B | Changed title. Replaced "Nielsen Media Research" with "The Nielsen Company" or "Nielsen." Changed "station, "network," and cable" to "distributor," where appropriate. In Statement of Policy, added "service" to "per service agreements." In Related Documents, removed Encoding and Station Lineup Requirements. Updated Nielsen email. Reworded alert regarding changes to the plant configuration. Corrected simulcast scenario and reworded statement regarding overwrite. Removed "1" from "MPEG2 audio (layers 2 & 3)." Removed second paragraph from Audio Processing section because it duplicated the Statement of Policy. |
| 2008-10-10 | A | Initial version.  Replaces "Encoder Best Practices guide Rev B" |