OpenCable™ Specifications
Audience Measurement

Audience Measurement Data Specification

OC-SP-AMD-I01-130502

ISSUED

DISCLAIMER

This document is published by Cable Television Laboratories, Inc. ("CableLabs®").

CableLabs reserves the right to revise this document for any reason including, but not limited to, changes in laws, regulations, or standards promulgated by various agencies; technological advances; or changes in equipment design, manufacturing techniques, or operating procedures described, or referred to, herein. CableLabs makes no representation or warranty, express or implied, with respect to the completeness, accuracy, or utility of the document or any information or opinion contained in the report. Any use or reliance on the information or opinion is at the risk of the user, and CableLabs shall not be liable for any damage or injury incurred by any person arising out of the completeness, accuracy, or utility of any information or opinion contained in the document.

This document is not to be construed to suggest that any affiliated company modify or change any of its products or procedures, nor does this document represent a commitment by CableLabs or any cable member to purchase any product whether or not it meets the described characteristics. Nothing contained herein shall be construed to confer any license or right to any intellectual property, whether or not the use of any information herein necessarily utilizes such intellectual property. This document is not to be construed as an endorsement of any product or company or as the adoption or promulgation of any guidelines, standards, or recommendations.

Document Status Sheet

Document Control Number:	OC-SP-AMD-I01-130502			
Document Title:	Audience Measurement Data Specification			
Revision History:	I01 - Released 5/2/13			
Date:	May 2, 2013			
Status:	~~**Work in Progress**~~	~~**Draft**~~	**Issued**	~~Closed~~
Distribution Restrictions:	~~Author Only~~	~~CL/Member~~	~~**CL/ Member/ Vendor**~~	**Public**

Key to Document Status Codes

Work in Progress	An incomplete document, designed to guide discussion and generate feedback that may include several alternative requirements for consideration.
Draft	A document in specification format considered largely complete, but lacking review by Members and vendors. Drafts are susceptible to substantial change during the review process.
Issued	A stable document, which has undergone rigorous member and vendor review and is suitable for product design and development, cross-vendor interoperability, and for certification testing.
Closed	A static document, reviewed, tested, validated, and closed to further engineering change requests to the specification through CableLabs.

Trademarks

Contents

Figures

Tables

1 SCOPE

1.1 Introduction and Purpose

This specification is a key building block in defining interoperability elements for cable industry solutions, measuring audience interactions and the effectiveness of programming and advertising. Comparability of data across Media Delivery Platforms and across service providers is imperative for service providers to deliver the most value to subscribers in terms of effective programming and relevant advertising. In addition, this must all be accomplished while ensuring privacy protection for the subscribers.

This Audience Measurement Data Specification includes models covering media events (think of these as viewer interactions) and measurements (think of these as enriched and correlated viewer interactions).

The lifecycle of user interactions and media stream definitions is generalized in the following diagram. As users interact with video viewing devices, events are generated. These events include tuning, selecting options, and interacting with programming guides and applications. Metadata definitions and events associated with the media streams can then be correlated with the user interactions, resulting in measurement data that can then be summarized into impression metrics. These metrics can then be combined across service providers resulting in industry-wide analyses of audience uptake.

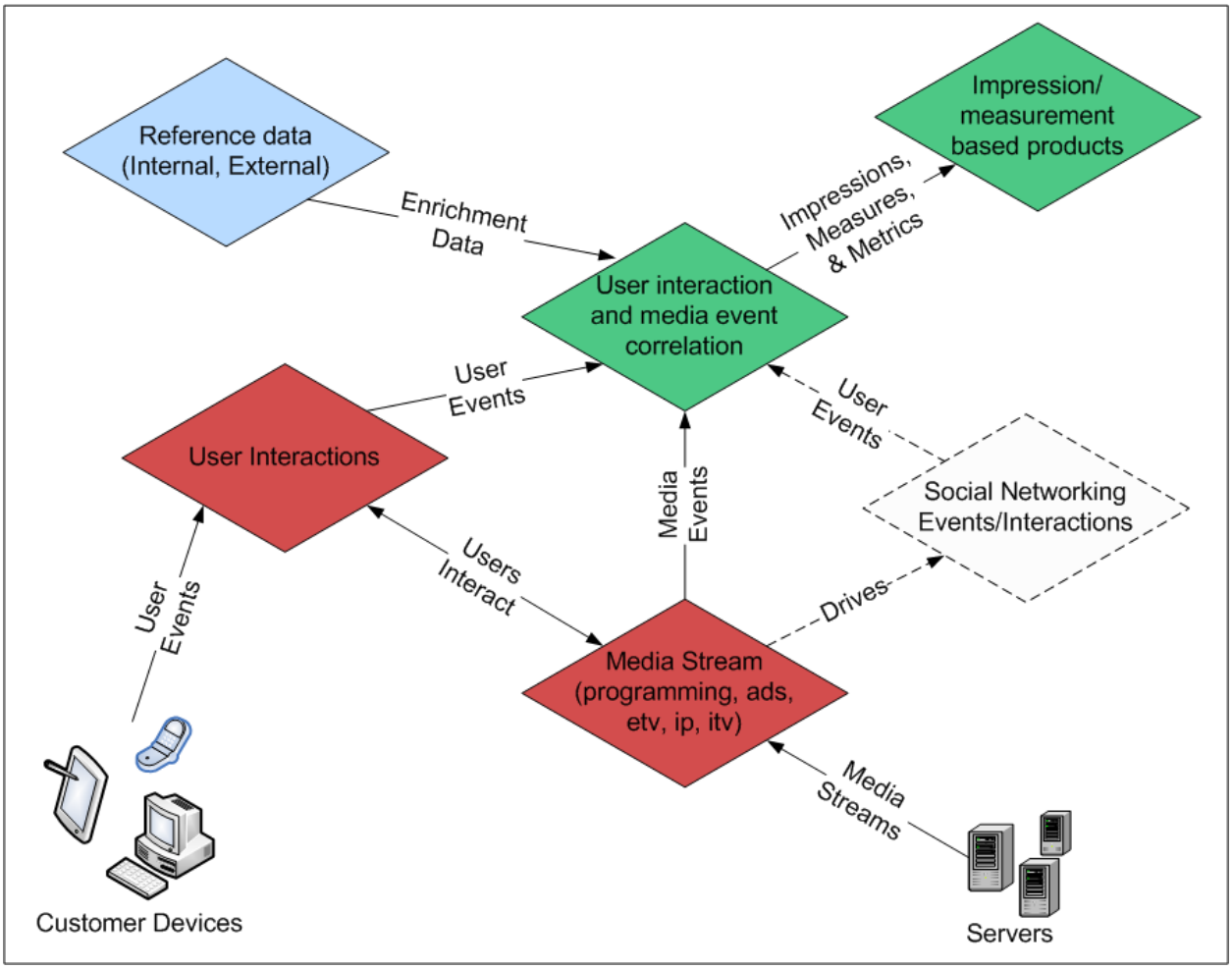


Figure 1 - Audience Measurement Event Flows

Additional future opportunities arise when service provider audience measurement and social networking measurement data are correlated, providing guidance for profile-based advertising and programming in near real-time.

Looking at the model from a supply chain perspective provides a more detailed view of the flow of interaction events from event sources as raw materials to delivery of measurement products as refined goods. The following diagram presents this flow. Devices such as set-top boxes and smart tablets generate interaction events that flow into event collection systems. These events are filtered, enriched, transformed, and correlated into session measurement data. Further aggregation and slicing of the data produces metrics.

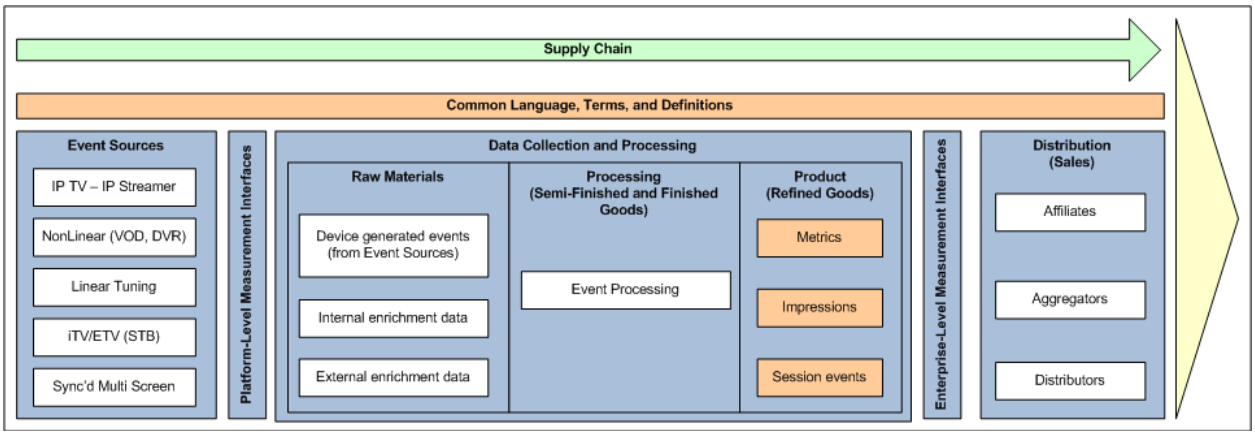


Figure 2 - Supply Chain Model for Measured Events

The remainder of this document will discuss use cases, and the event and measurement models.

1.2 Requirements

Throughout this document, the words that are used to define the significance of particular requirements are capitalized. These words are:

"SHALL"	This word means that the item is an absolute requirement of this specification.
"SHALL NOT"	This phrase means that the item is an absolute prohibition of this specification.
"SHOULD"	This word means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighed before choosing a different course.
"SHOULD NOT"	This phrase means that there may exist valid reasons in particular circumstances when the listed behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
"MAY"	This word means that this item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because it enhances the product, for example; another vendor may omit the same item.

2 REFERENCES

2.1 Normative References

In order to claim compliance with this specification, it is necessary to conform to the following standards and other works as indicated, in addition to the other requirements of this specification. Notwithstanding, intellectual property rights may be required to use or implement such normative references.

All references are subject to revision, and parties to agreement based on this specification are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

[VODMD] MD-SP-CONTENTv3.0-I02-121210, CableLabs Content 3.0 Specification, December 10, 2012, Cable Television Laboratories, Inc.

[DOI] ISO 26324:2012, Information and documentation - Digital object identifier system.

[GMT] ISO 8601:2004, Date elements and interchange formats – Information interchange – Representation of dates and times.

[RFC 3305] IETF RFC 3305, Uniform Resource Identifiers (URIs), URLs, and Uniform Resource Names (URNs): Clarifications and Recommendations, August 2002.

[RFC 4122] IETF RFC 4122, A Universally Unique IDentifier (UUID) URN Namespace, July 2005.

[UTC] IETF RFC 3339, Date and Time on the Internet: Timestamps.

2.2 Informative References

This specification uses the following informative references.

[CIMM] CIMM Set-Top Box Lexicon http://www.cimm-us.org/lexicon.htm

[ETV] OC-SP-ETV-BIF1.0.1-120614, ETV Binary Interchange Format 1.0 Specification, June 14, 2012, Cable Television Laboratories, Inc.

[OCAP] OC-SP-OCAP1.2.3-120531, OpenCable Applications Platform, Profile 1.2, May 31, 2012, Cable Television Laboratories, Inc.

2.3 Reference Acquisition

- Cable Television Laboratories, Inc., 858 Coal Creek Circle, Louisville, CO 80027; Phone +1-303-661-9100; Fax +1-303-661-9199; http://www.cablelabs.com
- Internet Engineering Task Force (IETF) Secretariat, 48377 Fremont Blvd., Suite 117, Fremont, CA 94538; Phone +1-510-492-4080, Fax +1-510-492-4001; http://www.ietf.org
- ISO Central Secretariat: International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, Case postale 56, CH-1211 Geneva 20, Switzerland; Internet: http://www.iso.ch/

3 TERMS AND DEFINITIONS

This specification uses the following terms:

Data Element	Atomic-level data (for example, Event Start).
Data Measure	Calculated data for a single subscriber for a single session (for example, dwell time).
Metric	Summarized data across subscribers and/or sessions (for example, program impressions for all subscribers).
Data Product	Metrics spanning a specified duration that are sold.
Affiliates	Includes content owners, audience measurement firms, research firms, agencies/advertisers, and programmers.
Media Event	An event of interest in the delivery, processing, or presentation of media content, including tuning to a linear channel, starting/stopping and trick play of a non-linear video session, and recording media to a DVR.
Session	Represents a finite period of viewing linear TV or non-linear video content; each session has a Start Event and an End Event.
tru2way	CableLabs' tru2way® is a middleware platform for programmers, advertisers, and application developers to deliver new interactive services on the cable infrastructure.

4 ABBREVIATIONS AND ACRONYMS

This specification uses the following abbreviations:

AMI	Audience Measurement Interface
EIDR	Entertainment Identifier Registry
EPG	Electronic Program Guide
ERD	Entity Relationship Diagram
FK	Foreign Key
GMT	Greenwich Mean Time
GUID	Globally Unique Identifier
MEDM	Media Event Data Model
MMDM	Media Measurement Data Model
PK	Primary Key
STB	Set-top Box
URI	Uniform Resource Identifier
UTC	Coordinated Universal Time
VOD	Video-On-Demand

5 OVERVIEW - AUDIENCE MEASUREMENT CONTEXT

This specification is designed to provide a basic architecture, model, and taxonomy to address the service measurement platform needs. A comprehensive service measurement platform is complex and includes many components. Sensitive privacy and security issues must be designed into and addressed at all points along the data generation, storage, and distribution chain, and flexibility in implementation and business models must be built in. However, a high degree of uniformity must also be achieved in order to allow data from varied sources to be processed and protected. Processing to serve business utility includes comparisons, aggregation, analysis, and other functions.

5.1 Reference Architecture

The following diagram describes a *contextual model* of the measurement framework.

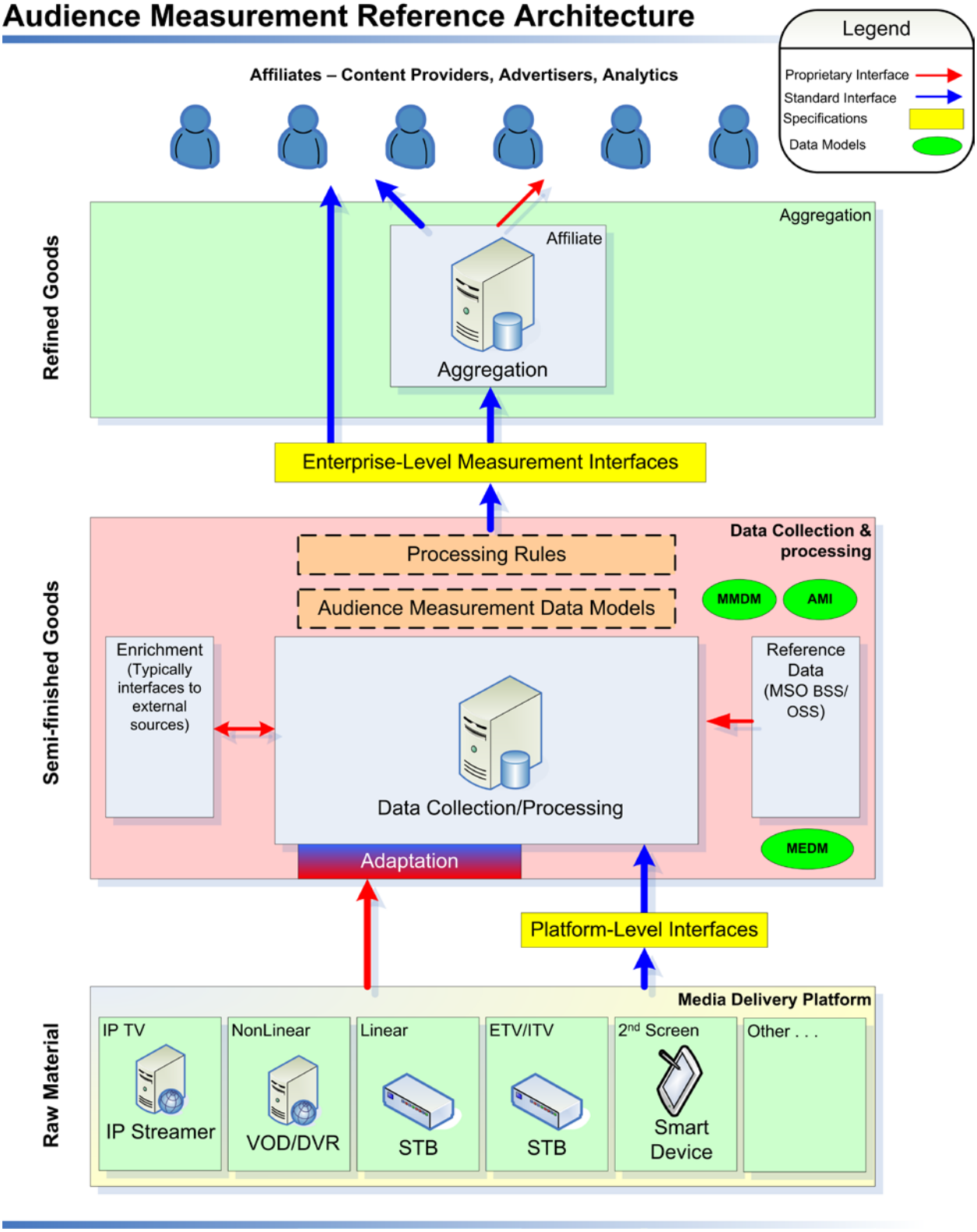


Figure 3 - Media Measurement Reference Architecture

There are three fundamental entities involved:

- **Affiliates** – Service providers may send a variety of data products to any number of affiliates, including content owners, audience measurement firms, research firms, agencies/advertisers, and programmers. Ideally, the affiliates consume data in Audience Measurement Interface (AMI) format, accessing it through the enterprise-level interfaces.
- **Data Collection and Processing Platforms** – The essential role is to store, aggregate, and process low-level event streams from Media Delivery Platforms. This role is the responsibility of a service provider, although agents of a service provider may implement some of these logical functions. Ideally, these platforms collect Media Event Data Model (MEDM) data elements, process it, and deliver Media Measurement Data Model (MMDM) data elements.
- **Media Delivery Platforms** – A device or system that supports navigation/discovery, processing, or presentation of media to viewers, including traditional STBs, DVRs, VOD servers, and emerging platforms such as IP streaming servers servicing video gateways, PCs, mobile, and tablet devices. Media Delivery Platforms also include interactive environments, such as EBIF, tru2way, and other application platforms. Ideally, these platforms generate MEDM data elements.

These entities process data in well-defined ways and share information through specified interfaces. The four areas of specification are:

- **Enterprise-level Measurement Interfaces** – These are formats and interfaces that serve to provide access to data at the enterprise level, between service providers and the affiliates of their choosing. Data access may be via a data representation, encoded format, or other means.
- **Processing Rules –** This is a set of rules governing how media event data is processed to support enterprise-level interfaces and data products. Requirements on data collection and processing platforms in support of these rules, such as data retention, auditing, security, and privacy, may be included here.
- **Media Event Data Model (MEDM) –** Media Delivery Platforms generate low-level events that should conform to a well-defined MEDM in order to support cross-platform comparability. Media Delivery Platforms may evolve to support the MEDM directly, or "adapters" may transform existing proprietary formats into these well-known models. Media Event Data Models will be developed for linear, non-linear, and interactive service delivery models. Included in these specifications are "cap and edit" rules that define some level of business logic applied to the low-level events.
- **Media Measurement Data Model (MMDM) –** Media events are collected, filtered, enriched, transformed, and correlated, resulting in data ready for making measurement calculations. This processing is unique to each service provider, and the details relating to the internal collection and processing of the media events into measurement data are outside the scope of this document. However, consistent definitions of measurements are necessary, as this data is foundational to deriving data products including metrics.
- **Audience Measurement Interface (AMI) –** Further aggregation and processing of measurements results in metrics that can be delivered to affiliate consumers and can be used to determine effectiveness and revenue models.
- **Platform Interfaces –** Platform Interface specifications, including transport protocol and data format definitions, will be developed for many Media Delivery Platforms. These interfaces can ensure data quality and comparability, and all implementations should conform to the MEDM. Conformance can lead to cost-effective product implementations and integrations. For those Media Delivery Platforms that do not implement a well-defined interface, a proprietary adapter should be developed to define conformance with the MEDM. An adapter defines how a data format maps to the MEDM. In practice, a Data Collection and Processing Platform may physically store data in an implementation-specific way. The Data Collection and Processing Platform should conform to the MEDM so Processing Rules can result in deterministic results independent of the source or format of the data collected via the Platform Interfaces.

5.2 MEDM and MMDM, within Audience Measurement Context

The following diagram shows another perspective on the data models. To summarize, traversing the figure from left to right, devices generate media events (MEDM). These events are processed by the service provider systems (MSO Event Processing) resulting in measurement data (MMDM). Further processing of the measurement data results in metrics data (AMI) that is made available via the enterprise-level interfaces, to affiliates and other users in business decision making (consumers of AM Products).

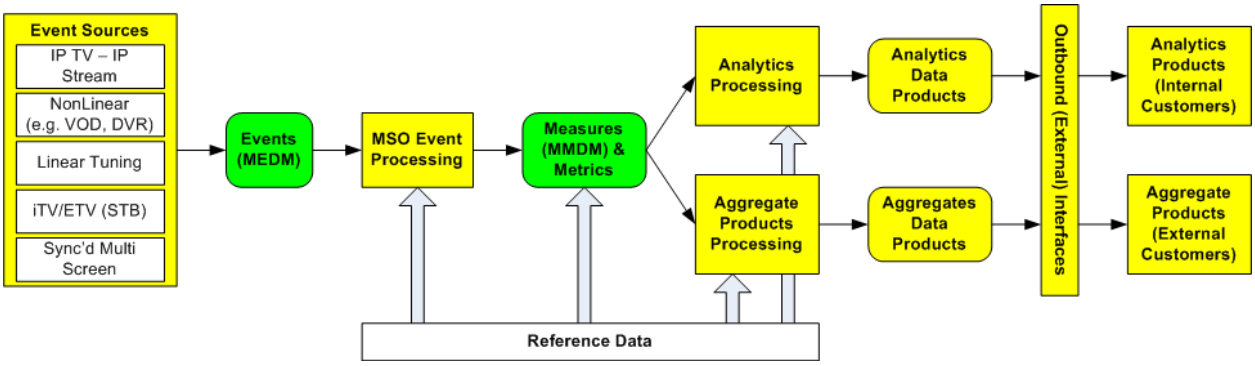


Figure 4 - AM Data Context

6 EVENTS - MEDIA EVENT DATA MODEL (MEDM)

The Media Event Data Model (MEDM) defines a model for events related to the delivery, processing, or presentation of media to viewers, such as tuning to a broadcast channel, selecting and controlling an on-demand asset, or recording to a DVR. The data model is generalized to express any linear and non-linear service, including but not limited to DVR and home networking, mobile, and online content delivery.

The Media Event Data Model is defined by contextual, conceptual, and logical models describing increasing levels of detail of the model. The conceptual and logical models are described by a UML entity-relationship diagram with accompanying narrative description of the entities. The logical model is presented in a subsequent section.

Many encoding formats and transport protocols may be defined that conform to the model. Differing circumstances will dictate optimal interfaces for gathering or sharing measurement data. For instance, an enterprise-level interface that exports huge volumes of data from a service provider to an affiliate can look very different from the mechanism used to log and transmit events from an embedded device on a constrained legacy cable network. Regardless of the encoded formats of the data, they should conform to this data model to support cross-platform comparability.

6.1 Conceptual Data Model

Figure 5 is the conceptual level entity-relationship diagram for media events. No attributes are presented in this diagram; the discussion below is of entities only. Full discussion of these entities and associated attributes is included in the detailed logical data model defined below.

The base entity is the MediaEvent. The various event entities all extend the base MediaEvent entity. For clarity, MediaEvent is not shown in the diagram. In practice, a stream of MediaEvents is generated by a device that delivers processes or presents media. MediaEvents are then collected by a service provider or designated agent. Data coming from a specific device, such as a set-top box or VOD server, may not fully populate the data model, and some attributes may be sourced from service-provider Reference or Enrichment data. For instance, a set-top box interface may not include any information about a viewer. The association of data from a set-top box and the viewer information may be made by the service provider after the data is collected from the set-top box or when exposing data via the Media Event Data Model.

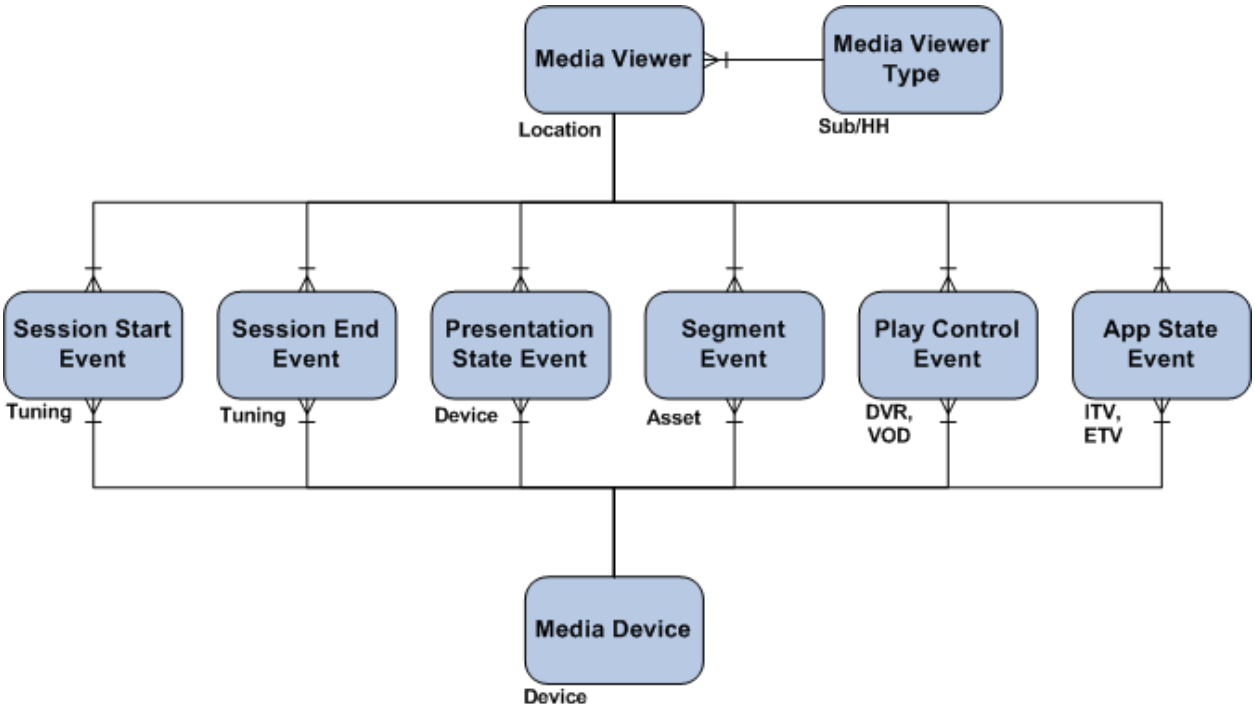


Figure 5 - MEDM Conceptual Data Model

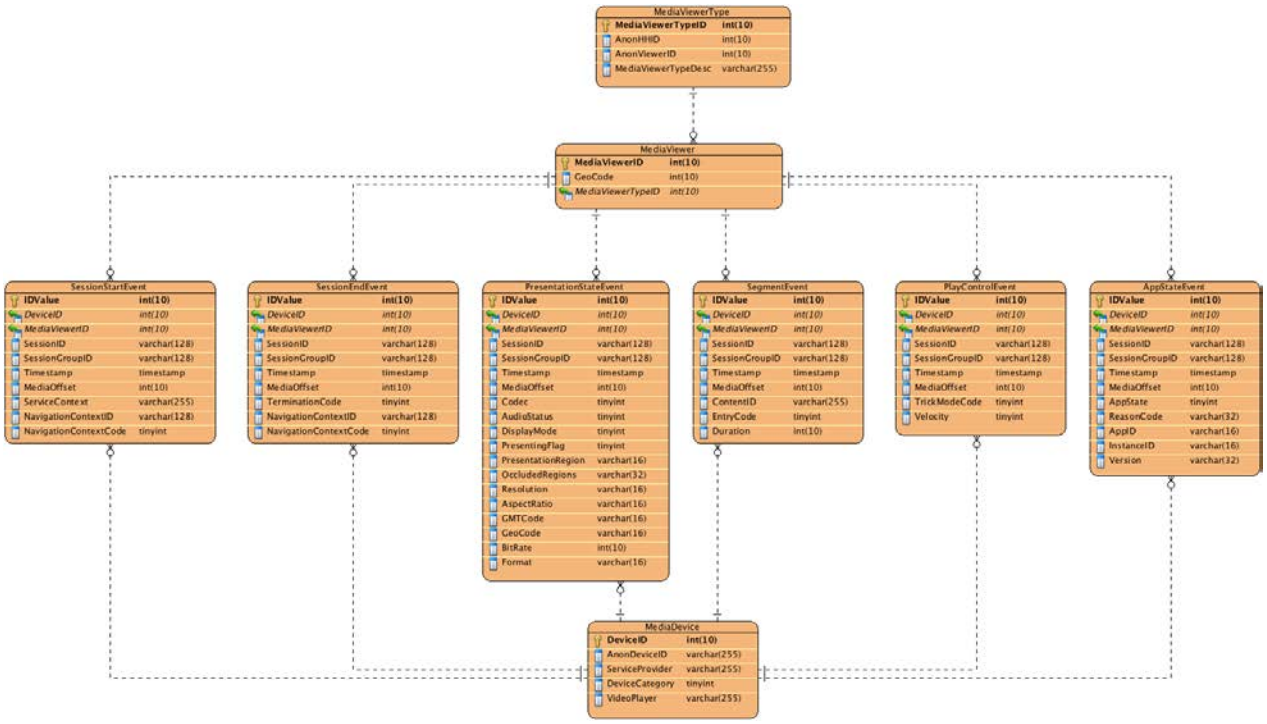
6.1.1 MEDM Entities

Table 1 - MEDM Entity Descriptions and Relationships

MEDM Entity	Entity Description	Entity Relationships
Media Viewer	The MediaViewer entity represents a viewer of media content. Media viewers may be known to the service provider, in which case an associated Media Viewer Type is referenced.	A MediaViewer belongs to a single household. The MediaViewer has many media events associated with it.
Media Viewer Type	The MediaViewerType entity provides descriptive information about known Media Viewers.	The MediaViewerType may represent either an entire household or a specific viewer in a household and has MediaViewers assigned to it.
Session Start Event	The SessionStartEvent is a specialization of MediaEvent and inherits all of its attributes. *Session* is a general term indicating a linear TV channel or a non-linear video segment. *Session start* is a generalized representation of the initiation of media processing, which may indicate selection of a linear broadcast channel, or the start of a non-linear session. Non-linear sessions may be supported by many environments, such as traditional cable VOD, Digital Video Recorder (DVR), Web-based video playout, home networked streaming, or any other non-broadcast media processing environment. Every SessionStartEvent SHALL be paired with a SessionEndEvent, grouping all intermediate events into a logical session sequence.	An instance of a SessionStartEvent is associated with a MediaViewer whose actions generated the event. It is also associated with the single MediaDevice that actually generated the event.
Session End Event	SessionEndEvent is a specialization of MediaEvent that represents the termination of media processing. Session termination may represent tuning away from a linear channel, the end of a DVR recording, or the termination of a non-linear session.	An instance of a SessionEndEvent is associated with a MediaViewer whose actions generated the event. Is also associated with the single MediaDevice that actually generated the event.
Presentation State Event	PresentationStateEvent is a specialization of MediaEvent that represents a change in the presentation attributes of a media presentation. Examples include a switch from the main display to picture-in-picture (PiP) on a TV, scaling the video window on a TV, muting audio, bringing an active DVR recording to the foreground, or another such change. PresentationStateEvents SHALL be generated with every SessionStartEvent.	An instance of a PresentationStateEvent is associated with a MediaViewer whose actions generated the event. Is also associated with the single MediaDevice that actually generated the event.

MEDM Entity	Entity Description	Entity Relationships
Segment Event	SegmentEvent is a specialization of MediaEvent that represents the processing of a logical segment of content. For example, as the boundaries between entertainment and advertising segments are crossed, SegmentEvents MAY be generated to indicate these boundary crossings. The MediaOffset attribute found in all MediaEvents between SegmentEvents are offsets within the ContentID identified by the SegmentEvent. Boundaries may be identified by in-band signals, such as SCTE 35 markers, or by schedule metadata.	An instance of a SegmentEvent is associated with a MediaViewer whose actions generated the event. Is also associated with the single MediaDevice that actually generated the event.
Play Control Event	PlayControlEvent is a specialization of MediaEvent that represents a trick mode event during presentation of non-linear content. A transition from presenting linear content live to presenting from a time-shift buffer is considered a transition to non-linear content. Trick modes include *pause* and *skip*. Skip can be used to model forward and backward play at any speed.	An instance of a PlayControlEvent is associated with a MediaViewer whose actions generated the event. Is also associated with the single MediaDevice that actually generated the event.
App State Event	AppStateEvent is a specialization of MediaEvent that represents the loading, launching, suspension, or termination of an interactive application. Examples of interactive applications are ETV or OCAP applications. Not addressed here is application instrumentation, which is the collection of application level clickstream events used to interpret viewer behavior within the context of an application (for example, companion applications).	An instance of an AppStateEvent is associated with a MediaViewer whose actions generated the event. Is also associated with the single MediaDevice that actually generated the event.
Media Device	The MediaDevice entity represents a media delivery, processing, or presentation platform. Examples include cable set-top boxes, televisions, tablets, PCs, mobile devices, and any other devices that present media to a viewer.	The MediaDevice is associated with one or more MediaEvents. In practice, this means that each MediaEvent must be associated with a device.

6.2 ERD - Media Event Data Model



6.2.1 Documentation

This is the Logical Media Event Data Model, a key component of the overall Audience Measurement architecture. This was generated using Visual Paradigm, which is a suite of UML and ERD modeling tools.

6.3 Media Event Data Model Details

The following tables provide details on each of the MEDM entities. Refer to Section 6.1, "Conceptual Data Model" for a description of each entity.

6.3.1 MediaViewerType Entity

Name	Data Type	Null-able	Documentation
MediaViewer TypeID	int(10)	No	Unique identifier for the record. This is the primary key.
AnonHHID	int(10)	No	The AnonHHID value SHALL be a GUID [RFC 4122] that indicates a unique viewing household. All events associated with a specific household will be associated with a MediaViewer entity with the same AnonHHID. This value does not represent, nor can it be externally associated with, a specific household or viewer.

Name	Data Type	Null-able	Documentation
AnonViewerID	int(10)	No	The AnonViewerID value SHALL be a GUID [RFC 4122] that indicates a unique viewer. All events associated with a specific viewer will be associated with a MediaViewer entity with the same AnonHHID. This value does not represent, nor can it be externally associated with, a specific household or viewer. In some environments, this value may not be able to be determined.
MediaViewerType Desc	Varchar (255)	No	The MediaViewerTypeDesc value SHALL be an unbounded String indicating the media viewer type.

6.3.2 MediaViewer Entity

Name	Data Type	Null-able	Documentation
MediaViewerID	int(10)	No	Unique identifier for the media viewer. This is the primary key.
GeoCode	int(10)	No	The Geocode value SHALL indicate the physical location associated with this subscriber household. Additional external definitions are required to determine allowable values within a defined implementation context, i.e., zipcode.
MediaViewer TypeID	int(10)	No	Link to the Media Viewer Type table.

6.3.3 SessionStartEvent Entity

Name	Data Type	Null-able	Documentation
IDValue	int(10)	No	Unique identifier for the record. This is the primary key.
DeviceID	int(10)	No	The unique anonymized (de-identified) identifier for the viewing device.
MediaViewerID	int(10)	No	The unique anonymized (de-identified) identifier for the viewer (user).
SessionID	varchar (128)	No	The Session ID value SHALL be a UUID [RFC 4122] representing a logical grouping of media events. For instance, the start, end, and intermediate events related to a VOD program viewing can be grouped together using SessionID.

Name	Data Type	Null-able	Documentation
SessionGroupID	varchar (128)	No	The SessionGroupID value SHALL be a UUID [RFC 4122] identifying a group of sessions. For instance, a multi-room DVR scenario may support multiple sessions, e.g., viewing a portion of a program in one room and finishing in another. Multiple sessions can be associated using this value.
Timestamp	time stamp	No	The Timestamp value SHALL represent the exact time at which an event is generated, expressed as a UTC value [UTC].
MediaOffset	int(10)	No	The MediaOffset value SHALL represent the offset, to millisecond accuracy, from the beginning of associated entertainment or ad content (see ContentID in SegmentEvent) at which an event occurs. For instance, an AppStateEvent may occur some seconds after the beginning of an ad. The MediaOffset value is deterministic for a given piece of content such that a sequence of MediaEvents associated with a piece of content will display the following characteristics for MediaOffset: • Will increase when processing in the forward direction. • Will decrease when processing in the reverse direction. • Will increase/decrease faster than real time when processing at rates faster than 1X. • May have gaps. For example, if replacing or skipping a 30-second advertisement that is part of the original content file, the MediaOffset may have a gap of 30 seconds.
ServiceContext	var char (255)	No	The ServiceContext value SHALL be a URI [RFC 3305] that indicates the linear or non-linear context of a service selection. For broadcast services, this value MAY be the EIDR [DOI] value of the programming feed. For non-linear services, this MAY be the Provider/Asset ID (PAID) [VODMD] of the asset, or an EIDR.
NavigationContextID	var char (128)	No	The NavigationContextID value SHALL be a UUID [RFC 4122] identifying a navigation session that was the source of navigation. For example, this value MAY be used to associate this event with an instance of an application, thereby allowing an application level event model to be correlated with this event. The NavigationContextID may be associated with an application that can be a feature-rich EPG, application, or STB firmware that receives and interprets remote control key codes.

Name	Data Type	Null-able	Documentation
NavigationContext Code	tinyint	No	The NavigationContextCode value SHALL provide the context from which the session was started. Allowable values are constrained to the following enumeration: 0 = Navigator. Session was started via service provider navigator. The service provider navigator may be the primary Electronic Program Guide, a so-called 'mini-guide', VOD library navigator, or any other primary navigation tool. 1 = Application. Session was started via any application other than the service provider navigator. Examples include STB resident, bound or unbound, or external device (PC, tablet, phone, etc.) based applications that request a service selection in response to viewer input. 2 = Numeric input. Session was started in response to a viewer pressing number keys on a remote. This function is typically performed by the navigator, but is identified as a separate code. 3 = Channel up/down. Session was started in response to a viewer pressing the channel up/down keys on a remote. This function is typically performed by the navigator, but is identified as a separate code. 4 = Start-up. Service selection occurred on device start up.

6.3.4 SessionEndEvent Entity

Name	Data Type	Null-able	Documentation
IDValue	int(10)	No	Unique identifier for the record. This is the primary key.
DeviceID	int(10)	No	The unique anonymized (de-identified) identifier for the viewing device.
MediaViewerID	int(10)	No	The unique anonymized (de-identified) identifier for the viewer (user).
SessionID	var char (128)	No	The Session ID value SHALL be a GUID [RFC 4122] representing a logical grouping of media events. For instance, the start, end, and intermediate events related to a VOD program viewing can be grouped together using SessionID.
SessionGroupID	var char (128)	No	The SessionGroupID value SHALL be a GUID [RFC 4122] identifying a group of sessions. For instance, a multi-room DVR scenario may support multiple sessions, e.g., viewing a portion of a program in one room and finishing in another. Multiple sessions can be associated using this value.

Name	Data Type	Null-able	Documentation
Timestamp	time stamp	No	The Timestamp value SHALL represent the exact time at which an event is generated, expressed as a UTC value [UTC].
MediaOffset	int(10)	No	The MediaOffset value SHALL represent the offset, to millisecond accuracy, from the beginning of associated entertainment or ad content (see ContentID in SegmentEvent) at which an event occurs. For instance, an AppStateEvent may occur some seconds after the beginning of an ad. The MediaOffset value is deterministic for a given piece of content such that a sequence of MediaEvents associated with a piece of content will display the following characteristics for MediaOffset: • Will increase when processing in the forward direction. • Will decrease when processing in the reverse direction. • Will increase/decrease faster than real time when processing at rates faster than 1X. • May have gaps. For example, if replacing or skipping a 30-second advertisement that is part of the original content file, the MediaOffset may have a gap of 30 seconds.
TerminationCode	tinyint	No	The TerminationCode value SHALL indicate the reason media processing has ended. Allowable values are constrained to the following enumeration: 0 = Tune-away. For linear services, processing ended when another service is selected. 1 = Play-to-end. For non-linear services, processing ends when the media reaches the end point. 2 = UserTerminated. For non-linear services, processing ends based on a user action. 3 = System. Processing ends when a system event causes termination, as in a transition to power stand-by mode.
Navigation ContextID	var char (128)	No	The NavigationContextID value SHALL be a GUID [RFC 4122] identifying an application that was the source of termination. See SessionStartEvent, NavigationContextID, for a complete description.
Navigation ContextCode	tinyint	No	The NavigationContextCode value SHALL indicate the context from which the service was terminated where the TerminationCode value is '0' or '2'. See Section 6.3.3, SessionStartEvent Entity, NavigationContextCode, for the definition of allowable values.

6.3.5 PresentationStateEvent Entity

Name	Data Type	Null-able	Documentation
IDValue	int(10)	No	Unique identifier for the record. This is the primary key.
DeviceID	int(10)	No	The unique anonymized (de-identified) identifier for the viewing device.
MediaViewerID	int(10)	No	The unique anonymized (de-identified) identifier for the viewer (user).
SessionID	var char (128)	No	The Session ID value SHALL be a GUID [RFC 4122] representing a logical grouping of media events. For instance, the start, end, and intermediate events related to a VOD program viewing can be grouped together using SessionID.
SessionGroupID	var char (128)	No	The SessionGroupID value SHALL be a GUID [RFC 4122] identifying a group of sessions. For instance, a multi-room DVR scenario may support multiple sessions, e.g., viewing a portion of a program in one room and finishing in another. Multiple sessions can be associated using this value.
Timestamp	time stamp	No	The Timestamp value SHALL represent the exact time at which an event is generated, expressed as a UTC value [UTC].
MediaOffset	int(10)	No	The MediaOffset value SHALL represent the offset, to one second accuracy, from the beginning of associated entertainment or ad content (see ContentID in SegmentEvent) at which an event occurs. For instance, an AppStateEvent may occur some seconds after the beginning of an ad. The MediaOffset value is deterministic for a given piece of content such that a sequence of MediaEvents associated with a piece of content will display the following characteristics for MediaOffset: • Will increase when processing in the forward direction. • Will decrease when processing in the reverse direction. • Will increase/decrease faster than real time when processing at rates faster than 1X. • May have gaps. For example, if replacing or skipping a 30-second advertisement that is part of the original content file, the MediaOffset may have a gap of 30 seconds.

Name	Data Type	Null-able	Documentation
Codec	tinyint	No	The Codec value SHALL indicate the video format used in presentation. Allowable values are constrained to the following enumeration: 0 = MPEG-2 1 = MPEG-4 2 = H.264
AudioStatus	tinyint	No	The AudioStatus value SHALL indicate the audio status. Allowable values are constrained to the following enumeration: 0 = Audio On 1 = Mute
DisplayMode	tinyint	No	The DisplayMode value SHALL indicate the display mode. Allowable values are constrained to the following enumeration: 0 = full screen 1 = scaled, i.e., Picture in Picture
PresentingFlag	tinyint	No	The PresentingFlag value SHALL indicate whether the associated service is being presented on a display, as opposed to being recorded, e.g., on a local DVR. A potential usage of this data model is to assign a SessionGroupID to a recording, and apply it to all subsequent views. Allowable values are constrained to the following enumeration: 0 = not presenting on screen 1 = presenting
PresentationRegion	var char (16)	No	The PresentationRegion value SHALL contain numeric values indicating the origin of the presentation onscreen, e.g., 0,0 for full screen display. The upper left corner is 0,0.
OccludedRegions	var char (32)	No	The OccludedRegions value SHALL contain a set of numeric values indicating the origin, width, and height of areas of the display that contain visual material not associated with the service context of the present session. For example, an application may paint over a full screen video presentation, and this information allows measurement of the fact that the video is not fully presented.
Resolution	var char (16)	No	The Resolution value SHALL contain numeric values indicating the pixel resolution of the presentation, e.g., 640x480 for Standard Definition TV.
AspectRatio	var char (16)	No	The AspectRatio value SHALL contain numeric values indicating the proportional relationship of the presentation width and height, e.g., 4:3, 16:9.

Name	Data Type	Null-able	Documentation
GMTCode	var char (16)	No	The GMTCode value SHALL indicate the GMT zone [GMT] from which an event was generated. The GMTCode value may change during a session. For example, a mobile device.
GeoCode	var char (16)	No	The Geocode value SHALL indicate the physical location from which this event was generated. Additional external definitions are required to determine allowable values within a defined implementation context, i.e., zipcode.
BitRate	int(10)	No	The BitRate value SHALL indicate the data rate of media delivery in IP delivery platforms, in Kbps. In some environments, such as adaptive bit-rate delivery over the internet, video presentation quality may degrade for some period.
Format	var char (16)	No	The Format value SHALL contain a String indicating the video presentation format, e.g., "1080i", "1080p", "SD", "HD".

6.3.6 SegmentEvent Entity

Name	Data Type	Null-able	Documentation
IDValue	int(10)	No	Unique identifier for the record. This is the primary key.
DeviceID	int(10)	No	The unique anonymized (de-identified) identifier for the viewing device.
MediaViewerID	int(10)	No	The unique anonymized (de-identified) identifier for the viewer (user).
SessionID	var char (128)	No	The Session ID value SHALL be a GUID [RFC 4122] representing a logical grouping of media events. For instance, the start, end, and intermediate events related to a VOD program viewing can be grouped together using SessionID.
SessionGroupID	var char (128)	No	The SessionGroupID value SHALL be a GUID [RFC 4122] identifying a group of sessions. For instance, a multi-room DVR scenario may support multiple sessions, e.g., viewing a portion of a program in one room and finishing in another. Multiple sessions can be associated using this value.
Timestamp	time stamp	No	The Timestamp value SHALL represent the exact time at which an event is generated, expressed as a UTC value [UTC].

Name	Data Type	Null-able	Documentation
MediaOffset	int(10)	No	The MediaOffset value SHALL represent the offset, to one second accuracy, from the beginning of associated entertainment or ad content (see ContentID in SegmentEvent) at which an event occurs. For instance, an AppStateEvent may occur some seconds after the beginning of an ad. The MediaOffset value is deterministic for a given piece of content such that a sequence of MediaEvents associated with a piece of content will display the following characteristics for MediaOffset: • Will increase when processing in the forward direction. • Will decrease when processing in the reverse direction. • Will increase/decrease faster than real time when processing at rates faster than 1X. • May have gaps. For example, if replacing or skipping a 30-second advertisement that is part of the original content file, the MediaOffset may have a gap of 30 seconds.
ContentID	var char (255)	No	The ContentID value SHALL be a URI [RFC 3305] indicating a content identifier. A number of identifier formats may be used in practice, including EIDR [DOI], PAID [VODMD], or other.
EntryCode	tinyint	No	The EntryCode value SHALL indicate the context in which a segment was entered. All segment events must be bounded by segment events with EntryFlag values indicating the entrance and exit into and from a logical content asset. Allowable values are constrained to the following enumeration: 0 = Start. Indicates a leading segment boundary is crossed while presenting media in a forward play mode. 1 = End. Indicates a segment boundary is crossed while presenting media in a reverse play mode. 2 = Internal. Indicates a segment is entered between the start and end boundaries. This may be the case when a linear channel is selected during the middle of a program.
Duration	int(10)	No	The Duration value SHALL be a numeric value indicating the duration in seconds of the current segment. A value of '0' SHALL indicate that the segment duration is not known, for instance, in the case of a live sporting event.

6.3.7 PlayControlEvent Entity

Name	Data Type	Null-able	Documentation
IDValue	int(10)	No	Unique identifier for the record. This is the primary key.
DeviceID	int(10)	No	The unique anonymized (de-identified) identifier for the viewing device.
MediaViewerID	int(10)	No	The unique anonymized (de-identified) identifier for the viewer (user).
SessionID	var char (128)	No	The Session ID value SHALL be a GUID [RFC 4122] representing a logical grouping of media events. For instance, the start, end, and intermediate events related to a VOD program viewing can be grouped together using SessionID.
SessionGroupID	var char (128)	No	The SessionGroupID value SHALL be a GUID [RFC 4122] identifying a group of sessions. For instance, a multi-room DVR scenario may support multiple sessions, e.g., viewing a portion of a program in one room and finishing in another. Multiple sessions can be associated using this value.
Timestamp	time stamp	No	The Timestamp value SHALL represent the exact time at which an event is generated, expressed as a UTC value [UTC].
MediaOffset	int(10)	No	The MediaOffset value SHALL represent the offset, to one second accuracy, from the beginning of associated entertainment or ad content (see ContentID in SegmentEvent) at which an event occurs. For instance, an AppStateEvent may occur some seconds after the beginning of an ad. The MediaOffset value is deterministic for a given piece of content such that a sequence of MediaEvents associated with a piece of content will display the following characteristics for MediaOffset: • Will increase when processing in the forward direction. • Will decrease when processing in the reverse direction. • Will increase/decrease faster than real time when processing at rates faster than 1X. • May have gaps. For example, if replacing or skipping a 30-second advertisement that is part of the original content file, the MediaOffset may have a gap of 30 seconds.

Name	Data Type	Null-able	Documentation
TrickModeCode	tinyint	No	The TrickModeCode value SHALL indicate the playback mode, or 'trick play' mode. Allowable values are constrained to the following enumeration: 0 = Play 1 = Skip
Velocity	tinyint	No	The Velocity value SHALL indicate the playback speed and direction when TrickModeCode is '0', or play. For instance, if TrickModeCode = 0 (Play), a Velocity value of +2 indicates fast-forward at 2X speed, and a velocity value of -2 indicates reverse at 2X speed. A value of '0' indicates paused.

6.3.8 AppStateEvent Entity

Name	Data Type	Null-able	Documentation
IDValue	int(10)	No	Unique identifier for the record. This is the primary key.
DeviceID	int(10)	No	The unique anonymized (de-identified) identifier for the viewing device.
MediaViewerID	int(10)	No	The unique anonymized (de-identified) identifier for the viewer (user).
SessionID	var char (128)	No	The Session ID value SHALL be a GUID [RFC 4122] representing a logical grouping of media events. For instance, the start, end, and intermediate events related to a VOD program viewing can be grouped together using SessionID.
SessionGroupID	var char (128)	No	The SessionGroupID value SHALL be a GUID [RFC 4122] identifying a group of sessions. For instance, a multi-room DVR scenario may support multiple sessions, e.g., viewing a portion of a program in one room and finishing in another. Multiple sessions can be associated using this value.
Timestamp	time stamp	No	The Timestamp value SHALL represent the exact time at which an event is generated, expressed as a UTC value [UTC].

Name	Data Type	Null-able	Documentation
MediaOffset	int(10)	No	The MediaOffset value SHALL represent the offset, to one second accuracy, from the beginning of associated entertainment or ad content (see ContentID in SegmentEvent) at which an event occurs. For instance, an AppStateEvent may occur some seconds after the beginning of an ad. The MediaOffset value is deterministic for a given piece of content such that a sequence of MediaEvents associated with a piece of content will display the following characteristics for MediaOffset: • Will increase when processing in the forward direction. • Will decrease when processing in the reverse direction. • Will increase/decrease faster than real time when processing at rates faster than 1X. • May have gaps. For example, if replacing or skipping a 30-second advertisement that is part of the original content file, the MediaOffset may have a gap of 30 seconds.
AppState	tinyint	No	The AppState value SHALL indicate application lifecycle state. Allowable values are constrained to the following enumeration: 0 = Loaded 1 = Launched 2 = Paused 3 = Suspended 4 = Terminated
ReasonCode	var char (32)	No	The ReasonCode value SHALL indicate the reason for an application lifecycle transition; for example, why an application was terminated. Additional external definitions are required to determine allowable values within a defined implementation context.
AppID	var char (16)	No	The AppID value SHALL indicate the associated application identifier, as defined by the format definition of the application. For example, [ETV] and [OCAP] define formats for AppID.
InstanceID	var char (16)	No	The InstanceID value SHALL indicate the application identifier, as defined by the format definition of the application. For example, [ETV] defines an instanceID.
Version	var char (32)	No	The Version value SHALL indicate the application version, as defined by the format definition of the application.

6.3.9 MediaDevice Entity

Name	Data Type	Null-able	Documentation
DeviceID	int(10)	No	Unique identifier for the media device. This is the primary key.
AnonDeviceID	var char (255)	No	The AnonDeviceID value SHALL be a GUID [RFC 4122] that indicates a unique device. All events associated with a specific processing device, i.e., STB, TV, tablet, etc., will be associated with a MediaDevice entity with the same AnonDeviceID. This value does not represent, nor can it be externally associated with, a specific household or viewer. Devices with multiple tuners are represented with a single AnonDevice value, as associating events with tuners or other sub-components of presentation is not of direct value.
ServiceProvider	var char (255)	No	The ServiceProvider value SHALL be an unbounded String indicating the Service Provider, i.e., cable operator, who is providing the service associated with the associated media events.
DeviceCategory	tinyint	No	The DeviceCategory value SHALL indicate the broad category to which the device belongs. Allowable values are constrained to the following enumeration: 0 = other 1 = Legacy cable set-top box 2 = Tru2Way device 3 = PC 4 = tablet 5 = mobile 6 = “smart” TV
VideoPlayer	varchar (255)	No	The VideoPlayer value SHALL be an unbounded String indicating the video presentation environment. Examples include Apple QuickTime™, Microsoft Silverlight™, and Adobe Flash™.

7 MEASURES - MEDIA MEASUREMENT DATA MODEL (MMDM)

The Media Measurement Data Model (MMDM) defines data composed of interaction (media) events combined with enrichment data such as subscriber, programming, demographics, and geographic area data. At this point in the lifecycle, discrete media events have been correlated into viewing sessions, which can then be correlated with programming, resulting in viewing impressions. Aggregating the MMDM data using various summarization criteria can generate audience measurement metrics. The media measurement data model is further defined in the following sections.

7.1 Conceptual Data Model

The conceptual model presents the tables and relationships without detailing the specific definitions of the tables. This model is useful in mapping Use Cases and requirements onto data models. The conceptual model is realized in a logical data model that presents the definitions of the tables.

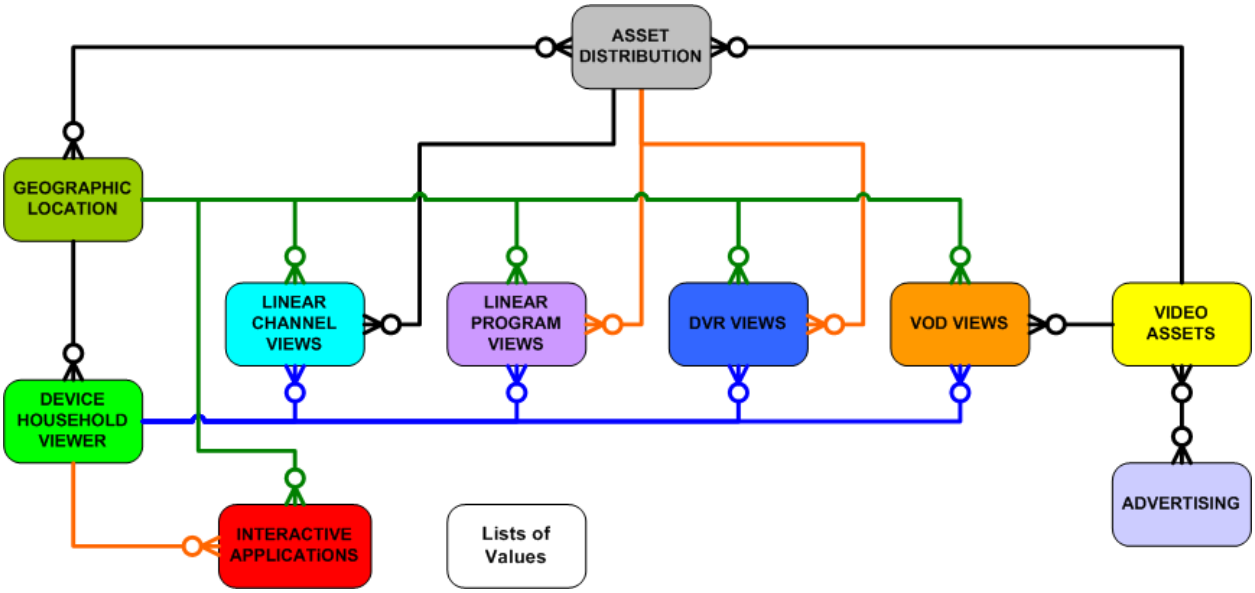


Figure 6 - MMDM Conceptual Data Model (Subject Areas)

7.1.1 MMDM Entity Descriptions

Table 2 - MMDM Subject Area Descriptions

MMDM Subject Area	Subject Area Description
Geographic Location	The tables in this subject area define the types and values of geographic locations. Examples include Zip Code, Designated Market Area, Census Tract, and other definitions. Ideally, user interactions and viewing of video assets should be associated with geographic locations.
Device Household Viewer	The tables in this subject area define de-identified households, viewers, devices and associated demographics.
Asset Distribution	The tables in this subject area define the delivery of video assets across mediums. These tables also associate distribution of the assets with the geographic location.

MMDM Subject Area	Subject Area Description
Linear Channel Views	The tables in this subject area capture viewing measurement of channels including tuning into and away from channels.
Linear Program Views	The tables in this subject area capture viewing measurement of programs that are distributed on the channels.
DVR Views	The tables in this subject area capture measurement of viewing programs recorded using DVR.
VOD Views	The tables in this subject area capture measurement of viewing programs distributed using the VOD platform.
Interactive Applications	The tables in this subject area capture measurement of user engagement with interactive applications. For example, applications developed using the EBIF and tru2way frameworks.
Video Assets	The tables in this subject area define the assets, portions of assets (segments), and links to aired programs. These contain the building blocks for assembling video assets including advertising into airable/viewable programs.
Advertising	The tables in this subject area link the video assets and viewing measures to the advertising assets. Advertising assets include campaigns, and placement opportunities.
Lists of Values	Contains the list of actions and errors associated with user viewing sessions.

7.2 Video Viewing Conceptual Detail

The measurement viewing model of the MMDM tables follows a common pattern across channel, program, DVR, and VOD viewing. This model is shown in Figure 7.

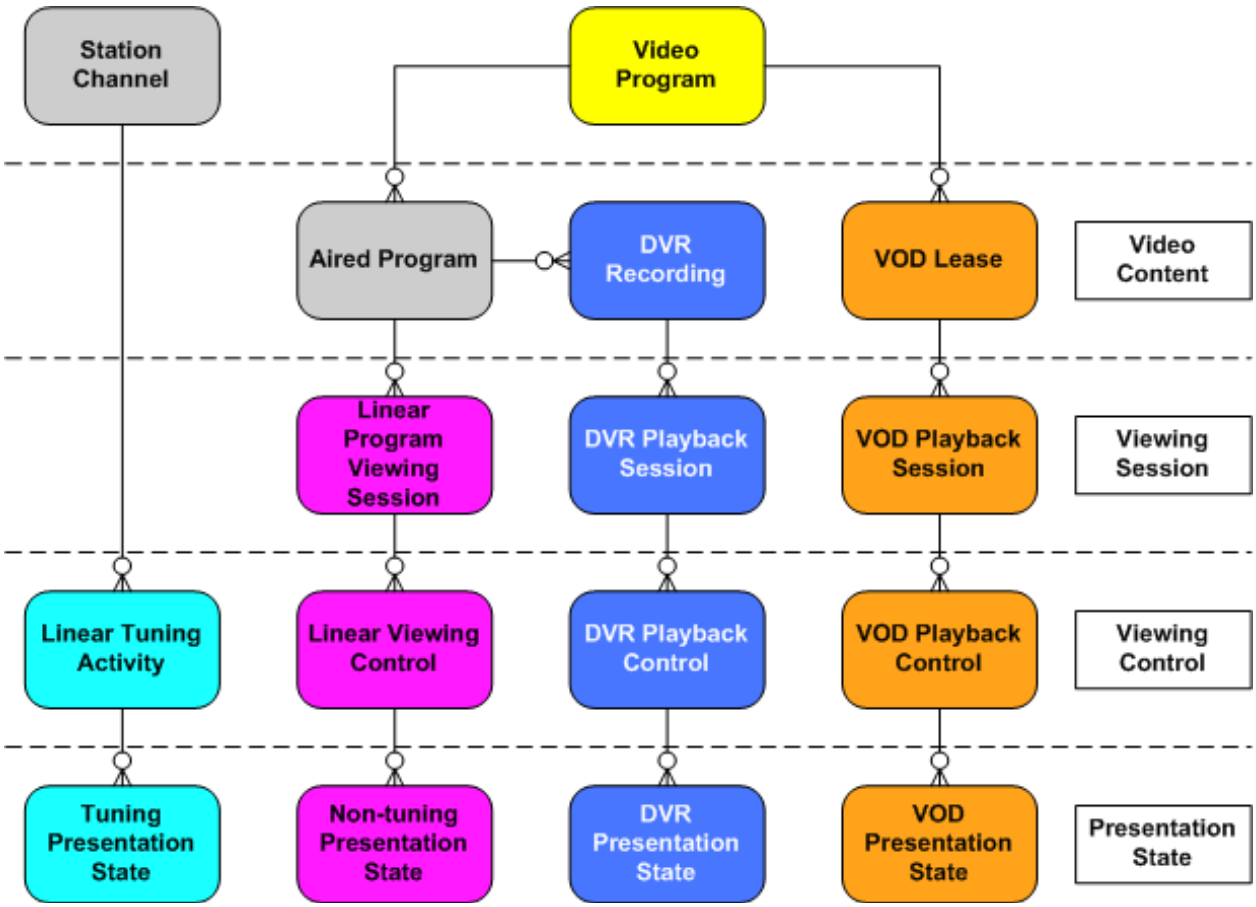


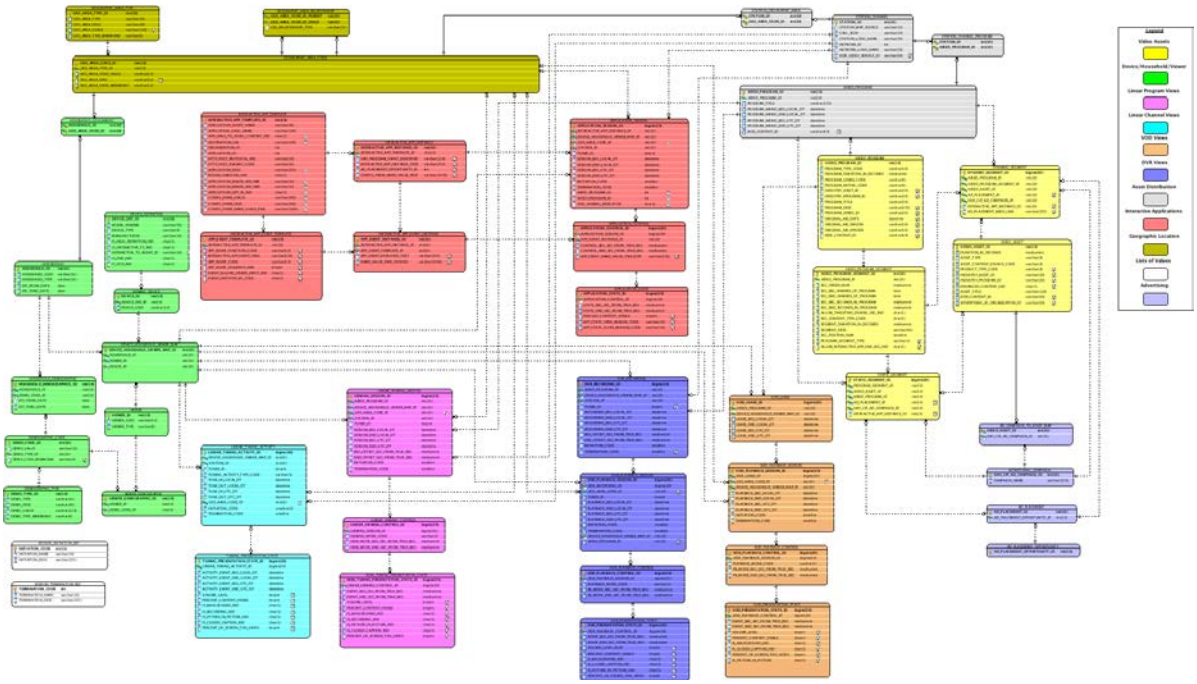
Figure 7 - MMDM Video Viewing Conceptual Details

The layers in the diagram are:

- Video Content Layer – Reference to the video content (e.g., VOD Lease, DVR Recording, or Aired Program)
- Viewing Session Layer – Reference to watching the video content (e.g., VOD and DVR playback or viewing of the aired program)
- Viewing Control Layer – Reference to the play controls while watching the video content (e.g., play, pause, FF, RW, stop, tune, etc.)
- Presentation State Layer – Reference to the presentation state while watching the video content (e.g., volume up/down, mute, split, etc.)

7.3 ERD - Media Measurement Data Model

The following is the Logical Media Measurement Data Model (MMDM), a key component of the overall Audience Measurement architecture. This was generated using Visual Paradigm, which is a suite of UML and ERD modeling tools.



7.4 MMDM Entity Details

7.4.1 GEOGRAPHIC_AREA_TYPE Entity

Contains the definitions of the various types of geographic areas. Examples include Zip Code, Designated Market Area (DMA), SysCode (AdZone), and Census Tract.

Name	Data Type	Null-able	Documentation
GEO_AREA_ TYPE_ID	int(10)	No	Unique identifier for geographic area types.
GEO_AREA_TYPE	varchar (16)	No	Geographic area types include identifiers such as Zip Code, Designated Market Area (DMA), US Census Tract, and others.
GEO_AREA_DESC	varchar (40)	No	Description for the geographic area type.
GEO_AREA_USAGE	varchar (128)	Yes	Recommendations or general usage for the type.
GEO_AREA_ TYPE_MNEMONIC	varchar (6)	No	Geographic Area MNEMONIC is a 6 char descriptor of the geographic area type. This is for convenience for filtering and reporting.

7.4.2 STATION_GEOGRAPHIC_AREA Entity

Intersection table mapping the station delivering video content to the geographic area receiving the content.

Name	Data Type	Null-able	Documentation
STATION_ID	int(10)	No	Unique station identifier.
GEO_AREA_ CODE_ID	int(10)	No	Unique geographic area identifier.

7.4.3 GEOGRAPHIC_AREA_RELATIONSHIP Entity

This associates geographic area definitions into grouping relationships. For example, this can associate a Zip Code, DMA, and Census Tract to define a geographic area as a collection of type definitions.

Name	Data Type	Null-able	Documentation
GEO_AREA_ CODE_ID_ PARENT	int(10)	No	Reference to the parent geographic area code.
GEO_AREA_ CODE_ID_ CHILD	int(10)	No	The children in the geographic area grouping.
GEO_ RELATIONSHIP_ TYPE	varchar (32)	No	This would contain a type such as "DMA-ZIP."

7.4.4 STATION_CHANNEL Entity

Station Channel contains the combinations of stations, channels, networks, and services on which programs are delivered to the viewers.

Name	Data Type	Null-able	Documentation
STATION_ID	int(10)	No	Unique identifier for the station delivering the video content to the viewer.
STATION_ MAP_SOURCE	varchar (12)	No	The information source of the Station to Channel mapping (e.g., Tribune).
CALL_SIGN	varchar (10)	No	The acronym (call sign) for the Station; Station Call letters.
STATION_ LONG_NAME	varchar (50)	No	The full name of a Station.
NETWORK_ID	int	No	A unique identifier for a Network.
NETWORK_ LONG_NAME	varchar (50)	No	The name of a Network.
EIDR_VIDEO_ SERVICE_ID	varchar (64)	Yes	Contains the entertainment ID registry number for the station.

7.4.5 STATION_CHANNEL_PROGRAM Entity

Associates the aired programs to the station/channel/network on which the programs are aired.

Name	Data Type	Null-able	Documentation
STATION_ID	int(10)	No	Unique identifier for the station on which the program was aired.
AIRED_ PROGRAM_ID	int(10)	No	Unique identifier for the aired program.

7.4.6 GEOGRAPHIC_AREA_CODE Entity

Geographic Area Code contains the specific values associated to the geographic area types. For example, this may include a list of Zip Codes or DMAs.

Name	Data Type	Null-able	Documentation
GEO_AREA_ CODE_ID	int(10)	No	Geographic Area Code ID is the unique internal identifier of this geographic area.
GEO_AREA_ TYPE_ID	int(10)	No	Foreign key back to the geographic area type.
GEO_AREA_ CODE_VALUE	varchar (12)	No	Actual associated value for the geographic area type. For example, if the type is Zip Code, the value may be a 5 or 9 digit Zip Code (e.g., "80027-1234").
GEO_AREA_ DESC	varchar (32)	Yes	The description associated with the value of the geographic code type. For example, with a type of Zip Code, and a value of "80027", the description could be "Louisville, CO, USA".
GEO_AREA_ CODE_ MNEMONIC	varchar (12)	No	Geographic Area Code Mnemonic is a 6-character descriptor of the geographic area code. This is for convenience for filtering and reporting.

7.4.7 AIRED_PROGRAM Entity

Aired Program records information on when this video program aired. This could be the original airing or a rerun. The same Video Program may run multiple times in one day. If the Video Program does not allow targeted content, then it is assumed that the same content (including advertisements) was played each time the Video Program aired.

Name	Data Type	Nullable	Documentation
AIRED_ PROGRAM_ID	int(10)	No	Aired Program ID is the unique internal identifier of this video program.
VIDEO_ PROGRAM_ID	int(10)	No	Video Program ID provides a link to the video program which is being aired.

Name	Data Type	Nullable	Documentation
PROGRAM_ TITLE	varchar (255)	No	Contains the title of the aired program.
PROGRAM_ AIRING_BEG_ LOCAL_DT	datetime	No	Program Airing Begin Local Date Time identifies the date and time this program aired, expressed in local time. This may also be known as Program scheduled start date time.
PROGRAM_ AIRING_END_ LOCAL_DT	datetime	No	Program Airing End Local Date Time identifies the date and time this program finished airing, expressed in local time. This may also be known as Program scheduled end date time.
PROGRAM_ AIRING_BEG_ UTC_DT	datetime	No	Program Airing Begin UTC Date Time identifies the date and time this program aired, expressed in UTC time. This may also be known as Program scheduled start date time.
PROGRAM_ AIRING_END_ UTC_DT	datetime	No	Program Airing End UTC Date Time identifies the date and time this program finished airing, expressed in UTC time. This may also be known as Program scheduled end date time.
EIDR_ CONTENT_ID	varchar (64)	Yes	EIDR is a universal unique identifier system for movie and television assets. From top level titles, edits, and DVDs, to encodings, clips and mash-ups, EIDR provides global unique identifiers for the entire range of audiovisual object types that are relevant to entertainment commerce. (Source: EIDR.org)

7.4.8 INTERACTIVE_APP_TEMPLATE Entity

Interactive Application Template contains the definition of the application template.

Name	Data Type	Nullable	Documentation
INTERACTIVE_ APP_ TEMPLATE_ID	int(10)	No	Unique identifier for the interactive application template.
APPLICATION_ SHORT_NAME	varchar (40)	No	Short name of the interactive application.
APPLCATION_ LONG_NAME	varchar (120)	No	Long name of the interactive application.

Name	Data Type	Nullable	Documentation
APP_LINKS_ TO_VIDEO_ CONTENT_IND	char(1)	Yes	Application Links to Video Content Indicator is a Y/N field that specifies whether or not this Interactive Application is linked to the Video Content that is being aired on the screen. Examples: A Sports Application on ESPN may likely be linked to the content airing. A recommendation engine is not likely linked to particular video content. Y = Interactive Application is linked to content N = Interactive Application is not linked to content
DESTINATION_ URL	varchar (100)	Yes	Verify this: Destination URL is the Uniform Resource Locator to which the application response information will be sent. So in the case of voting and polling, this is the web address to which the STB will direct the voting information.
ORGANIZATION_ID	int	No	Identifier of the organization originating the interactive application.
APPLICATION_ ID	int	No	Application ID is the unique identifier assigned to the application. This is not the database internal ID, but an industry recognized ID for this application.
HTTP_POST_ PROTOCOL_ VER	varchar (10)	No	Hyper Text Transport Protocol Post Protocol Version records the version of the HTTP protocol used in sending messages from the STB to the collection server. This allows the collection server to know how to interpret the message.
HTTP_POST_ FORMAT_CODE	varchar (10)	No	Hyper Text Transport Protocol Post Format records the format of the HTTP protocol used in sending messages from the STB to the collection server. This allows the collection server to know how to interpret the message.
APPLICATION_ DESC	varchar (255)	Yes	Contains the description of the interactive application. This generically identifies what kind of Interactive Application is being run. Example: College Football Voting and Polling.

Name	Data Type	Nullable	Documentation
BOUND_ UNBOUND_IND	char(1)	No	Indicates whether an interactive application is linked (bound) to the live channel. Bound example: User experience is bound to the entertainment content and exits when content changes (e.g., Request For Information - RFI). Unbound example: The application can continue to run outside the scope of the content in which it was launched (e.g., eBay alerts).
APPLICATION_ MAJOR_VER_ NBR	varchar (10)	Yes	Major version number for the interactive application.
APPLICATION_ MINOR_VER_ NBR	varchar (10)	Yes	Minor version number for the interactive application.
APPLICATION_ OPT_IN_IND	char(1)	Yes	Application Opt In Indicator specifies whether or not the user must opt in to the application. Y means that the user must opt in for the application to run for them. N means the application can launch without being requested by the user.
CONFIG_ PARM_USAGE	varchar (200)	Yes	Configuration Parameter Usage is a narrative field explaining the usage of the configuration parameters.
CONFIG_ PARM_DESC	varchar (200)	Yes	Configuration Parameter Description records any descriptive information about the configuration parameters.
CONFIG_ PARM_NAME_ USAGE_PAIR	varchar (1000)	Yes	Configuration Parameter Name Usage Pair records a set of name-value pairs, which provide configuration information for the Application Template.

7.4.9 HOUSEHOLD_GEOGRAPHIC Entity

Intersection table mapping the household to its geographic data.

Name	Data Type	Nullable	Documentation
HOUSEHOLD_ID	int(10)	No	Anonymized (de-identified) household identifier.
GEO_AREA_ CODE_ID	int(10)	No	Unique geographic area identifier.

7.4.10 APPLICATION_SESSION Entity

Application Session records the instantiation or invocation of an Interactive Application by a Device Household Viewer. The Interactive Application may be associated with any of:

- Aired Program ID when the viewer is viewing Linear Content (Linear Tuning Activity or Linear Program Viewing Session) or recording content (DVR).
- Video Program ID when the viewer is viewing a Video On Demand asset where there is only a Video Program ID.
- Neither Aired Program nor Video Program; an example may be a Recommendation application. The EIDR is not a sufficient link, because the same EIDR may occur in several aired programs and thus EIDR could not be used to distinguish one aired program from another.

Name	Data Type	Nullable	Documentation
APPLICATION_ SESSION_ID	bigint (20)	No	Application Session ID records the unique identifier for application session.
INTERACTIVE_ APP_ INSTANCE_ID	int(10)	No	Interactive Application Instance ID records the unique identifier assigned to this instance (e.g., execution) of the Interaction Application. This value identifies the Interactive Application Instance that the user is running. Many Application Sessions may point to the same Interactive Application Instance, for example 10,000 people may be using a Voting and Polling application for a football game.
DEVICE_ HOUSEHOLD_ VIEWER_MAP_ ID	int(10)	No	Household Device Viewer ID provides a link to the DHV_Map (Household Device Viewer Mapping) table, which identifies the Household, Viewer, and Device associated with this Interactive Session.
GEO_AREA_ CODE_ID	int(10)	Yes	Geographic area code identifier records the geographic area in which the interactive application session began.
STATION_ID	int(10)	No	Station ID points to the station_channel table as a foreign key reference. Provides link to call_sign, EIDR, etc.
TUNER_ID	tinyint	No	Device Tuner ID identifies the tuner used during this application session. This is important to differentiate between multiple sessions that may be created at the same time from the same Household Device Viewer.
SESSION_BEG_ LOCAL_DT	datetime	No	Session Begin Local Date Time records the date and time of when this application session began, expressed in local time. The viewer may start the session at the same time as the program or at any point during the program.
SESSION_END_ LOCAL_DT	datetime	No	Session End Local Date Time records the date and time of when this application session ended, expressed in local time.

Name	Data Type	Nullable	Documentation
SESSION_BEG_ UTC_DT	datetime	No	Session Begin UTC Date Time records the date and time of when this application session began, expressed in UTC time. The viewer may start the session at the same time as the program or at any point during the program.
SESSION_END_ UTC_DT	datetime	No	Session End UTC Date Time records the date and time of when this application session ended, expressed in UTC time.
INITIATION_ CODE	smallint	No	Session Initiation Code identifies what action initiated the session. Examples include: user invoked via menu; system prompted user, etc.
TERMINATION_ CODE	smallint	No	Session Termination Code identifies a reason code for a session terminating. Examples include: Tune-out, User Changed channel, User exited session, End of program.
AIRED_ PROGRAM_ID	**Datatype:** int **Nullable:** Yes *Background: The field INTERACTIVE_APP_TEMPLATE.APP_LINKS_TO_VIDEO_CONTENT_IND specifies whether or not the Interactive Application links to Video Content. Read the following with that in mind.* Aired Program ID identifies the aired program that the viewer was viewing when the Application Session was instantiated. This value may be captured whether or not the Interactive Application Links to the Content. If the Interactive Application does NOT link to the content, then the Aired Program ID value can be used to enable measuring other activity that was occurring when the user was consuming the content specified in the Aired Program ID. During measurement, this additional activity can reduce the viewing score that an ad earns. For example, if the user is interacting with a recommendation application when an ad appears on the channel, this may decrease the score of any ad viewing. If the Interactive Application does link to the content (to the program that was airing), then the Aired Program ID value can be used to measure Interactive Application activity that was occurring when the user was consuming the content specified in the Aired Program ID. During measurement, this additional Interactive Application activity can increase the viewing score because it can be determined that the viewer is very engaged with the content since the application was related to the content. A NULL value indicates that there was not an Aired Program present. This may happen in the case of VOD viewing.		

Name	Data Type	Nullable	Documentation
VIDEO_ PROGRAM_ID	**Datatype:** int **Nullable:** Yes *Background: The field INTERACTIVE_APP_TEMPLATE.APP_LINKS_TO_VIDEO_CONTENT_IND specifies whether or not the Interactive Application links to Video Content. Read the following with that in mind.* Video Program ID identifies the video program that the viewer was viewing when the Application Session was instantiated. This value may be captured whether or not the Interactive Application Links to the Content. If the Interactive Application does NOT link to the content, then the Video Program ID value can be used to enable measuring other activity that was occurring when the user was consuming the content specified in the Video Program ID. During measurement, this additional activity can reduce the viewing score that an ad earns. For example, if the user is interacting with a recommendation application when an ad appears on the channel, this may decrease the score of any ad viewing. If the Interactive Application does link to the content (to the program that was airing), then the Video Program ID value can be used to measure Interactive Application activity that was occurring when the user was consuming the content specified in the Video Program ID. During measurement, this additional Interactive Application activity can increase the viewing score because it can be determined that the viewer is very engaged with the content since the application was related to the content. A NULL value indicates that there was not a Video Program present.			
VOD_VIEWING_ INDICATOR	char(1)	Yes	Video On Demand Viewing Indicator specifies whether or not the viewing activity that was occurring this Application Session happened during a VOD viewing session. Values include: Y = This happened during a VOD session. In this case, the Aired Program ID should be null. During measurement, associating this viewing to an Aired Program would not be attempted. N = This happened during a non-VOD session so it happened when Linear or DVR was occurring. During measurement, we can link this activity to an Aired Program.

7.4.11 INTERACTIVE_APP_INSTANCE Entity

Interactive Application Event Instance records the actual event instance.

Name	Data Type	Null-able	Documentation
INTERACTIVE_ APP_ INSTANCE_ID	int(10)	No	Interactive Application Instance ID records the unique identifier assigned to this instance (i.e., execution) of the Interactive Application.
INTERACTIVE_ APP_ TEMPLATE_ID	int(10)	No	Unique identifier for the interactive application template. Interactive Application ID links back to the Interactive Application Template where the basic information about the Interactive Application is recorded.
SAFI_ PROGRAM_ EVENT_ IDENTIFIER	varchar (128)	Yes	PEID, or Programmed Event ID: This field is a unique identifier that ties to the content (program or commercial spot) that is being enhanced. A campaign that enhances several different programs or commercial spots will have one PEID for each scheduled event (e.g., a six-week enhancement to a weekly program would have six different PEIDs).
INTERACTIVE_ APP_ INSTANCE_ DESC	varchar (250)	Yes	Interactive Application Instance Description records the description of this instance (i.e., execution) of the Interaction Application. This may be the name of the college football game. For example: Texas vs. Oklahoma.
AD_ PLACEMENT_ OPPORTUNITY_ ID	int	Yes	Ad placement opportunity ID records the unique internal identifier assigned to the ad placement opportunity related to this Interactive Application Instance.
CONFIG_PARM_ NAME_VALUE_ PAIR	varchar (1000)	Yes	Configuration Parameter Name Value Pair records a set of name value pairs, which provide configuration information for the Application Instance. For this instance of the Application, this records the actual configuration values for the CONFIG_PARM_NAME_ USAGE_PAIR defined in the INTERACTIVE_APP_ TEMPLATE. These may be thought of as Application Settings.

7.4.12 VIDEO_PROGRAM Entity

Video Program records information about a video program. A Video Program is some video content such as a news cast or a sporting event including any ad breaks that are contained within the program. The Video Program may start and end with ads, and may have ads anywhere within the content.

Name	Data Type	Null-able	Documentation
VIDEO_ PROGRAM_ID	int(10)	No	Video Program ID is the unique internal identifier of this video program.

Name	Data Type	Null-able	Documentation
PROGRAM_ TYPE_CODE	varchar (16)	No	Video Program Type Code records the type of this video program. Examples: News, Weather, Movie, Sport, Series.
PROGRAM_ DURATION_ IN_SECONDS	medium int	No	Program Duration In Seconds records the duration of this program, measured in seconds.
PROGRAM_ GENRE_CODE	varchar (8)	No	Video Program Genre Code records the genre of this video program.
PROGRAM_ RATING_CODE	varchar (4)	No	Video Program Rating Code records the rating code of this video program.
INDUSTRY_ ASSET_ID	varchar (20)	Yes	Industry Asset ID records a standard, commonly accepted industry ID for this video program.
INDUSTRY_ PROGRAM_ID	varchar (20)	Yes	Industry Program ID records a standard, commonly accepted industry ID for this video program. Each program has a unique value for Industry Program ID. In the case of a Series, each episode in the series has a unique Industry Program ID, but all the episodes in the Series share the same Program Series ID.
PROGRAM_ TITLE	varchar (50)	No	Video Program Title records the name of this video program.
PROGRAM_ DESC	varchar (255)	Yes	This is the long description of the video program.
PROGRAM_ SERIES_ID	varchar (20)	Yes	Program Series ID records the series identifier for this program. This is the commonly used identifier of this series when the program is an episodic program. This may also be known as Industry Series ID. Collecting series information allows comparisons over time to see if series viewership is dropping off.
ORIGINAL_ AIR_DATE	datetime	Yes	Date and time the video program originally aired.
ORIGINAL_ AIR_SEASON	varchar (16)	Yes	The season this program originally aired.
ORIGINAL_ AIR_EPISODE	varchar (16)	Yes	The episode in the season this program originally aired.
EIDR_ CONTENT_ID	varchar (64)	Yes	EIDR is a universal unique identifier system for movie and television assets. From top level titles, edits, and DVDs, to encodings, clips and mash-ups, EIDR provides globally unique identifiers for the entire range of audio-visual object types that are relevant to entertainment commerce. (Source: EIDR.org)

7.4.13 DYNAMIC_SEGMENT Entity

Dynamic Segment records information about a video asset, which is dynamically inserted to this segment at airing. For example, when a video allows dynamic ad insertion, this identifies the dynamic (targeted) video asset that was inserted into the segment. The ultimate goal is that for each Video Program Segment, for each viewing session of a particular Video Program Airing, whichever Ad was delivered to the viewer is captured. An interim step until such detailed data is available is to record only the Video Program Segment, the Ad was delivered (but not to which viewer), and the Video Program Airing data.

Name	Data Type	Null-able	Documentation
DYNAMIC_SEGMENT_ID	bigint(20)	No	Unique identifier of a dynamic segment.
AIRED_PROGRAM_ID	int(10)	No	Video Program Airing ID links to the parent Video Program Airing, which identifies the airing of the video program in which this asset appeared. This will be present for Linear and DVR. It will NOT be present for VOD.
VIDEO_PROGRAM_SEGMENT_ID	int(10)	No	Video Program Segment ID links to the parent Video Program Segment, which defines the video program segment into which this dynamic content is being inserted.
VIDEO_ASSET_ID	int(10)	No	Video Asset ID links to the Video Asset table to identify that asset (ad) that was dynamically inserted into this segment.
AD_PLACEMENT_ID	int(10)	Yes	Ad Placement ID provides the link to placement of the ad in relation to the advertising opportunity.
SAFI_CIP_AD_CAMPAIGN_ID	int(10)	No	This records the campaign ID under which the ad was placed in the Dynamic Segment. The same ad can be used in multiple campaigns. When tracking viewership of an ad, we need to know the campaign under which the ad was presented to the viewer. If we do not capture the campaign, then we will end up recording Households that viewed the ad, but it will be apart from the context of the campaign and thus will not be useful for measuring campaign performance.
INTERACTIVE_APP_INSTANCE_ID	int(10)	Yes	Interactive Application Instance ID records the identifier of this interactive application instance. As an example, this dynamic segment may have a truck commercial that varies depending on the city such that a viewer in Denver may get one instance of the application while a viewer in Fort Collins may get a different version of the application. **Note**: This information does not control the measurement activity. Instead, it can be used to identify a possible reason for the viewing results.

Name	Data Type	Null-able	Documentation
AD_ PLACEMENT_ BASIS_LINK	varchar (255)	Yes	Ad Placement Basis Link provides a link to the data which explains why this ad was placed in this Dynamic Segment. What group of viewers were being targeted with this ad. This is the Placement Decision Notification message/information.

7.4.14 DEVICE_DEFINITION Entity

Contains the manufacturer's definitions of the viewing devices. Examples include a set-top box, a tablet device, a smartphone, an Internet protocol TV, a personal computer, or any other type of device able to view video content.

Name	Data Type	Null-able	Documentation
DEVICE_DEF_ID	int(10)	No	Video Viewing Device Definition ID is the internal identifier assigned to this video viewing device definition.
MODEL_ NUMBER	varchar (50)	No	Model number of the viewing device.
DEVICE_TYPE	varchar (8)	No	The type of the viewing device (e.g., set-top).
MANUFACTURER	varchar (16)	No	Manufacturer of the viewing device.
IS_HIGH_ DEFINITION_ IND	char(1)	No	Flag indicating if the device is enabled for high-definition video content.
IS_ INTERACTIVE_ TV_IND	char(1)	No	Flag indicating if the viewing device is enabled for interactive television viewing agents.
INTERACTIVE_ TV_AGENT_ID	varchar (16)	Yes	Identifier of the ITV agent (e.g., EBIF, T2W/OCAP, MHP, JavaTV) if the viewing device is enabled for ITV.
IS_DVR_IND	char(1)	No	Flag indicating if the viewing device is enabled for Digital Video Recorder capabilities.
IS_VOD_IND	char(1)	No	Flag indicating if the viewing device is enabled for video on demand capabilities.

7.4.15 APPLICATION_CONTROL Entity

This entity captures the part of the Interactive Application with which the user is interacting (the Interactive Application Event) along with the user response to that Interactive Application Event. Example: The user is interacting with the App Event for Voting and they have chosen player "Smith" as their choice.

Name	Data Type	Null-able	Documentation
APPLICATION_ CONTROL_ID	bigint(20)	No	Application Control ID is the unique identifier for this Application Control record.
APPLICATION_ SESSION_ID	bigint(20)	No	Application Session ID links to the parent Application session which provides context for this application session.
APP_EVENT_ INSTANCE_ID	int(10)	No	Application Event Instance ID links to the INTERACTIVE_ APP_EVENT_INSTANCE. APP_EVENT_INSTANCE_ID which provides the definition information related to what the user is doing in this part of the Application. Example: The Interactive App Event Instance may define “voting”. By linking to that value, we now know that this Application Control record has to do with voting. The link to the Application Session record identifies the context for the voting, such as the football game between Texas and Oklahoma.
CONTROL_ BEG_SEC_ FROM_ TRUE_BEG	mediumint	No	Application Mode Beg Second From True Beginning (of Video Program) identifies the position in the actual program content of where this activity occurred. Having the actual position in the content allows mapping of Application activity onto Video Content so that we can determine where in the content the user was when they were using this application. Example: The Application may have been a shopping app initiated just after a car ad appeared. Or, the Application may have been a Sports scoreboard initiated during inning 4 of a baseball game.
CONTROL_ END_SEC_ FROM_ TRUE_BEG	mediumint	No	Application Mode End Second From True Beginning (of Video Program) identifies the position in the actual program content where this activity ended. Having the actual position in the content allows mapping of Application activity onto Video Content so that we can determine where in the content the user was when they were using this application. Example: The Application may have been a shopping app initiated just after a car ad appeared and then terminated 40 seconds later. The Application may have been a Sports scoreboard that was initiated during inning 4 of a baseball game, and kept active until inning 7.
APP_EVENT_ NAME_VALUE_ PAIR_RESP	varchar (250)	Yes	Application Event Name Value Pair Response records the viewer's response to the prompt or displayed choice provided in the application. By capturing this as a Name-Value pair, we provide the flexibility to record both parts of the data (question and answer) or (prompt and answer).

7.4.16 INTERACTIVE_APP_EVENT_TEMPLATE Entity

Interactive Application Event Template provides the list of templates for instances of interactive apps.

Name	Data Type	Null-able	Documentation
APP_EVENT_ TEMPLATE_ID	int(10)	No	Interactive application Event Template ID is a unique internal (database) numeric identifier assigned to this event.
INTERACTIVE_ APP_ TEMPLATE_ID	int(10)	No	Interactive application template ID links to the parent Interactive Application Template.
APP_EVENT_ FUNCTION_ CODE	varchar (12)	Yes	Used to specify: Begin or Initiate the Application Exit or to Terminate the Application.
INTERACTIVE_ APP_EVENT_ DESC	varchar (250)	Yes	Records a description of the Event. Examples: Initiated App, Initiated an Order, Completed a Purchase, Exited via Channel Change, Exited via Cancel Button, etc.
APP_ EVENT_CODE	varchar (12)	Yes	Application Event Code records the mnemonic code assigned to this Application Event.
APP_EVENT_ SEQUENCE_NBR	tinyint	Yes	Application Event Sequence Number provides the ordering for the events in this Interactive Application.
EVENT_ ALLOWS_ VIEWER_ INPUT_IND	char(1)	Yes	Application Event Allows Viewer Input Indicator is a yes/no flag that specifies whether or not the user can respond or enter input in response to this event. Y = Viewer input is allowed N = Viewer input is not allowed.
EVENT_ INITIATED_BY_CO DE	char(1)	Yes	Event Initiated By Code records how this event is initiated. Values include: U = User initiates the event, or user responds to the event that the server does S = Server initiates the event E = Either user or server may initiate the event.

7.4.17 INTERACTIVE_APP_EVENT_INSTANCE Entity

Interactive Application Event Instance records the actual event that was presented to the viewer along with the options that go with that event.

Name	Data Type	Null-able	Documentation
APP_EVENT_ INSTANCE_ID	int(10)	No	Primary key, unique internal identifier for the record.
INTERACTIVE_ APP_ INSTANCE_ID	int(10)	No	Interactive Application Instance ID records the unique identifier assigned to this instance (i.e., execution) of the Interaction Application.

Name	Data Type	Null-able	Documentation
APP_EVENT_ TEMPLATE_ID	int(10)	No	Interactive application Event Template ID is a unique numeric identifier assigned to this event.
APP_EVENT_ DISPLAYED_ TEXT	**Datatype:** varchar(200) **Nullable:** Yes Application Event Displayed Text records the text that was displayed to the viewer when this event ran as part of the Interactive Application Instance. **Examples:** For Voting and Polling Interactive Prompt: “Welcome to the GM sponsored college football game of Texas vs. Oklahoma” Preference Question: Favorite Team (“Are you rooting for Texas or Oklahoma?”) Confirmation of Favorite Team (“Get Ready to Vote” overlay) Vote/Poll Question: For Texas, “Which running back will get the most yards?” For Oklahoma: “Which receiver will catch the most passes?” “Thank You” overlay Vote/Poll Results (“Welcome Back” Message During or End of Game Overlays)		
NAME_VALUE_ PAIR_CHOICES	varchar (1000)	Yes	Name Value Pair Choices records all of the available choices that the user is presented with for answering the displayed text.

7.4.18 VIDEO_ASSET Entity

Video Asset represents a video asset such as an advertisement that may be viewed by a video asset viewing device. In the case of a Non-Targeted Ad, the analyst can readily identify what ad was aired at this point in the Video Program. In the case of a Targeted Video Asset such as a Targeted Ad, there are many variables that control what ad was actually directed to the specific video asset viewing device, so unless the ad decision system specifically records what ad was sent to each device, there is likely no way to know that. Even if one could know the type of ad that was targeted based on viewer demographic and geographic data, there is no way to determine what particular ad was placed in the specific time slot. Because of this fact, we would do well to measure the viewing seconds of targeted vs. non-targeted content with the objective of determining whether the targeted or non-targeted content earns more viewing time.

Name	Data Type	Null-able	Documentation
VIDEO_ ASSET_ID	int(10)	No	Video Asset ID is a unique numeric identifier assigned to this video asset.
DURATION_ IN_SECONDS	mediumint	No	Duration in seconds records the duration of this video asset in seconds. For an ad, this may be 30 or 60 seconds. For a newscast, it may be 1800 seconds if the commercials are baked into the content.
ASSET_TYPE	varchar(8)	No	Video Asset Type identifies the type of the video asset such as Content, Ad, etc. The service provider may provide a reference table for this.

Name	Data Type	Null-able	Documentation
ASSET_ CONTENT_ SOURCE_CODE	varchar(8)	No	Video Asset Content Source Code identifies the source of the content (TV Studio, Webcast, YouTube, etc.). The service provider may provide a reference table for this.
PRODUCT_ TYPE_CODE	varchar(8)	Yes	Product Type Code records a code that identifies the type of product being advertised, if this is an ad. The Provider may define a reference table for this data.
INDUSTRY_ ASSET_ID	varchar (20)	Yes	Industry Asset ID records a standard, commonly accepted industry ID for this video asset.
INDUSTRY_ PROGRAM_ID	varchar (20)	Yes	Industry Program ID records a standard, commonly accepted industry ID for this video asset.
ENHANCED_ CONTENT_IND	char(1)	Yes	Enhanced Content Indicator is used to identify assets, which contain enhanced content such as interactive content or EBIF ads.
ASSET_TITLE	varchar (128)	No	Video Asset Title records the title of this video asset.
EIDR_CONTENT_ID	varchar (64)	Yes	EIDR is a universal unique identifier system for movie and television assets. From top level titles, edits, and DVDs, to encodings, clips and mash-ups, EIDR provides global unique identifiers for the entire range of audio visual object types that are relevant to entertainment commerce. (Source: EIDR.org)
ADVERTISING_ ID_ ORGANIZATION _ID	varchar (64)	Yes	Ad-ID is a Web-based system accessible 24/7 worldwide that generates a unique identifying code for each advertising asset, creating a capability to identify them across all media. (Source: Ad-ID.org)

7.4.19 HOUSEHOLD Entity

The Household table contains household definitions.

Name	Data Type	Null-able	Documentation
HOUSEHOLD_ID	int(10)	No	Household ID is the unique internal identifier of this household.
HOUSEHOLD_ GUID	varchar (32)	No	Anonymized (de-identified) household identifier.
HOUSEHOLD_ TYPE	varchar (16)	No	Household type. Examples include residential, multi-family, small business, commercial, etc.
EFF_ FROM_DATE	date	No	Date the Household became active.
EFF_ THRU_DATE	date	No	Date the Household stopped being active.

7.4.20 VIDEO_PROGRAM_SEGMENT Entity

Video Program Segment defines a part of a video program, a segment of a video program. This may be the time when an ad aired or the time that defines a part of the program, such as an inning in a baseball game.

Name	Data Type	Null-able	Documentation
VIDEO_ PROGRAM_ SEGMENT_ID	int(10)	No	Program Segment ID records the unique identifier assigned to this video program segment.
VIDEO_ PROGRAM_ID	int(10)	No	Program ID provides a link to the parent video program.
SEG_ ORDER_NUM	mediumint	No	Segment Order Number defines the position of this video segment within the program, e.g., 1, 2, 3.
SEG_ BEG_HHMMSS_OF _PROGRAM	time	No	Segment Begin Time in HH:MM:SS format defines when in the program this segment begins. This is time from the beginning of the program, not time from the start of airing of this segment. Example: The program airs at 6:00 PM - this is not relevant. The segment defines an ad that airs exactly 10 minutes into the program. This value would be 00:10:00.
SEG_ END_HHMMSS_OF _PROGRAM	time	No	Segment End Time in HH:MM:SS format defines when in the program this segment ends. This time defines when the program segment ends with time being measured from the beginning of the program. Building on the example above, if the ad is one minute long, the segment would end at 00:10:59.

Name	Data Type	Null-able	Documentation
SEG_BEG_ SECONDS_IN_ PROGRAM	mediumint	No	Segment Begin Time Seconds in Program records the number of seconds from the start of the program at which this segment begins. If an ad began at the start of the second minute, this would be 60. Counting begins at zero, so the first minute is from seconds 0 to 59.
SEG_END_ SECONDS_IN_ PROGRAM	mediumint	No	Segment End Time Seconds in Program records the number of seconds from the start of the program at which this segment ends. If a 60-second ad began at the start of the second minute, and the end of the ad marked the end of the segment, this would be 119 (counting begins from 60, not 61).
ALLOW_ TARGETING_ DURING_ SEG_IND	char(1)	No	Allow Targeting During Segment Indicator specifies whether or not targeted ads can be run during this segment. Y= Yes N = No
SEG_ CONTENT_ TYPE_CODE	char(2)	No	Segment Content Type Code records information about what kind of content is expected to air during this segment. Example: AD = Advertisement; PC = Program Content.
SEGMENT_ DURATION_ IN_SECONDS	mediumint	No	Segment Duration in Seconds records the duration of this segment in seconds.
SEGMENT_ DESC	varchar (64)	No	Segment Description records any description of this segment.
SEG_ POSITION_NUM	smallint	No	Segment Position Number defines the position of this video segment within the program. This is for future use in the measurement process. The usage can vary depending upon how the segments are defined. For example, positions may be 1, 7, 12, 22, whereas order will be 1, 2, 3 (sequential).
PROGRAM_ SEGMENT_ TYPE	varchar(3)	Yes	Map to Linear, VOD, iTV/ETV, IPTV, DVR, etc.
ALLOW_ INTERACTIVE_ APP_DUR_ SEG_IND	char(1)	Yes	Allow Interactive Applications During Segment Indicator specifies whether or not an interactive application may be run during this segment. Y = Yes N = No

7.4.21 APPLICATION_STATE Entity

Application state contains the viewing state and associated data for the application control.

Name	Data Type	Null-able	Documentation
APPLICATION_ STATE_ID	bigint(20)	No	Application state ID is a unique numeric identifier assigned to this application state.
APPLICATION_ CONTROL_ID	bigint(20)	No	Application control ID links the application state to the application control.
STATE_BEG_ SEC_FROM_ TRUE_BEG	mediumint	No	Event Beginning (Starting) Offset Second from True Beginning records the number of seconds into the program at which the Application began to have the state shown in the App State Data. Knowing this information, we can normalize viewing across the sessions done by numerous devices. Example: If the session began at the exact start of the actual program, this would be zero. If the session began at the start of the third minute, this would be 120. The first two minutes of content would be in seconds 0 to 119.
STATE_END_ SEC_FROM_ TRUE_BEG	mediumint	No	Event Ending Offset Second from True Beginning records the number of seconds into the program at which the Application stopped having the state shown in the App State Data. Example: If the session ended at the exact end of the actual program, this would be the number of seconds in the program, such as 1800 for a 30-minute program. If the session ended exactly ten minutes into the program, this would be 600. These values must be adjusted to account for starting the count at 0, so the values would be 1799 and 599, respectively.
PERCENT_ CONTENT_ VISIBLE	tinyint	Yes	Percent Content Visible records a percentage indicating how much of the Application content is visible. This can be used in the scoring algorithm to reduce the viewing points earned if the visible percentage is below a specified level. Also known as occluded region.

Name	Data Type	Null-able	Documentation
APP_STATE_ OPEN_ REASON_CODE	**Datatype:** varchar(10) **Nullable:** Yes *Open*: Reactivate after application suspension (for example, a suspension due to a commercial break). Application State Open Reason Code records the reason associated with the application state. **Examples:** The Application is active and a commercial break appears which forces the application to suspend. The reason may be "Close App for Commercial Break". The Application is active and user chooses picture in picture mode which forces the application to suspend. The reason may be "Close App Picture in Picture mode." The Application is hidden because PIP mode is active. User closes PIP mode and application reappears. The reason may be "Show application upon closing PIP mode."		
APP_STATE_ CLOSE_ REASON_CODE	**Datatype:** varchar(10) **Nullable:** Yes *Close*: Suspend the application so overlays do not appear during commercial break. **Examples:** Tune away. Viewer hits exit button. Emergency Alert System message must be displayed. Higher priority application appears (e.g., Caller ID, depending on application setting). Guide is invoked. A commercial break begins. An application is configured to suspend or not show any graphics when the user chooses Picture-in-picture mode on the TV. More generally, some applications may require full video with no scaling in order to be visible.		

7.4.22 VIEWING_DEVICE Entity

Video Viewing Device identifies any device, which a person may use to view video content.

Name	Data Type	Null-able	Documentation
DEVICE_ID	int(10)	No	Video Viewing Device ID is the anonymized (de-identified) internal identifier assigned to this video viewing device.
DEVICE_DEF_ID	int(10)	No	Video Viewing Device Type Code identifies what kind of device this is.
DEVICE_GUID	varchar (32)	No	De-identified globally unique identifier for the device.

7.4.23 DEVICE_HOUSEHOLD_VIEWER_MAP Entity

Device Household Viewer records the linkage between a Viewer, their House, and their Viewing Device.

Name	Data Type	Null-able	Documentation
DEVICE_ HOUSEHOLD_ VIEWER_ MAP_ID	int(10)	No	Device Household Viewer ID records the internal identifier assigned to this combination of Device - House - Viewer.
HOUSEHOLD_ID	int(10)	No	Household ID identifies the household and links to the Household table.
VIEWER_ID	int(10)	No	Viewer ID identifies the viewer and links to the Viewer table.
DEVICE_ID	int(10)	No	Unique identifier of the viewing device associated with the household and viewer.

7.4.24 STATIC_SEGMENT Entity

Static Segment records the information that identifies which Video Asset aired during this Video Program Segment for the instance of the Video Program that aired at the time identified by Video Program Airing. This is static, as opposed to dynamic, because all viewers of this Video Program Airing will see the same content. If the Video Program Segment defines an ad break, this identifies the Video Asset (ad) that aired during the ad break. If the Video Program Segment defines a program part (such as part of a newscast), this identifies the Video Asset (e.g., National news) that aired during the segment. The length of the Video Program Segment must match the length of the Video Asset that is being assigned to that segment. Note that the Video Program Segment may contain either targeted or non-targeted content; this record is recording the details of the static (non-targeted) content. The dynamic content is recorded in table PROG_AIRING_SEG_ASSET_DYNAMIC. By comparing viewing results of the two kinds of content, the system is able to measure the effectiveness of the targeting as measured in viewing seconds earned.

Name	Data Type	Null-able	Documentation
STATIC_ SEGMENT_ID	bigint(20)	No	Unique identifier for the static segment.
PROGRAM_ SEGMENT_ID	int(10)	No	Program Segment ID records the link to the parent Video Program Segment record. That record identifies the position within the Video Program at which this content was placed.
VIDEO_ ASSET_ID	int(10)	No	Video Asset ID records the asset ID of the asset which aired during this program segment. In the case of an ad, this identifies the ad that aired.
AIRED_ PROGRAM_ID	int(10)	No	Program Airing ID links to the parent Video Program Airing which identifies which airing of the video program this asset appeared in.
AD_ PLACEMENT_ID	int(10)	Yes	Ad Placement ID provides the link to placement of the ad in relation to the advertising opportunity.

Name	Data Type	Null-able	Documentation
SAFI_CIP_AD_ CAMPAIGN_ID	int(10)	No	The SAFI_CIP_AD_CAMPAIGN_ID records the campaign ID under which the ad was placed in the Static Segment. The same ad can be used in multiple campaigns. When we are tracking viewership of an ad, we need to know the campaign under which the ad was presented to the viewer. If we do not capture the campaign, then we will end up recording Households that viewed the ad, but it will be apart from the context of the campaign, which will not be useful for measuring campaign performance.
INTERACTIVE_ APP_ INSTANCE_ID	**Datatype:** int(10) **Nullable:** Yes Interactive Application Instance ID records the identifier of this interactive application instance. **Example:** The Video Program is a national sporting event such as the Rose Bowl. The Program airs say at 1:00 PM MST. Multiple Video Program Segments are defined. The Segments have Static content with Interactive App Instances that vary depending on your city (Press here for a call from your local Ford dealer). **Note:** This information does not control the measurement activity. Instead, it can be used to identify a possible reason for the viewing results.		

7.4.25 HOUSEHOLD_DEMOGRAPHIC Entity

Contains the demographics associated with the households viewing programs. This enables the generation of analytics and metrics based on specific traits.

Name	Data Type	Null-able	Documentation
HOUSEHOLD_ DEMOGRAPHICS _ID	int(10)	No	Household demographics ID is the unique internal identifier of this demographic.
HOUSEHOLD_ID	int(10)	No	Household identifier.
DEMO_ CODE_ID	int(10)	No	Demographic associated with the household.
EFF_ FROM_DATE	date	No	Contains the date from which this demographic code was assigned to this Household.
EFF_ THRU_DATE	date	No	Contains the date through which this demographic code was assigned to this Household.

7.4.26 DVR_RECORDING Entity

This entity records key information about the DVR recording.

Name	Data Type	Null-able	Documentation
DVR_ RECORDING_ID	bigint(20)	No	DVR Recording ID records the unique internal identifier assigned to this record.
AIRED_ PROGRAM_ID	int(10)	No	Aired Program ID (Video Program Airing ID) provides a link to the specific Video Program Airing instance that was recorded. Since any Video Program could be aired one or more times (rerun, ads, etc.), we need to link to the actual content that was recorded. This will also provide the details about the airing such as date and time aired, channel, etc.
DEVICE_ HOUSEHOLD_ VIEWER_ MAP_ID	int(10)	No	Device Household Viewer ID provides a link to the Device Household Device Viewer Mapping table which identifies the Device, Household, and Viewer associated with this recording.
STATION_ID	int(10)	No	Station ID points to the station_channel table as a foreign key reference. Provides link to call_sign, EIDR, etc.
TUNER_ID	tinyint	Yes	Device Tuner ID identifies the tuner used to create this recording. This is important to differentiate between multiple recordings that may be created at the same time from the same Household Device Viewer.
RECORDING_ BEG_LOCAL_DT	datetime	No	Recording Begin Local Date Time records the date and time this recording began, in local time. The viewer may start the recording at the same time as the program or at any point during the program. **Note:** If the user sets the recording to begin before the actual start of the program, this value must reflect the actual program start time (not a few minutes before the program start time).
RECORDING_ END_LOCAL_DT	datetime	No	Recording End Local Date Time records the date and time of when this recording ended, in local time. The viewer may end the recording at the same time as the program ends or at any point during the program. **Note:** If the user sets the recording to finish after the actual end of the program, this value must reflect the actual program end time (not a few minutes after the program end time).
RECORDING_ BEG_UTC_DT	datetime	No	Recording Begin UTC Date Time records the date and time of when this recording began, in UTC time. The viewer may start the recording at the same time as the program or at any point during the program. **Note:** If the user sets the recording to begin before the actual start of the program, this value must reflect the actual program start time (not a few minutes before the program start time).

Name	Data Type	Null-able	Documentation
RECORDING_ END_UTC_DT	datetime	No	Recording End UTC Date Time records the date and time of when this recording ended, in UTC time. The viewer may end the recording at the same time as the program ends or at any point during the program. **Note:** If the user sets the recording to finish after the actual end of the program, this value must reflect the actual program end time (not a few minutes after the program end time).
BEG_OFFSET_ SEC_FROM_ TRUE_BEG	**Datatype:** mediumint **Nullable:** No Beginning (Starting) Offset Second from True Beginning records the number of seconds into the program at which this recording began. Knowing this information, the program is able to normalize viewing across the recordings done by numerous devices. **Example:** If the recording began at the exact start of the actual program, then this would be zero. If the recording began at the start of the third minute, then this would be 120. The first two minutes of content would be in seconds 0 to 119. Value range is 0 to program duration in seconds (ex: 3599 for 1 hour program). **Note:** If the user sets the recording to begin recording before the actual start of the program, this value must reflect the actual program start second (not a few minutes before the program start time).		
END_OFFSET_ SEC_FROM_ TRUE_BEG	**Datatype:** mediumint **Nullable:** No Ending Offset Second from True Beginning records the number of seconds into the program at which this recording ended. **Example:** If the recording ended at the exact end of the actual program, then this would be the number of seconds in the program, perhaps 1800 for a 30 minute program (60*30). If the recording ended exactly ten minutes into the program, then this would be 600 (60* 10). These values must be adjusted to account for starting the count at 0, so the values would be 1799 and 599 respectively. Value range is 0 to program duration in seconds (ex: 3599 for 1 hour program). **Note:** If the user sets the recording to finish recording after the actual end of the program, this value must reflect the actual program end second (not a few minutes after the program end time).		
INITIATION_ CODE	smallint	No	Recording Type Code identifies how the recording was initiated. Values include: ONET = One Touch SCHD = Scheduled.
TERMINATION_ CODE	smallint	Yes	Recording Termination Code identifies how the recording was ended. Links to the Session Action Code table.

7.4.27 LINEAR_VIEWING_SESSION Entity

Viewing Session records the details of the viewing session of a viewer associated with a house using a device. The session may be of the Linear content directly, in which case this record links to Video Program Airing as its parent.

Name	Data Type	Null-able	Documentation
VIEWING_ SESSION_ID	bigint(20)	No	Viewing Session ID records the unique internal identifier assigned to this record.
AIRED_ PROGRAM_ID	int(10)	No	Aired Program ID provides a link to the specific Video Program Airing instance that was viewed. Since any Video Program could be aired one or more times (re-runs, etc., we need to link to the actual content that was viewed. This will also provide the details about the airing such as date and time aired, channel, etc.
DEVICE_ HOUSEHOLD_ VIEWER_ MAP_ID	int(10)	No	Device Household Viewer ID provides a link to the Household Device Viewer table which identifies the Household, Viewer, and Device associated with this session.
GEO_AREA_ CODE_ID	int(10)	Yes	Geographic area identifier in which the session began.
STATION_ID	int(10)	No	Station ID points to the station_channel table as a foreign key reference. Provides link to call_sign, EIDR, etc.
TUNER_ID	tinyint	No	Device Tuner ID identifies the tuner used during this session. This is important to differentiate between multiple sessions that may be created at the same time from the same Household Device Viewer.
SESSION_ BEG_LOCAL_DT	datetime	No	Session Begin Local Date Time records the date and time of when this session began, expressed in local time. The viewer may start the viewing at the same time as the program or at any point during the program.
SESSION_END_LO CAL_DT	datetime	No	Session End UTC Date Time records the date and time of when this session ended, expressed in UTC time.
SESSION_ BEG_UTC_DT	datetime	No	Session Begin UTC Date Time records the date and time of when this session began, expressed in UTC time. The viewer may start the viewing at the same time as the program or at any point during the program.
SESSION_ END_UTC_DT	datetime	No	Session End UTC Date Time records the date and time of when this session ended, expressed in UTC time.

Name	Data Type	Null-able	Documentation
BEG_OFFSET_SEC_FROM_TRUE_BEG	mediumint	No	Beginning (Starting) Offset Second from True Beginning records the number of seconds into the program at which this session began. Knowing this information, we can normalize viewing across the sessions done by numerous devices. Example: If the session began at the exact start of the actual program, then this would be zero. If the session began at the start of the third minute, then this would be 120. The first two minutes of content would be in seconds 0 to 119.
END_OFFSET_SEC_FROM_TRUE_BEG	mediumint	No	Ending Offset Second from True Beginning records the number of seconds into the program at which this session ended. Example: If the session ended at the exact end of the actual program, then this would be the number of seconds in the program, perhaps 1800 for a 30-minute program. If the session ended exactly ten minutes into the program, then this would be 600. These values must be adjusted to account for starting the count at 0, so the values would be 1799 and 599, respectively.
INITIATION_CODE	smallint	No	Identifies what action initiated the session. Examples include, tune-in, timed start, long running session, etc.
TERMINATION_CODE	smallint	No	Reason code for a session terminating. Examples include Tune-out, end of program, end of recording session, etc.

7.4.28 VOD_LEASE Entity

Contains the key information about the VOD Lease.

Name	Data Type	Null-able	Documentation
VOD_LEASE_ID	bigint(20)	No	VOD Lease ID records the unique internal identifier assigned to this record.
VIDEO_PROGRAM_ID	int(10)	No	Contains the link to the leased video program.
DEVICE_HOUSEHOLD_VIEWER_MAP_ID	int(10)	No	Household Device Viewer ID provides a link to the DHV_Map (Device Household Viewer Mapping) table, which identifies the Household, Viewer, and Device associated with this recording.
LEASE_BEG_LOCAL_DT	datetime	No	Contains the beginning date time of the VOD lease in local time.
LEASE_END_LOCAL_DT	datetime	No	Contains the ending date time of the VOD lease in local time.

Name	Data Type	Null-able	Documentation
LEASE_BEG_ UTC_DT	datetime	No	Contains the beginning date time of the VOD lease, expressed in UTC time.
LEASE_END_ UTC_DT	datetime	No	Contains the ending date time of the VOD lease, expressed in UTC time.

7.4.29 VIEWER Entity

Viewer record information about the person operating a video asset viewing device to view or record video content.

Name	Data Type	Null-able	Documentation
VIEWER_ID	int(10)	No	Viewer ID is the unique internal identifier of this viewer.
VIEWER_GUID	varchar (32)	No	Viewer globally unique ID is the anonymized (de-identified) unique internal identifier of this video program.
VIEWER_TYPE	varchar(8)	No	Type of the viewer consuming the video content.

7.4.30 AD_CAMPAIGN_TO_ASSET_MAP Entity

Provides the link between the video asset and associated advertising campaigns. Video assets can be associated with zero or many advertising campaigns.

Name	Data Type	Null-able	Documentation
VIDEO_ ASSET_ID	int(10)	No	Contains the link to the video asset.
SAFI_CIP_AD_ CAMPAIGN_ID	int(10)	No	Contains the link to the associated advertising campaign.

7.4.31 DEMOGRAPHIC_CODE Entity

Contains the list of demographics available for performing analytics.

Name	Data Type	Null-able	Documentation
DEMO_ CODE_ID	int(10)	No	Demographic type ID is the unique internal identifier of this demographic type.
DEMO_VALUE	varchar (32)	No	Actual associated value for the demographic type. For example, if the demographic is age range, this value could be "40-59".
DEMO_TYPE_ID	int(10)	No	Foreign key back to the demographic type.

Name	Data Type	Null-able	Documentation
DEMO_CODE_ MNEMONIC	varchar(6)	Yes	This is a 6-character descriptor of the demographic code. This is for convenience for filtering and reporting.

7.4.32 LINEAR_TUNING_ACTIVITY Entity

Linear Tuning Activity records the tuning event as it occurred, before breaking it into program chunks in the Linear Viewing Session record. Having the data in this format allows for Longitudinal Analytics that are very difficult to reproduce using the Session-level data because the sessions must be reassembled. For example, what program did the STB tune to before and after a program of interest.

Name	Data Type	Null-able	Documentation
LINEAR_TUNING_ ACTIVITY_ID	bigint(20)	No	Linear Tuning Activity ID is the unique identifier assigned to this record.
DEVICE_ HOUSEHOLD_ VIEWER_MAP_ID	int(10)	No	Device Household Viewer Map ID provides a link to the Household Device Viewer table, which identifies the Household, Viewer, and Device associated with this linear tuning activity.
STATION_ID	int(10)	No	Station ID points to the station_channel table as a foreign key reference. Provides link to call_sign, EIDR, etc.
TUNER_ID	tinyint	No	Device Tuner ID identifies the tuner used during this tuning activity. This is important to differentiate between multiple sessions that may be created at the same time from the same House Device Viewer.
TUNING_ ACTIVITY_ TYPE_CODE	varchar(3)	No	Tuning Activity Type Code identifies the type of this tuning activity: LIN = Linear DVR = Digital Video Recording VOD = Video On Demand.
TUNE_IN_ LOCAL_DT	**Datatype:** datetime **Nullable:** No Tune In Local Date Time records the date and time the viewing device (STB) tuned to the channel, in local time. **Examples:** A tune in may occur because the viewer tunes to the channel, because of a power on, or because of a DVR recording beginning. On a channel change, the tune out occurs in one second and the tune in occurs in the next second (they do not occur in the same second, because this would lead to double measuring of viewing during that second).		

Name	Data Type	Null-able	Documentation
TUNE_OUT_ LOCAL_DT	**Datatype:** datetime **Nullable:** No Tune Out Local Date Time records the date and time the viewing device (STB) tuned away from the channel, in local time. This records the last second that the device was tuned to the channel. **Examples:** A tune out may occur because the viewer tunes to another channel, because of a power off, or because of a DVR recording ending. When tuning to another channel, the tune out occurs in one second and the tune in during the next second (they do not occur in the same second, because this would lead to double measuring of viewing during that second).		
TUNE_IN_UTC_DT	datetime	No	Tune In UTC Date Time records the date and time of when the viewing device (STB) tuned to the channel expressed in UTC time. Refer to TUNE_IN_LOCAL_DT for examples.
TUNE_OUT_UTC_ DT	datetime	No	Tune Out UTC Date Time records the date and time of when the viewing device (STB) tuned away from the channel expressed in UTC time. This records the last second that the device was tuned to the channel. Refer to TUNE_OUT_LOCAL_DT for examples.
GEO_AREA_ CODE_ID	int(10)	Yes	Geo Area Code ID is used when the Tuning Activity occurs in a different location than the geographic location associated with the Household, such as when the viewer is traveling with the device. This records only the location where the tuning activity began, not each location along the way.
INITIATION_CODE	smallint(6)	No	Initiation Code identifies how the tuning activity was initiated. Identifies what action initiated the session. Examples include tune-in, timed start, long running session, etc.
TERMINATION_ CODE	smallint	No	Termination Code identifies how the Tuning Activity was terminated.

7.4.33 VOD_PLAYBACK_SESSION Entity

VOD Playback Session records information about the viewing session.

Name	Data Type	Null-able	Documentation
VOD_PLAYBACK_ SESSION_ID	bigint(20)	No	VOD Playback ID records the unique identifier of this VOD playback record.
VOD_LEASE_ID	bigint(20)	No	Contains the link to the VOD Lease. This ties the sessions to the lease.
GEO_AREA_ CODE_ID	int(10)	Yes	Geographic Area Code ID is the link to the geographic area.
DEVICE_ HOUSEHOLD_ VIEWER_MAP_ID	int(10)	No	Household Device Viewer ID provides a link to the DHV_Map (Device Household Viewer Mapping) table, which identifies the Household, Viewer, and Device associated with this viewing.
PLAYBACK_ BEG_LOCAL_DT	datetime	No	Playback Begin Datetime records the date and time of when the VOD playback began, in local time.
PLAYBACK_ END_LOCAL_DT	datetime	No	Playback End Datetime records the date and time of when the VOD playback ended, in local time.
PLAYBACK_ BEG_UTC_DT	datetime	No	Playback Begin UTC Datetime records the date and time of when the VOD playback began, in UTC time.
PLAYBACK_ END_UTC_DT	datetime	No	Playback End UTC Datetime records the date and time of when the VOD playback ended, in UTC time.
INITIATION_CODE	smallint	No	Identifies what action initiated the session. Example: begin viewing VOD asset.
TERMINATION_ CODE	smallint	No	Reason code for a session terminating. Example: end viewing VOD asset.

7.4.34 ADVERTISING_CAMPAIGN Entity

Name	Data Type	Null-able	Documentation
SAFI_CIP_AD_ CAMPAIGN_ID	int(10)	No	The unique identifier of the Stewardship and Fulfillment Interface (SaFI) identifier.
CAMPAIGN_ NAME	varchar (250)	No	The full name of the advertising campaign.

7.4.35 DVR_PLAYBACK_SESSION Entity

DVR Recording Playback Session records information about the viewing session.

Name	Data Type	Null-able	Documentation
DVR_PLAYBACK_ SESSION_ID	bigint(20)	No	DVR Recording Playback ID records the unique identifier of this DVR recording playback record.
DVR_ RECORDING_ID	bigint(20)	No	DVR Recording ID provides a link to the DVR Recording table which identifies all the details about this recording, including the link to what was recorded and when.
GEO_AREA_ CODE_ID	int(10)	Yes	Geographic Area Code ID is the link to the geographic area.
TUNER_ID	tinyint	No	Tuner ID records the Tuner used for playback. This may not be the same as the Tuner used for recording.
PLAYBACK_ BEG_LOCAL_DT	datetime	No	Playback Begin Local Datetime records the date and time the DVR recording playback began, in local time.
PLAYBACK_ END_LOCAL_DT	datetime	No	Playback End Local Datetime records the date and time the DVR recording playback ended, in local time.
PLAYBACK_ BEG_UTC_DT	datetime	No	Playback Begin UTC Datetime records the date and time the DVR recording playback began, in UTC time.
PLAYBACK_ END_UTC_DT	datetime	No	Playback End UTC Datetime records the date and time the DVR recording playback ended, in UTC time.
INITIATION_CODE	smallint	No	Identifies what action initiated the session. Examples include tune-in, timed start, long running session, etc.
TERMINATION_ CODE	smallint	No	Reason code for a session terminating. Examples include tune-out, end of program, end of recording session, etc.
DEVICE_ HOUSEHOLD_ VIEWER_MAP_ID	int(10)	No	Device Household Viewer ID provides a link to the DHV_Map (Device Household Viewer Mapping) table, which identifies the Household, Viewer, and Device associated with this viewing.
AIRED_ PROGRAM_ID	int(10)	Yes	Aired Program ID is copied forward from the parent record for convenience.

7.4.36 DEMOGRAPHIC_TYPE Entity

Contains the lists of candidate statistical characteristics of a population.

Name	Data Type	Null-able	Documentation
DEMO_TYPE_ID	int(10)	No	Unique identifier of the demographic type.
DEMO_TYPE	varchar (16)	No	Short name of the demographic types. Includes identifiers such as Gender, Age Range, Median Income, household ownership, mobility, etc.

Name	Data Type	Null-able	Documentation
DEMO_DESC	varchar (40)	No	The long description of the demographic.
DEMO_USAGE	varchar (128)	No	General note on the usage of the demographic.
DEMO_TYPE_ MNEMONIC	varchar(6)	No	This is a 6-character descriptor of the demographic type. This is for convenience for filtering and reporting.

7.4.37 VIEWER_DEMOGRAPHIC Entity

Contains the demographics associated with the viewer of the program. This enables the generation of analytics and metrics based on specific traits.

Name	Data Type	Null-able	Documentation
VIEWER_ DEMOGRAPHIC_ID	int(10)	No	The Viewer Demographic ID is the unique identifier assigned to this record.
VIEWER_ID	int(10)	No	Contains the viewer ID to be associated with the desired demographic.
DEMO_CODE_ID	int(10)	No	Contains the demographic identifier to be associated with the viewer.

7.4.38 AD_PLACEMENT Entity

This entity associates the actual placements of video assets to the placement opportunities.

Name	Data Type	Null-able	Documentation
AD_ PLACEMENT_ID	int(10)	No	Unique identifier for the ad placement.
AD_PLACEMENT_ OPPORTUNITY_ID	int(10)	No	Identifier that links the placement of the advertising to the placement opportunity.

7.4.39 LINEAR_VIEWING_CONTROL Entity

Linear viewing control records details about the play.

Name	Data Type	Null-able	Documentation
LINEAR_VIEWING_ CONTROL_ID	bigint(20)	No	Linear viewing control ID records the unique identifier of this control action.
VIEWING_ SESSION_ID	bigint(20)	No	Viewing session ID links the viewing control action to the viewing session.

Name	Data Type	Null-able	Documentation
VIEWING_ MODE_CODE	varchar(2)	No	Viewing Mode Code records the mode or activity occurring during playback. PL = Play PA = Pause F1 = Fast Forward 1x F2 = Fast Forward 2x R1 = Rewind 1x R2 = Rewind 2x (etc.)
VIEW_MODE_ BEG_SEC_ FROM_ TRUE_BEG	mediumint	No	View Mode Beg Second From True Beginning (of Video Program) identifies the position in the actual content of where this activity occurred. So regardless of what part of the video the user is viewing, this identifies where in the content the viewer is causing this activity. Tracking the activity position in this manner allows the system to normalize measurement across all of the sessions from multiple viewers.
VIEW_MODE_ END_SEC_ FROM_ TRUE_BEG	**Datatype:** mediumint **Nullable:** No View Mode End Second From True Beginning (of Video Program) identifies the position in the actual content (not simply the recorded part) of where the activity represented by this playback mode ended. So, regardless of what part of the recording the user recorded, this identifies where in the content the viewer is causing this activity. Tracking playback position in this manner allow the system to normalize measurement across all of the DVR playback occurrences from multiple viewers. **Example:** If the playback mode is F2 (fast forward 2x), this field identifies the ending point of where the F2 activity occurred in the actual content. This time could be of a finer granularity than one second if desired. Value range is 0 to program duration in seconds (ex: 3599 for a 1-hour program).		

7.4.40 SESSION_INITIATION_REF Entity

Contains the session initiation codes and descriptions.

Name	Data Type	Null-able	Documentation
INITIATION_ CODE	int(11)	No	Unique identifier for session termination actions.
INITIATION_ NAME	varchar (16)	No	Short name associated with the session initiation actions.

Name	Data Type	Null-able	Documentation
INITIATION_ DESC	varchar (255)	No	Long description of session initiation actions.

7.4.41 AD_PLACEMENT_OPPORTUNITY Entity

This entity contains the links to the placement opportunities definitions. These definitions are externally defined.

Name	Data Type	Null-able	Documentation
AD_ PLACEMENT_ OPPORTUNITY_ ID	int(10)	No	Ad placement opportunity ID records the unique internal identifier assigned to this record.

7.4.42 VOD_PLAYBACK_CONTROL Entity

VOD Recording Playback Control records details about the viewing of the VOD program.

Name	Data Type	Null-able	Documentation
VOD_PLAYBACK_ CONTROL_ID	bigint(20)	No	VOD Playback Session ID records the unique identifier of this VOD Recording Playback Session.
VOD_PLAYBACK_ SESSION_ID	bigint(20)	No	VOD Playback ID links back to the parent VOD viewing record, which records the details about the playback of this VOD recording.
PLAYBACK_ MODE_CODE	varchar(2)	No	Playback Mode Code records the mode or activity occurring during playback. PL = Play PA = Pause F1 = Fast Forward 1x F2 = Fast Forward 2x R1 = Rewind 1x R2 = Rewind 2x (etc.)

Name	Data Type	Null-able	Documentation
PB_MODE_ BEG_SEC_ FROM_ TRUE_BEG	**Datatype:** mediumint **Nullable:** No Playback Mode Beg Second From True Beginning (of Video Program) identifies the position in the actual content (not simply the recorded part) where this activity occurred. So, regardless of what part of the recording the user recorded, this identifies where in the content the viewer is causing this activity. Tracking the activity position in this manner allows the system to normalize measurement across all of the DVR playback occurrences from multiple viewers. **Example:** If the playback mode is Play, this field identifies the beginning point of where the Play activity occurred in the actual content. This time could be of a finer granularity than one second if desired. Value range is 0 to program duration, in seconds (e.g., 3599 for a 1-hour program).		
PB_MODE_ END_SEC_ FROM_ TRUE_BEG	**Datatype:** mediumint **Nullable:** No Playback Mode End Second From True Beginning (of Video Program) identifies the position in the actual content (not simply the recorded part) the activity represented by this playback mode ended. So, regardless of what part of the recording the user recorded, this identifies where in the content the viewer is causing this activity. Tracking playback position in this manner allows the system to normalize measurement across all of the DVR playback occurrences from multiple viewers. **Example:** If the playback mode is F2 (fast forward 2x), this field identifies the ending point of where the F2 activity occurred in the actual content. This time could be of a finer granularity than one second if desired. Value range is 0 to program duration, in seconds (e.g., 3599 for a 1-hour program).		

7.4.43 TUNING_PRESENTATION_STATE Entity

This captures the presentation state changes during the viewing session.

Name	Data Type	Null-able	Documentation
TUNING_ PRESENTATION_ STATE_ID	bigint(20)	No	This captures the presentation state changes during the viewing session.
LINEAR_TUNING_ ACTIVITY_ID	bigint(20)	No	Linear Tuning Activity ID records the link to the parent Tuning Activity record.
ACTIVITY_EVENT_ BEG_LOCAL_DT	datetime	No	Activity Event Begin Local Date Time records the date and time of when the activity in this record began, expressed in local time.

Name	Data Type	Null-able	Documentation
ACTIVITY_EVENT_END_LOCAL_DT	datetime	No	Activity Event End Local Date Time records the date and time of when the activity in this record ended, expressed in local time.
ACTIVITY_EVENT_BEG_UTC_DT	datetime	No	Activity Event Begin Local Date Time records the date and time of when the activity in this record began, expressed in UTC time.
ACTIVITY_EVENT_END_UTC_DT	datetime	No	Activity Event End Local Date Time records the date and time of when the activity in this record ended, expressed in UTC time.
VOLUME_LEVEL	tinyint	Yes	Volume Level records the volume during this period of time indicated by this record.
PERCENT_CONTENT_VISIBLE	tinyint	Yes	Percent Content Visible records the percentage of content of this tuning activity that was visible during this period of time indicated by this record. Example: Content was 100% visible, or content was 70% visible.
IS_BACKGROUND_IND	char(1)	Yes	Flag indicating if the event occurred in the background.
IS_RECORDING_IND	char(1)	Yes	Foreground background Indicator records whether the video is in the foreground or background during the time shown on this record.
IS_PCTURE_IN_PICTURE_IND	char(1)	Yes	Picture in Picture Indicator records whether the video is being viewed in picture in picture mode during the time shown on this record.
IS_CLOSED_CAPTION_IND	char(1)	Yes	Closed Caption indicates whether the viewer is displaying closed captions. Y = closed caption is on. N = closed caption is off.
PERCENT_OF_SCREEN_THIS_VIDEO	tinyint	Yes	Percent of Screen this Video identifies the percentage of the screen that is consumed by this video. This is used when the screen allows multiple video feeds where all are 100% visible. This provides a measure of how much of the viewer's attention may be devoted to the video program being measured. Value range is 0 to 100.

7.4.44 DVR_PLAYBACK_CONTROL Entity

DVR Recording Playback Control records details about the play.

Name	Data Type	Null-able	Documentation
DVR_PLAYBACK_ CONTROL_ID	bigint(20)	No	DVR Recording Playback Session ID records the unique identifier of this DVR Recording Playback Session.
DVR_PLAYBACK_ SESSION_ID	bigint(20)	No	DVR Recording Playback ID links back to the parent DVR Recording Playback record which records the details about the playback of this DVR recording.
PLAYBACK_ MODE_CODE	varchar(2)	No	Playback Mode Code records the mode or activity occurring during playback. PL = Play PA = Pause F1 = Fast Forward 1x F2 = Fast Forward 2x R1 = Rewind 1x R2 = Rewind 2x ST=STOP RS=Restart DL=Delete (etc.)
PB_MODE_ BEG_SEC_ FROM_ TRUE_BEG	**Datatype:** mediumint **Nullable:** No Playback Mode Beg Second From True Beginning (of Video Program) identifies the position in the actual content (not simply the recorded part) where this activity occurred. So, regardless of what part of the recording the user recorded, this identifies where in the content the viewer is causing this activity. Tracking the activity position in this manner allows the system to normalize measurement across all of the DVR playback occurrences from multiple viewers. **Example:** If the playback mode is Play, this field identifies the beginning point of where the Play activity occurred in the actual content. This time could be of a finer granularity than one second if desired. Value range is 0 to program duration, in seconds (e.g., 3599 for a 1-hour program).		

Name	Data Type	Null-able	Documentation
PB_MODE_END_SEC_FROM_TRUE_BEG	**Datatype:** mediumint **Nullable:** No Playback Mode End Second From True Beginning (of Video Program) identifies the position in the actual content (not simply the recorded part) where the activity represented by this playback mode ended. So, regardless of what part of the recording the user recorded, this identifies where in the content the viewer is causing this activity. Tracking playback position in this manner allows the system to normalize measurement across all of the DVR playback occurrences from multiple viewers. **Example:** If the playback mode is F2 (fast forward 2x), this field identifies the ending point of where the F2 activity occurred in the actual content. This time could be of a finer granularity than one second if desired. Value range is 0 to program duration, in seconds (e.g., 3599 for a 1-hour program).		

7.4.45 NON_TUNING_PRESENTATION_STATE Entity

Name	Data Type	Null-able	Documentation
NON_TUNING_PRESENTATION_STATE_ID	bigint(20)	No	Unique identifier for the non-tuning Presentation State.
LINEAR_VIEWING_CONTROL_ID	bigint(20)	No	Provides the link to the controls table associated with linear viewing.
EVENT_BEG_SEC_FROM_TRUE_BEG	mediumint	No	Session Beg Second From True Beginning (of Video Program) identifies the position in the actual content where this activity occurred. So, regardless of what part of the video the user is viewing, this identifies where in the content the viewer is causing this activity. Tracking the activity position in this manner allows the system to normalize measurement across all of the sessions from multiple viewers.
EVENT_END_SEC_FROM_TRUE_BEG	mediumint	No	Session End Second From True Beginning (of Video Program) identifies the position in the actual content of where this activity occurred. So, regardless of what part of the video the user is viewing, this identifies the end point in the content where the viewer is causing this activity. Tracking the activity position in this manner allows the system to normalize measurement across all of the sessions from multiple viewers.
VOLUME_LEVEL	tinyint	Yes	Volume level records the volume at which this occurred. This can be used in the scoring algorithm to reduce the viewing points earned if the volume is below a specified level. 0 = Muted.

Name	Data Type	Null-able	Documentation
PERCENT_ CONTENT_ VISIBLE	tinyint	Yes	Percent Content Visible records a percentage indicating how much of the viewing content is visible. This can be used in the scoring algorithm to reduce the viewing points earned if the visible percentage is below a specified level. Also known as occluded region.
IS_BACKGROUND_ IND	char(1)	Yes	Is_Background records whether the video is in the background (less visible). This can be used in the scoring algorithm to reduce the viewing points earned if the video is not visible because it is in the background. Y = Background N = Foreground
IS_RECORDING_ IND	char(1)	Yes	Flag indicating if the event occurred during the recording session.
IS_PICTURE_ IN_PICTURE_IND	char(1)	Yes	Flag indicating if the event occurred as part of picture in picture.
IS_CLOSED_ CAPTION_IND	char(1)	Yes	Closed Caption indicates whether the viewer is displaying closed captions. Y = closed caption is on. N = closed caption is off.
PERCENT_OF_ SCREEN_THIS_ VIDEO	tinyint	Yes	Percent of Screen this Video identifies the percentage of the screen that is consumed by this video. This is used when the screen allows multiple video feeds where all are 100% visible. This provides a measure of how much of the viewer's attention may be devoted to the video program being measured. Value range is 0 to 100.

7.4.46 SESSION_TERMINATION_REF Entity

Contains the session termination codes and descriptions.

Name	Data Type	Null-able	Documentation
TERMINATION_ CODE	int	No	Unique identifier for session termination actions.
TERMINATION_ NAME	varchar (16)	No	Short name associated with the session termination actions.
TERMINATION_ DESC	varchar (255)	No	Long description of session termination actions.

7.4.47 VOD_PRESENTATION_STATE Entity

This captures the presentation state changes during the viewing session.

Name	Data Type	Null-able	Documentation
VOD_ PRESENTATION_ STATE_ID	bigint(20)	No	Unique identifier for the non-tuning Presentation State.
VOD_PLAYBACK_ CONTROL_ID	bigint(20)	No	VOD Playback control ID links to the parent VOD Playback Control record.
EVENT_BEG_ SEC_FROM_ TRUE_BEG	mediumint	No	Event Beg Second From True Beginning (of Video Program) identifies the position in the actual content this activity occurred. So, regardless of what part of the video the user is viewing, this identifies where in the content the viewer is causing this activity. Tracking the activity position in this manner allows the system to normalize measurement across all of the sessions from multiple viewers. Value range is 0 to program duration, in seconds (e.g., 3599 for a 1-hour program).
EVENT_END_ SEC_FROM_ TRUE_BEG	mediumint	No	Event End Second From True Beginning (of Video Program) identifies the position in the actual content where this activity occurred. So, regardless of what part of the video the user is viewing, this identifies the end point in the content where the viewer is causing this activity. Tracking the activity position in this manner allows the system to normalize measurement across all of the sessions from multiple viewers. Value range is 0 to program duration, in seconds (e.g., 3599 for a 1-hour program).

Name	Data Type	Null-able	Documentation
VOLUME_LEVEL	tinyint	Yes	Playback volume level records the volume at which this playback occurred. This can be used in the scoring algorithm to reduce the viewing points earned if the volume is below a specified level. 0 = Muted. Value range is 0 to 100.
PERCENT_ CONTENT_VISIBLE	tinyint	Yes	Playback Percent Content Visible records a percentage indicating how much of the viewing content is visible. This can be used in the scoring algorithm to reduce the viewing points earned if the visible percentage is below a specified level. Also known as occluded region. Value range is 0 to 100.
IS_BACKGROUND_ IND	char(1)	Yes	Is_Background records whether the video is in the background (less visible). This can be used in the scoring algorithm to reduce the viewing points earned if the video is not visible because it is in the background. Y = Background N = Foreground
IS_CLOSED_ CAPTION_IND	char(1)	Yes	Closed Caption indicates whether the viewer is displaying closed captions. Y = closed caption is on. N = closed caption is off.
PERCENT_OF_ SCREEN_THIS_ VIDEO	tinyint	Yes	Percent of Screen this Video identifies the percentage of the screen that is consumed by this video. This is used when the screen allows multiple video feeds, where all are 100% visible. This provides a measure of how much of the viewer's attention may be devoted to the video program being measured. Value range is 0 to 100.
IS_PICTURE_ IN_PICTURE	char(1)	Yes	Picture in Picture indicator indicates whether the viewer is using picture in picture feature. Y = Screen is in Picture in Picture Mode. N = Screen is NOT in Picture in Picture Mode.

7.4.48 DVR_PRESENTATION_STATE Entity

This captures the presentation state changes during the viewing session.

Name	Data Type	Null-able	Documentation
DVR_ PRESENTATION _STATE_ID	bigint(20)	No	DVR Presentation State ID is the unique identifier assigned to this DVR Presentation State record.

Name	Data Type	Null-able	Documentation
DVR_ PLAYBACK_ CONTROL_ID	bigint(20)	No	DVR Playback control ID links to the parent DVR Playback Control record.
EVENT_BEG_ SEC_FROM_ TRUE_BEG	mediumint	No	Event Beg Second From True Beginning (of Video Program) identifies the position in the actual content of where this activity occurred. So, regardless of what part of the video the user is viewing, this identifies where in the content the viewer is causing this activity. Tracking the activity position in this manner allows the system to normalize measurement across all of the sessions from multiple viewers. Value range is 0 to program duration, in seconds (e.g., 3599 for a 1-hour program).
EVENT_END_ SEC_FROM_ TRUE_BEG	mediumint	No	Event End Second From True Beginning (of Video Program) identifies the position in the actual content of where this activity occurred. So regardless of what part of the video the user is viewing, this identifies the end point in the content where the viewer is causing this activity. Tracking the activity position in this manner allows the system to normalize measurement across all of the sessions from multiple viewers. Value range is 0 to program duration, in seconds (ex: 3599 for 1-hour program).
VOLUME_LEVEL_ NUM	tinyint	Yes	Playback volume level records the volume at which this playback occurred. This can be used in the scoring algorithm to reduce the viewing points earned if the volume is below a specified level. 0 = Muted. Value range is 0 to 100.
PERCENT_ CONTENT_VISIBLE	tinyint	Yes	Playback Percent Content Visible records a percentage indicating how much of the viewing content is visible. This can be used in the scoring algorithm to reduce the viewing points earned if the visible percentage is below a specified level. Also known as occluded region. Value range is 0 to 100.
IS_BACKGROUND_ IND	char(1)	Yes	Is_Background records whether the video is in the background (less visible). This can be used in the scoring algorithm to reduce the viewing points earned if the video is not visible because it is in the background. Values are: Y = Background; N = Foreground
IS_CLOSED_ CAPTION_IND	char(1)	Yes	Closed Caption indicates whether the viewer is displaying closed captions. Y = closed caption is on, N = closed caption is off.
IS_PICTURE_IN_ PICTURE_IND	char(1)	Yes	Picture in Picture indicator identifies whether the viewer is using picture in picture feature. Y = Screen is in Picture in Picture Mode N = Screen is NOT in Picture in Picture Mode

Name	Data Type	Null-able	Documentation
PERCENT_OF_ SCREEN_THIS_ VIDEO	tinyint	Yes	Percent of Screen this Video identifies the percentage of the screen that is consumed by this video. This is used when the screen allows multiple video feeds where all are 100% visible. This provides a measure of how much of the viewer's attention may be devoted to the video program being measured. Value range is 0 to 100.

Appendix I Use Case Realizations for the Media Event Data Model (MEDM)

Many Use Cases have been developed to capture the view interactions with the media streams. This version of the document contains the Use Cases associated to with viewing of linear content. Subsequent versions will include non-linear, IP, interactive TV, and other interactions.

I.1 Use Case: Linear Viewing::Single Set-top Box::Single Channel::Single Program::Time Shifting (UC2)

This Use Case captures the scenario of a viewer tuning to a channel and watching the content without tuning away.

I.1.1 Scenario Description

Tune into Top Chef on Bravo at 10:03:22 pm ET/9:03:22 pm CT on Wed, 3/23/2011. Insert 3 MSO advertisements over the underlying ads from the network. Following assumes the Session Group ID of "1" is created when the recording is scheduled.

NOTE: Events for Session "1" will have been collected when the recording was scheduled via the Navigator or other application (ex. an MSO web site is used to schedule a recording on the subscriber's home set-top box). Media offsets are captured as wall clock (UTC).

I.1.2 Scenario Timing Diagram

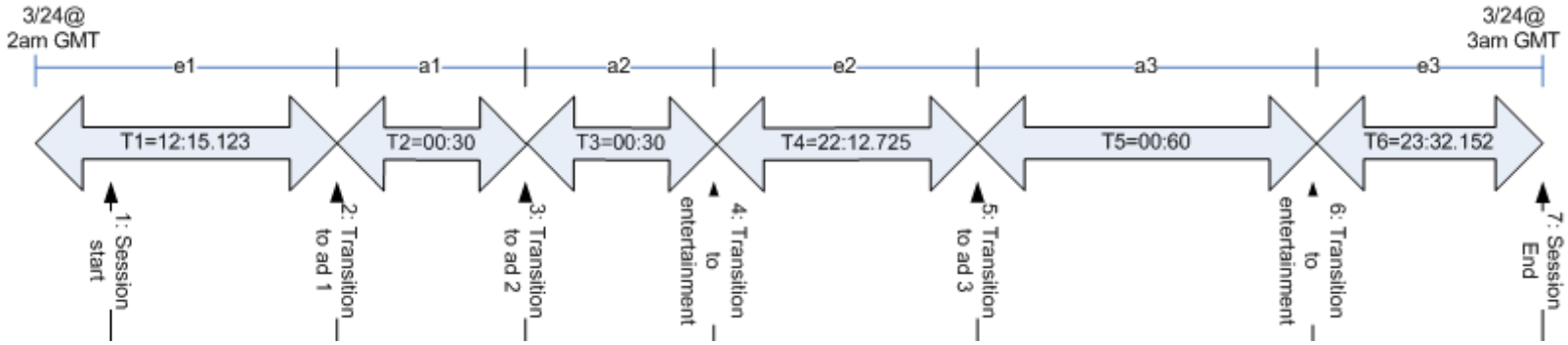


Figure 8 - Scenario Timing Diagram (UC2)

I.1.3 Sequence of Media Events

The data in these events conforms to the Media Event Data Model (MEDM) presented in Section 6. MediaOffset reflects the timeline of the network. It does not reflect the program.

Table 3 - MEDM Event Data for Use Case 2

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
Tune into E1 in progress	SessionStartEvent		NA	1	1	3/24 @ 02:03:22	**Navigation Context ID** = ID related to Navigator session leading to a tune in **Navigation Context Code** = 0 (tune initiated using EPG) *could be other values* **Service Context ID** = Bravo
	SegmentEvent	0	3/24 @ 02:03:22	1	1		**Content ID** = Bravo
	PresentationContext		3/24 @ 02:03:22	1	1		**Presentation Flag** = 1 (presenting)
end of e1	SegmentEvent	1	3/24 @ 02:12:15.123	1	1	3/24 @ 02:12:15.123	**Content ID** = Bravo
start of a1	SegmentEvent	0	0	1	1	3/24 @ 02:12:15.123	**Content ID** = <first advert>
end of a1	SegmentEvent	1	30 sec	1	1	3/24 @ 02:12:45.123	**Content ID** = <first advert>
start of a2	SegmentEvent	0	0	1	1	3/24 @ 02:12:45.123	**Content ID** = <second advert>
end of a2	SegmentEvent	1	30 sec	1	1	3/24 @ 02:13:15.123	**Content ID** = <second advert>
start of e2	SegmentEvent	0	3/24 @ 02:13:15.123	1	1	3/24 @ 02:13:15.123	**Content ID** = Bravo
end of e2	SegmentEvent	1	3/24 @ 02:35:27.848	1	1	3/24 @ 02:35:27.848	**Content ID** = Bravo
start of a3	SegmentEvent	0	0	1	1	3/24 @ 02:35:27.848	**Content ID** = <third advert>
end of a3	SegmentEvent	1	60 sec	1	1	3/24 @ 02:36:27.848	**Content ID** = <third advert>

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
start of e3	SegmentEvent	0	3/24 @ 02:36:27.848	1	1	3/24 @ 02:36:27.848	**Content ID** = Bravo
end of e3	SegmentEvent	1	3/24 @ 03:00:00.000	1	1	3/24 @ 03:00:00.000	**Content ID** = Bravo
	SessionEnd		NA	1	1		**Termination Code** = 3 (subscriber uses power btn to go to standby) **Navigation Context ID** = ??? **Navigation Context Code** = 0 (Navigator)
	PresentationContext		3/24 @ 03:00:00.000	1	1		**Presentation Flag** = 0 (not presenting)

MediaOffset reflects the episode of Top Chef being recorded. These events could be generated based on either knowledge of program boundaries at record time or by applying a reference data set to the data above.

Table 4 - MEDM Event Data for Use Case 2 (Top Chef)

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
start of e1	SessionStartEvent		NA	1	1	3/24 @ 02:03:22	**Navigation Context ID** = ID related to Navigator session leading to a tune in **Navigation Context Code** = 0 (tune initiated using EPG) *could be other values* **Service Context ID** = Bravo
	SegmentEvent	0	03:22.0	1	1		**Content ID** = Top Chef Episode x
	PresentationContext		03:22.0	1	1		**Presentation Flag** = 1 (presenting)

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
end of e1	SegmentEvent	1	12:15.123	1	1	3/24 @ 02:12:15.123	**Content ID** = Top Chef Episode x
start of a1	SegmentEvent	0	00:00.0	1	1	3/24 @ 02:12:15.123	**Content ID** = <first advert>
end of a1	SegmentEvent	1	30 sec	1	1	3/24 @ 02:12:45.123	**Content ID** = <first advert>
start of a2	SegmentEvent	0	00:00.0	1	1	3/24 @ 02:12:45.123	**Content ID** = <second advert>
end of a2	SegmentEvent	1	30 sec	1	1	3/24 @ 02:13:15.123	**Content ID** = <second advert>
start of e2	SegmentEvent	0	13:15.123	1	1	3/24 @ 02:13:15.123	**Content ID** = Top Chef Episode x
end of e2	SegmentEvent	1	35.27.848	1	1	3/24 @ 02:35:27.848	**Content ID** = Top Chef Episode x
start of a3	SegmentEvent	0	00:00.0	1	1	3/24 @ 02:35:27.848	**Content ID** = <third advert>
end of a3	SegmentEvent	1	60 sec	1	1	3/24 @ 02:36:27.848	**Content ID** = <third advert>
start of e3	SegmentEvent	0	36:27.848	1	1	3/24 @ 02:36:27.848	**Content ID** = Top Chef Episode x
end of e3	SegmentEvent	1	1:00:00.000	1	1	3/24 @ 03:00:00.000	**Content ID** = Top Chef Episode x
	SessionEnd		NA	1	1		**Termination Code** = 3 (subscriber uses power btn to go to standby) **Navigation Context ID** = ??? **Navigation Context Code** = 0 (Navigator)
	PresentationContext		1:00:00.000	1	1		**Presentation Flag** = 0 (not presenting)

Pause in Entertainment at 2:22:30.123 for 45 seconds. Baseline 1. These are highlighted in yellow.

Table 5 - MEDM Event Data for Use Case 2 Baseline 1

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
start of e2	SegmentEvent	0	3/24 @ 02:13:15.123	1	1	3/24 @ 02:13:15.123	**Content ID** = Bravo
PAUSE e2	PlayControlEvent		3/24 @ 02:22:30.123			3/24 @ 02:22:30.123	**TrickModeCode** = 0 **Velocity** = 0
RESUME e2	PlayControlEvent		3/24 @ 02:22:30.123			3/24 @ 02:23:15.123	**TrickModeCode** = 0 **Velocity** = 1
end of e2	SegmentEvent	1	3/24 @ 02:35:27.848	1	1	3/24 @ 02:36:12.848	**Content ID** = Bravo
baseline 2							
start of e2	SegmentEvent	0	13:15.123	1	1	3/24 @ 02:13:45.123	**Content ID** = Top Chef Episode x
PAUSE e2	PlayControlEvent		22:30.123			3/24 @ 02:22:30.123	**TrickModeCode** = 0 **Velocity** = 0
RESUME e2	PlayControlEvent		22:30.123			3/24 @ 02:23:15.123	**TrickModeCode** = 0 **Velocity** = 1
end of e2	SegmentEvent	1	35:27.848	1	1	3/24 @ 02:36:12.848	**Content ID** = Top Chef Episode x

Rewind at 2X 15 seconds into "a2" for 1 minute followed by a resume. Baseline 2.

Table 6 - MEDM Event Data for Use Case 2 Baseline 2

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
start of a2	SegmentEvent	0	0	1	1	3/24 @ 02:12:45.123	**Content ID** = <second advert>

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
Rewind at 15 sec into a2	PlayControlEvent		15			3/24 @ 02:13:00.123	**15 seconds elapse** **TrickModeCode** = 1 **Velocity** = -2
start of a2	SegmentEvent	0	0	1	1	3/24 @ 02:13:07.623	**7.5 seconds elapse - 15sec/2** **Content ID** = <second advert>
start of a1	SegmentEvent	1	30 sec	1	1	3/24 @ 02:13:07.623	**Content ID** = <first advert>
end of a1	SegmentEvent	0	0	1	1	3/24 @ 02:13:22.623	**15 seconds elapsed - 30sec/2** **Content ID** = <first advert>
start of e1	SegmentEvent	1	3/24 @ 02:12:15.123	1	1	3/24 @ 02:13:22.623	**Content ID** = Bravo
RESUME	PlayControlEvent		3/24 @ 02:11:00.123	1	1	3/24 @ 02:14:00.123	**37.5 seconds elapsed - 1:15/2** **TrickModeCode** = 0 **Velocity** = 1
end of e1	SegmentEvent	1	3/24 @ 02:12:15.123	1	1	3/24 @ 02:15:15.123	**1:15 elapses before end of e1** **Content ID** = Bravo
start of a1	SegmentEvent	0	00:00.0	1	1	3/24 @ 02:15:15.123	**Content ID** = <first advert>
end of a1	SegmentEvent	1	30 sec	1	1	3/24 @ 02:15:45.123	**Content ID** = <first advert>
start of a2	SegmentEvent	0	00:00.0	1	1	3/24 @ 02:15:45.123	**Content ID** = <second advert>
end of a2	SegmentEvent	1	30 sec	1	1	3/24 @ 02:16:15.123	**Content ID** = <second advert>

I.2 Use Case: Linear Viewing::Single Set-top Box::Single Channel::Multiple Programs and Multiple Ads (UC4)

This Use Case captures the scenario of a viewer tuning to multiple channels during the viewing session and watching multiple programs and advertisements.

I.2.1 Description

Tune in to Bravo at 9:45 pm ET/8:40 pm CT on Wed, 3/23/2011. Subscriber presses power standby at 10:30 pm ET/9:30 pm CT. Insert 3 MSO advertisements over the underlying ads from the network. 2 ads in the program airing prior to 10 pm ET and 1 for the program that starts at 10 pm ET. 2 scenarios are illustrated:

1. Media offsets are captured as wall clock (UTC).

2. Media offset baselines based on reference data (could be based on signals delivered in-band). 9-10 Real Housewives/10-11 Top Chef.

I.2.2 Timing Diagram

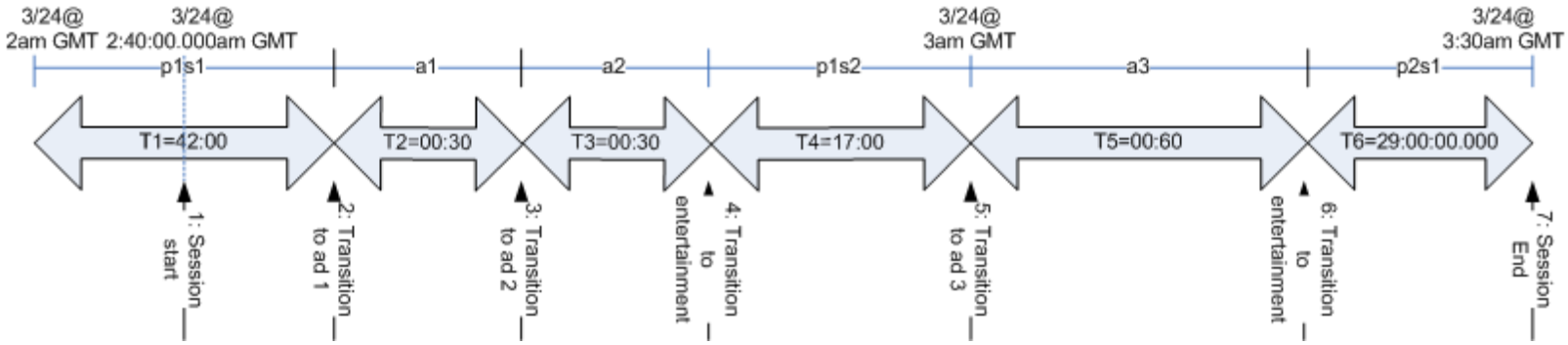


Figure 9 - timing Diagram (UC4)

I.2.3 Sequence of Media Events

The data in these events conforms to the Media Event Data Model (MEDM) presented in Section 6. Baseline for Use Case. MediaOffset reflects timeline of the network. It does not reflect the program.

Table 7 - MEDM Event Data for Use Case 4

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
Tune into p1s1 in progress	SessionStartEvent		NA	1	1	3/24 @ 02:40:00	**Navigation Context ID** = ID related to Navigator session leading to a tune in **Navigation Context Code** = 0 (tune initiated using EPG) *could be other values* **Service Context ID** = Bravo
	SegmentEvent	0	3/24 @ 02:40:00	1	1		**Content ID** = Bravo
	PresentationContext		3/24 @ 02:40:00	1	1		**Presentation Flag** = 1 (presenting)
end of p1s1	SegmentEvent	1	3/24 @ 02:42:00	1	1	3/24 @ 02:42:00	**Content ID** = Bravo
start of a1	SegmentEvent	0	0	1	1	3/24 @ 02:42:00	**Content ID** = <first advert>
end of a1	SegmentEvent	1	30 sec	1	1	3/24 @ 02:42:30	**Content ID** = <first advert>
start of a2	SegmentEvent	0	0	1	1	3/24 @ 02:42:30	**Content ID** = <second advert>
end of a2	SegmentEvent	1	30 sec	1	1	3/24 @ 02:43:00	**Content ID** = <second advert>
start of p1s2	SegmentEvent	0	3/24 @ 02:43:00	1	1	3/24 @ 02:43:00	**Content ID** = Bravo
end of p1s2	SegmentEvent	1	3/24 @ 03:00:00	1	1	3/24 @ 03:00:00	**Content ID** = Bravo
start of a3	SegmentEvent	0	0	1	1	3/24 @ 03:00:00	**Content ID** = <third advert>
end of a3	SegmentEvent	1	60 sec	1	1	3/24 @ 03:01:00	**Content ID** = <third advert>
start of p2s1	SegmentEvent	0	3/24 @ 03:01:00	1	1	3/24 @ 03:01:00	**Content ID** = Bravo
end of p2s1	SegmentEvent	1	3/24 @ 03:30:00	1	1	3/24 @ 03:30:00	**Content ID** = Bravo
	SessionEnd		NA	1	1		**Termination Code** = 3 (subscriber uses power btn to go to standby) **Navigation Context ID** = ??? **Navigation Context Code** = 0 (Navigator)
	PresentationContext		3/24 @ 03:30:00	1	1		**Presentation Flag** = 0 (not presenting)

Option 1 for including program boundaries - does not associate ads on hour boundary with any particular program.

MediaOffset reflects the program being presented - 9-10 Real Housewives/10-11 Top Chef. These events could be generated based on either knowledge of program boundaries at presentation time, or by applying a reference data set to the data above.

Table 8 - MEDM Event Data for Use Case 4 Option 1

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
Tune into P1S1 in progress	SessionStartEvent		NA	1	1	3/24 @ 02:40:00	**Navigation Context ID** = ID related to Navigator session leading to a tune in **Navigation Context Code** = 0 (tune initiated using EPG) *could be other values* **Service Context ID** = Bravo
	SegmentEvent	0	00:40	1	1		**Content ID** = Real Housewives
	PresentationContext		00:40	1	1		**Presentation Flag** = 1 (presenting)
end of p1s1	SegmentEvent	1	00:42	1	1	3/24 @ 02:42:00	**Content ID** = Real Housewives
start of a1	SegmentEvent	0	0	1	1	3/24 @ 02:42:00	**Content ID** = <first advert>
end of a1	SegmentEvent	1	30 sec	1	1	3/24 @ 02:42:30	**Content ID** = <first advert>
start of a2	SegmentEvent	0	0	1	1	3/24 @ 02:42:30	**Content ID** = <second advert>
end of a2	SegmentEvent	1	30 sec	1	1	3/24 @ 02:43:00	**Content ID** = <second advert>
start of p1s2	SegmentEvent	0	00:43	1	1	3/24 @ 02:43:00	**Content ID** = Real Housewives
end of p1s2	SegmentEvent	1	1:00	1	1	3/24 @ 03:00:00	**Content ID** = Real Housewives
start of a3	SegmentEvent	0	0	1	1	3/24 @ 03:00:00	**Content ID** = <third advert>
end of a3	SegmentEvent	1	60 sec	1	1	3/24 @ 03:01:00	**Content ID** = <third advert>
start of p2s1	SegmentEvent	0	00:01	1	1	3/24 @ 03:01:00	**Content ID** = Top Chef
end of p2s1	SegmentEvent	1	00:30	1	1	3/24 @ 03:30:00	**Content ID** = Top Chef

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
	SessionEnd		NA	1	1		**Termination Code** = 3 (subscriber uses power btn to go to standby) **Navigation Context ID** = ??? **Navigation Context Code** = 0 (Navigator)
	PresentationContext		00:30	1	1		**Presentation Flag** = 0 (not presenting)

Option 2 for including program boundaries - illustration of how to associate ads on hour boundary with a particular program.

MediaOffset reflects the program being presented - 9-10 Real Housewives/10-11 Top Chef. These events could be generated based on either knowledge of program boundaries at presentation time, or by applying a reference data set to the data above.

Table 9 - MEDM Event Data for Use Case 4 Option 2

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
Tune into P1S1 in progress	SessionStartEvent		NA	1	1	3/24 @ 02:40:00	**Navigation Context ID** = ID related to Navigator session leading to a tune in **Navigation Context Code** = 0 (tune initiated using EPG) *could be other values* **Service Context ID** = Bravo
	SegmentEvent	0	00:40	1	1		**Content ID** = Real Housewives
	PresentationContext		00:40	1	1		**Presentation Flag** = 1 (presenting)
end of p1s1	SegmentEvent	1	00:42	1	1	3/24 @ 02:42:00	**Content ID** = Real Housewives
start of a1	SegmentEvent	0	0	1	1	3/24 @ 02:42:00	**Content ID** = <first advert>
end of a1	SegmentEvent	1	30 sec	1	1	3/24 @ 02:42:30	**Content ID** = <first advert>
start of a2	SegmentEvent	0	0	1	1	3/24 @ 02:42:30	**Content ID** = <second advert>

	Event	Flag	MediaOffset	SessionID	Session Group ID	Timestamp (UTC)	Other
end of a2	SegmentEvent	1	30 sec	1	1	3/24 @ 02:43:00	**Content ID** = <second advert>
start of p1s2	SegmentEvent	0	00:43	1	1	3/24 @ 02:43:00	**Content ID** = Real Housewives
end of p1s2	SegmentEvent	1	1:00	1	1	3/24 @ 03:00:00	**Content ID =** Real Housewives
start of p2s0	SegmentEvent	0	0	1	1	3/24 @ 03:00:00	**Content ID** = Top Chef
end of p2s0	SegmentEvent	1	0	1	1	3/24 @ 03:00:00	**Content ID** = Top Chef
start of a3	SegmentEvent	0	0	1	1	3/24 @ 03:00:00	**Content ID** = <third advert>
end of a3	SegmentEvent	1	60 sec	1	1	3/24 @ 03:01:00	**Content ID** = <third advert>
start of p2s1	SegmentEvent	0	00:01	1	1	3/24 @ 03:01:00	**Content ID** = Top Chef
end of p2s1	SegmentEvent	1	00:30	1	1	3/24 @ 03:30:00	**Content ID** = Top Chef
	SessionEnd		NA	1	1		**Termination Code** = 3 (subscriber uses power button to go to standby) **Navigation Context ID** = ??? **Navigation Context Code** = 0 (Navigator)
	PresentationContext		00:30	1	1		**Presentation Flag** = 0 (not presenting)

I.3 Use Case: Linear Viewing::Single Set-top Box::Multiple Channels::Multiple Programs::Time Shifting (UC8)

This Use Case captures the scenario of a viewer tuning to multiple channels during the viewing session and watching multiple programs and advertisements.

I.3.1 Description

Subscriber tunes into Countdown to Green on TNT network at 4:02pm ET on June 10, 2012. At 4:15pm the subscriber tunes into MotorZ TV on ABC network. At 4:35pm the subscriber tunes back into Countdown to Green on TNT network. At 4:42pm the subscriber rewinds Countdown to Green back to 20 minutes into the show. At 4:49pm the subscriber powers off the set-top.

I.3.2 Timing Diagram

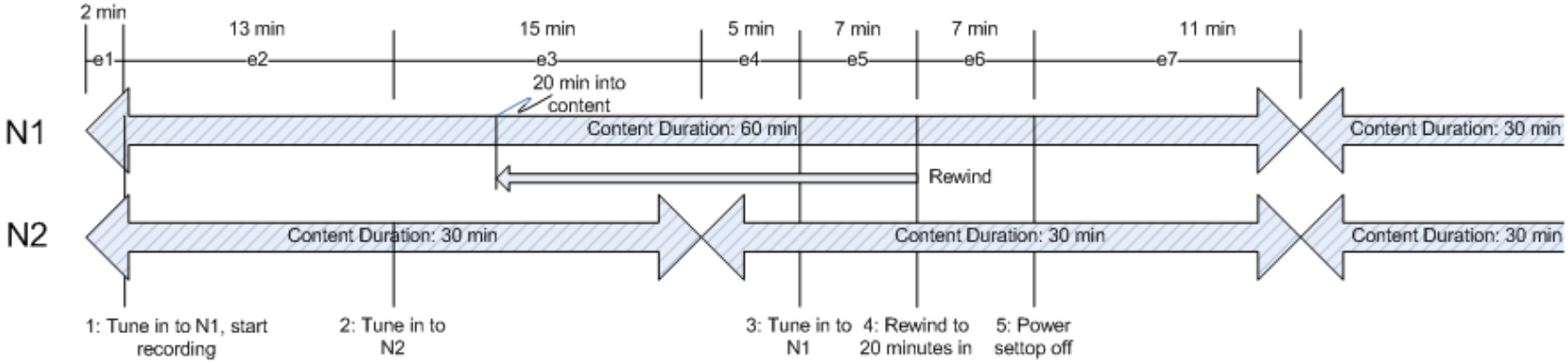


Figure 10 - Timing Diagram (UC8)

I.3.3 Sequence of Media Events

The data in these events conforms to the Media Event Data Model (MEDM) presented in the document.

Table 10 - MEDM Event Data for Use Case 8

	Event	MediaOffset	SessionID	SessionGroupID	Timestamp (UTC)	Other
start of e2 N1 Presenting	SessionStart	NA	1	1	01:02:00 AM	**NavigationContextCode**: 0 – From core navigator **NavigationContextId**: ??? **ServiceContext**: TNT

	Event	MediaOffset	SessionID	SessionGroupID	Timestamp (UTC)	Other
	SegmentEvent	00:02:00	1	1		**ContentID**: Closer, Season 4, Episode 2 **EntryCode**: 2 - Internal **Duration:** 01:00:00
	PresentationContext	00:02:00	1	1		**Codec**: 0 - MPEG-2 **AudioStatus**: 0 - Audio On **DisplayMode**: 0 - Full Screen **PresentingFlag**: 1 - Presenting **PresentationRegion**: 0,0 - full screen **OccludedRegions**: 0 - no occluded regions **Resolution**: 1024x768 **AspectRatio**: 16x9 **GMTCode**: -5 **Geocode**: 28173 **BitRate**: 15.75 Mbps **Format**: HD - 1080p
N1 Stops presenting	PresentationContext	00:15:00	1	1	01:15:00 AM	**Codec**: 0 - MPEG-2 **AudioStatus**: 0 - Audio On **DisplayMode**: 0 - Full Screen **PresentingFlag**: 0 - Not Presenting **PresentationRegion**: 0,0 - full screen **OccludedRegions**: 0 - no occluded regions **Resolution**: 1024x768 **AspectRatio**: 16x9 **GMTCode**: -5 **Geocode**: 28173 **BitRate**: 15.75 Mbps **Format**: HD - 1080p

	Event	MediaOffset	SessionID	SessionGroupID	Timestamp (UTC)	Other
Start of N2	SessionStart	NA	2	2	01:15:00 AM	**NavigationContextCode**: 0 - From core navigator **NavigationContextId**: ??? **ServiceContext**: ABC
	SegmentEvent	00:15:00	2	2	01:15:00 AM	**ContentID**: Survivor, Season 2, Episode 1 **EntryCode**: 2 - Internal **Duration**: 00:30:00
	PresentationContext	00:15:00	2	2	01:15:00 AM	**Codec**: 0 - MPEG-2 **AudioStatus**: 0 - Audio On **DisplayMode**: 0 - Full Screen **PresentingFlag**: 1 - Presenting **PresentationRegion**: 0,0 - full screen **OccludedRegions**: 0 - no occluded regions **Resolution**: 1024x768 **AspectRatio**: 16x9 **GMTCode**: -5 **Geocode**: 28173 **BitRate**: 15.75 Mbps **Format**: HD - 1080p
end of e3 N2 presenting	SegmentEvent	00:30:00	2	2	01:30:00 AM	**ContentID**: Survivor, Season 2, Episode 1 **EntryCode**: 1 - End **Duration**: 00:30:00
	SegmentEvent	00:00:00	2	2	01:30:00 AM	**ContentID**: News **EntryCode**: 0 - Begin **Duration**: 00:30:00

	Event	MediaOffset	SessionID	SessionGroupID	Timestamp (UTC)	Other
N2 Stops presenting	PresentationContext	00:05:00	2	2	01:35:00 AM	**Codec**: 0 - MPEG-2 **AudioStatus**: 0 - Audio On **DisplayMode**: 0 - Full Screen **PresentingFlag**: 0 - Not Presenting **PresentationRegion**: 0,0 - full screen **OccludedRegions**: 0 - no occluded regions **Resolution**: 1024x768 **AspectRatio**: 16x9 **GMTCode**: -5 **Geocode**: 28173 **BitRate**: 15.75 Mbps **Format**: HD - 1080p
N1 Starts Presenting	PresentationContext	00:35:00	1	1	01:35:00 AM	**Codec**: 0 - MPEG-2 **AudioStatus**: 0 - Audio On **DisplayMode**: 0 - Full Screen **PresentingFlag**: 1 - Presenting **PresentationRegion**: 0,0 - full screen **OccludedRegions**: 0 - no occluded regions **Resolution**: 1024x768 **AspectRatio**: 16x9 **GMTCode**: -5 **Geocode**: 28173 **BitRate**: 15.75 Mbps **Format**: HD - 1080p
Rewind Start on N1	PlayControlEvent	00:42:00	1	1	01:42:00 AM	**TrickModeCode**: 0 - Play **Velocity**: -2
Live Play on N1	PlayControlEvent	00:20:00	1	1	01:42:10 AM	**TrickModeCode**: 0 - Play **Velocity**: 0

	Event	MediaOffset	SessionID	SessionGroupID	Timestamp (UTC)	Other
end of e7, event from N2 though N1 is presenting	SegmentEvent	00:30:00	2	2	02:00:00 AM	**ContentID**: Survivor, Season 2, Episode 1 **EntryCode**: 1 - End **Duration**: 00:30:00
	SegmentEvent	00:00:00	2	2	02:00:00 AM	**ContentID**: Scrubs **EntryCode**: 0 - Begin **Duration**: 00:30:00
Power off	SegmentEvent	00:49:00	1	1	02:11:10 AM	**ContentID**: Closer, Season 4, Episode 2 **EntryCode**: 2 - Internal **Duration**: 01:00:00
	SegmentEvent	00:11:10	2	2	02:11:10 AM	**ContentID**: Scrubs **EntryCode**: 2 – Internal **Duration**: 00:30:00
	SessionEnd	NA	1	1	02:11:10 AM	**TerminationCode**: 0 - Tune Away **NavigationContextCode**: 0 - Navigator **NavigationContextId**: ???
	SessionEnd	NA	2	2	02:11:10 AM	**TerminationCode**: 0 - Tune Away **NavigationContextCode**: 0 - Navigator **NavigationContextId**: ???

Appendix II Use Case Realizations for the Media Measurement Data Model (MMDM)

Many Use Cases have been developed to capture viewer interactions with the media streams. These Use Cases are associated with the measurement aspects of viewer interactions. These focus on linear program and channel viewing, DVR viewing, VOD viewing, and interactive applications.

II.1 Mocked Up Data for MMDM Elements which are Common Across Use Cases

The data in these events conforms to the Media Event Data Model (MEDM) presented in the document. The definitions of the tables, their attributes, and relations between the tables are presented above.

II.1.1 Mocked Up Data Elements – Device/Household/Viewer Subject Area

Table 11 - MMDM Table: HOUSEHOLD_GEOGRAPHIC

HOUSEHOLD_GEOGRAPHIC	
HOUSEHOLD_ID	**GEO_AREA_CODE_ID**
86392514	5 (Zipcode 80203)
86392514	8 (DMA-17)

Table 12 - MMDM Table: HOUSEHOLD

HOUSEHOLD				
HOUSEHOLD_ID	**HOUSEHOLD_GUID**	**HOUSEHOLD_TYPE**	**EFF_FROM_DATE**	**EFF_THRU_DATE**
86392514	43982d86f	Residential	2010-01-25	2099-12-31

Table 13 - MMDM Table: HOUSEHOLD_DEMOGRAPHIC

HOUSEHOLD_DEMOGRAPHIC		
HOUSEHOLD_DEMOGRAPHICS_ID	**HOUSEHOLD_ID**	**DEMO_CODE_ID**
2	86392514	8 (Single Family)
3	86392514	9 (Owned)

Table 14 - MMDM Table: DEMOGRAPHIC_CODE

DEMOGRAPHIC_CODE			
DEMO_CODE_ID	**DEMO_VALUE**	**DEMO_TYPE_ID**	**DEMO_CODE_MNEMONIC**
1	$70,000 - $85,000	1 (Income Range)	
2	$85,000 - $100,000	1 (Income Range)	
3	18-35	2 (Age Range)	
4	35-50	2 (Age Range)	
5	Female	3 (Gender)	
6	Male	3 (Gender)	
7	Not Disclosed	3 (Gender)	
8	Single Family	4 (Household Type)	
9	Owned	5 (Household Ownership)	

Table 15 - MMDM Table: DEMOGRAPHIC_TYPE

DEMOGRAPHIC_TYPE				
DEMO_TYPE_ID	**DEMO_TYPE**	**DEMO_DESC**	**DEMO_USAGE**	**DEMO_TYPE_MNEMONIC**
1	Income Range	Income Range		
2	Age Range	Age Range		
3	Gender	Gender		
4	Household Type	Household Type		
5	Household Ownership	Household Ownership		

Table 16 - MMDM Table: DEVICE_DEFINITION

DEVICE_DEFINITION								
DEVICE_ DEF_ID	**MODEL_ NUMBER**	**DEVICE_ TYPE**	**MANUFAC- TURER**	**IS_HIGH_ DEFINITION_IND**	**IS_INTERACTIVE_ TV_IND**	**INTERACTIVE_TV_ AGENT_IND**	**IS_DVR_ IND**	**IS_VOD_ IND**
1	BCM3255	DOCSIS 3.0+	Broadcom	Y	Y	EBIF	N	Y

Table 17 - MMDM Table: VIEWING_DEVICE

VIEWING_DEVICE		
DEVICE_ID	**DEVICE_DEF_ID**	**DEVICE_GUID**
45892135	1	FF325976EDB

Table 18 - MMDM Table: DEVICE_HOUSEHOLD_VIEWER_MAP

DEVICE_HOUSEHOLD_VIEWER_MAP			
DEVICE_HOUSEHOLD_VIEWER_MAP_ID	**HOUSEHOLD_ID**	**VIEWER_ID**	**DEVICE_ID**
2986	86392514	932576493	45892135

Table 19 - MMDM Table: VIEWER

VIEWER		
VIEWER_ID	**VIEWER_GUID**	**VIEWER_TYPE**
932576493	abf3957d6520	

II.1.2 Mocked Up Data Elements – Geographic Location Subject Area

Table 20 - MMDM Table: GEOGRAPHIC_AREA_TYPE

GEOGRAPHIC_AREA_TYPE				
GEO_AREA_TYPE_ID	**GEO_AREA_TYPE**	**GEO_AREA_DESC**	**GEO_AREA_USAGE**	**GEO_AREA_TYPE_ MNEMONIC**
1	ZIP	US Postal ZIP Codes		
2	DMA	Designated Market Area		
3	AD ZONE	Advertising Zone		
4	CENSUS TRACT	US Census Tract		
5	SYSCODE	Cable Company System Code		
6	STATE	US States		
7	COUNTRY	Country		

Table 21 - MMDM Table: GEOGRAPHIC_AREA_CODE

GEOGRAPHIC_AREA_CODE				
GEO_AREA_ CODE_ID	**GEO_AREA_ TYPE_ID**	**GEO_AREA_ CODE_VALUE**	**GEO_AREA_DESC**	**GEO_AREA_CODE_ MNEMONIC**
1	1 (Zip)	11797	Woodbury, NY	
2	3 (Ad Zone)	ADZ-a4	Ad Zone a4	
3	7 (Country)	United States	United States of America	
4	2 (DMA)	DMA-130	New York, NY	
5	1 (Zip)	80203	Denver, CO	
6	3 (Ad Zone)	CO-CWZ	Colorado, Central West Zone, Denver (AdZone)	
7	6 (State)	CO	Colorado	
8	2 (DMA)	DMA-17	Denver, CO (DMA)	

II.1.3 Mocked Up Data Elements – Asset Distribution Subject Area

Table 22 - MMDM Table: STATION_GEOGRAPHIC_AREA

STATION_GEOGRAPHIC_AREA	
STATION_ID	**GEO_AREA_CODE_ID**
10567	5 (Zip 80230)
10567	6 (Ad Zone CO-CWZ)
10567	7 (State CO)
10567	8 (DMA-17)
10422	5
10422	6
10422	7
10422	8
62754	5
62754	6
62754	7
62754	8

Table 23 - MMDM Table: STATION_CHANNEL

STATION_CHANNEL							
STATION_ID	**STATION_ MAP_SOURCE**	**CALL_SIGN**	**STATION_ LONG_NAME**	**NETWORK_ID**	**NETWORK_ LONG_NAME**	**EIDR_ CONTENT_ID**	**EIDR_VIDEO_ SERVICE_ID**
1280	TMS	KMGH	KMGH	10567	KMGH - ABC Affiliate		
1281	TMS	KDVR	KDVR	10422	KDVR - Fox Affiliate		
1282	TMS	KRMADT3	KRMADT3 (KRMA-DT3)	62754	KRMA - PBS Affiliate		

Table 24 - MMDM Table: STATION_CHANNEL_PROGRAM

STATION_CHANNEL_PROGRAM	
STATION_ID	**AIRED_PROGRAM_ID**
1280	67896
1280	67897
1280	67898
1281	67899
1281	67900
1282	67901
1280	67902
1281	67903

Table 25 - MMDM Table: AIRED_PROGRAM

AIRED_PROGRAM						
AIRED_ PROGRAM_ ID	**VIDEO_ PROGRAM_ ID**	**PROGRAM_ TITLE**	**PROGRAM_ AIRING_BEG_ LOCAL_DT**	**PROGRAM_ AIRING_END_ LOCAL_DT**	**PROGRAM_ AIRING_BEG_ LOCAL_DT**	**PROGRAM_ AIRING_END_ LOCAL_DT**
67896	14480	Everyday Health	2012-06-09 T17:00:00.0	2012-06-09 T17:29:59.0	2012-06-10 T00:00:00.0	2012-06-10 T00:29:59.0
67897	14481	Food for Thought With Claire Thomas	2012-06-09 T17:30:00.0	2012-06-09 T17:59:59.0	2012-06-10 T00:30:00.0	2012-06-10 T00:59:59.0
67898	14482	The Caribbean Dream Celebrity Sports Invitational	2012-06-09 T18:00:00.0	2012-06-09 T18:29:59.0	2012-06-10 T01:00:00.0	2012-06-10 T01:29:59.0
67899	14483	On the Spot	2012-06-09 T17:00:00.0	2012-06-09 T17:59:59.0	2012-06-10 T00:00:00.0	2012-06-10 T00:59:59.0
67900	14484	Johnny Cash, Hank Williams, George Jones	2012-06-09 T18:00:00.0	2012-06-09 T18:29:59.0	2012-06-10 T01:00:00.0	2012-06-10 T01:29:59.0
67901	14485	Great Performances	2012-06-09 T01:00:00.0	2012-06-09 T02:29:59.0	2012-06-09 T08:00:00.0	2012-06-09 T09:29:59.0

AIRED_PROGRAM						
AIRED_ PROGRAM_ ID	VIDEO_ PROGRAM_ ID	PROGRAM_ TITLE	PROGRAM_ AIRING_BEG_ LOCAL_DT	PROGRAM_ AIRING_END_ LOCAL_DT	PROGRAM_ AIRING_BEG_ LOCAL_DT	PROGRAM_ AIRING_END_ LOCAL_DT
67902	14486	Yachting	2012-06-09 T18:30:00.0	2012-06-09 T18:59:59.0	2012-06-10 T01:30:00.0	2012-06-10 T01:59:59.0
67903	14487	Landscaping Secrets	2012-06-09 T18:30:00.0	2012-06-09 T18:59:59.0	2012-06-10 T01:30:00.0	2012-06-10 T01:59:59.0

Note: In the preceding table, the empty EIDR_CONTENT_ID column has been removed.

II.1.4 Mocked Up Data Elements – Video Assets Subject Area

Note: In the following tables, all empty columns have been omitted due to space considerations.

Table 26 - MMDM Table: VIDEO_PROGRAM

VIDEO_PROGRAM								
VIDEO_ PRO- GRAM_ID	PRO- GRAM_ TYPE_ CODE	PROGRAM_ DURATION_ IN_ SECONDS	PRO- GRAM_ GENRE_ CODE	PRO- GRAM_ RATING_ CODE	INDUSTRY _ASSET_ ID	PROGRAM_TITLE	PROGRAM_DESC	PRO- GRAM_ SERIES_ ID
14480	Series	1800	Art	G	EP014417 750017	Everyday Health	An inspirational artist auctions off her work for a camp for sick kids.	
14481	Series	1800	Instruc- tional	G	EP014418 080019	Food for Thought With Claire Thomas	Bacon-fried eggs with pancetta; red-velvet pancakes; simple hash-browns.	
14482	Series	1800	Sports	G	SH015400 490000	The Caribbean Dream Celebrity Sports Invitational	Celebrities compete in numerous events for a national charity.	

VIDEO_PROGRAM								
VIDEO_PRO-GRAM_ID	PRO-GRAM_TYPE_CODE	PROGRAM_DURATION_IN_SECONDS	PRO-GRAM_GENRE_CODE	PRO-GRAM_RATING_CODE	INDUSTRY_ASSET_ID	PROGRAM_TITLE	PROGRAM_DESC	PRO-GRAM_SERIES_ID
14483	Series	3600	Docu-drama	PG	EP014408400021	On the Spot	Fighting over the number of oceans; climate change; vegetables; hugs.	s
14484	Series	1800	Variety	PG	SH014879400000	Johnny Cash, Hank Williams, George Jones	Sit back and listen to the country sounds you grew up with!	
14485	Series	5400	Variety	G	EP000174790546	Great Performances	Harry Connick Jr. performs a mix of standards, show tunes and jazz classics in New York City.	
14486	Series	1800	Sports	G	EP007044530043	Yachting	America's Cup, World Series, From Venice, Italy.	
14487	Series	1800	Instruc-tional	G	SH009378210000	Landscaping Secrets	Revolutionary outdoor power tools.	

Table 27 - MMDM Table: VIDEO_PROGRAM_SEGMENT

VIDEO_PROGRAM_SEGMENT											
VIDEO_PROGRAM_SEGMENT_ID	VIDEO_PROGRAM_ID	SEG_ORDER_NUM	SEG_BEG_HHMMSS_OF_PROGRAM	SEG_END_HHMMSS_OF_PROGRAM	SEG_BEG_SECONDS_IN_PROGRAM	SEG_END_SECONDS_IN_PROGRAM	ALLOW_TARGETING_DURING_SEG_IND	SEG_CONTENT_TYPE_CODE	SEGMENT_DURATION_IN_SECONDS	SEGMENT_DESCR	SEG_POSITION_NUM	PROGRAM_SEGMENT_TYPE
8634901	14480	1	00:00:00	00:00:29	0	29 *(30 seconds ad segment)*	Y	AD *(Advertisement)*	30	Cheese ad	1	LIN

VIDEO_PROGRAM_SEGMENT												
VIDEO_PROGRAM_SEGMENT_ID	VIDEO_PROGRAM_ID	SEG_ORDER_NUM	SEG_BEG_HHMMSS_OF_PROGRAM	SEG_END_HHMMSS_OF_PROGRAM	SEG_BEG_SECONDS_IN_PROGRAM	SEG_END_SECONDS_IN_PROGRAM	ALLOW_TARGETING_DURING_SEG_IND	SEG_CONTENT_TYPE_CODE	SEGMENT_DURATION_IN_SECONDS	SEGMENT_DESCR	SEG_POSITION_NUM	PROGRAM_SEGMENT_TYPE
8634902	14480	2	00:00:30	00:00:59	30	59 *(30 second ad segment)*	Y	AD *(Advertisement)*	30	Crackers ad	1	LIN
8634903	14480	3	00:01:00	00:01:29	60	89 *(30 second ad segment)*	N	AD *(Advertisement)*	30	Granola ad	2	LIN
8634904	14480	4	00:01:30	00:14:59	90	899 *(810 second program segment)*	N	PC *(Program Content)*	810	Everyday Health Seg 1	2	LIN
8634905	14480	5	00:15:00	00:15:29	900	929 *(30 second ad segment)*	N	AD *(Advertisement)*	30	Milk ad	15	LIN
8634906	14480	6	00:15:30	00:15:39	930	939 *(10 second ad segment)*	N	AD *(Advertisement)*	10	Orange Juice ad	15	LIN
8634907	14480	7	00:16:00	00:16:59	960[1]	1019 *(60 second ad segment)*	N	AD *(Advertisement)*	60	Turkey ad	16	LIN
8634908	14480	8	00:17:00	00:17:14	1020	1034 *(15 second ad segment)*	N	AD *(Advertisement)*	15	Sausage ad	17	LIN

[1] 940 to 959 is not measured; no segment is defined for this time period.

VIDEO_PROGRAM_SEGMENT												
VIDEO_PROGRAM_SEGMENT_ID	VIDEO_PROGRAM_ID	SEG_ORDER_NUM	SEG_BEG_HHMMSS_OF_PROGRAM	SEG_END_HHMMSS_OF_PROGRAM	SEG_BEG_SECONDS_IN_PROGRAM	SEG_END_SECONDS_IN_PROGRAM	ALLOW_TARGETING_DURING_SEG_IND	SEG_CONTENT_TYPE_CODE	SEGMENT_DURATION_IN_SECONDS	SEGMENT_DESCR	SEG_POSITION_NUM	PROGRAM_SEGMENT_TYPE
86349 09	14480	9	00:28:20	00:28:29	1700[2]	1709 *(10 second ad segment)*	Y	AD *(Advertisement)*	10	Sun screen ad	28	LIN
86349 10	14480	10	00:28:30	00:28:59	1710	1739 *(30 second ad segment)*	Y	AD *(Advertisement)*	30	Skippy ad	28	LIN
86349 11	14480	11	00:29:00	00:29:59	1740	1799 *(60 second ad segment)*	Y	AD *(Advertisement)*	60	Chips ad	29	LIN
86350	14481	1	00:00:00	00:29:59	0	1799	N	PC *(Program Content)*	1800	CONTENT	1	PROGRAM
86351	14482	1	00:00:00	00:29:59	0	1799	N	PC *(Program Content)*	1800	CONTENT	1	PROGRAM
86352	14483	1	00:00:00	00:59:59	0	3599	Y	PC *(Program Content)*	3600	CONTENT	1	PROGRAM
86353	14484	1	00:00:00	00:29:59	0	1799	N	PC *(Program Content)*	1800	CONTENT	1	PROGRAM
86354	14485	1	00:00:00	01:29:59	0	5399	Y	PC *(Program Content)*	5400	CONTENT	1	PROGRAM

[2] 1035 to 1699 is not measured; no segment is defined for this time period.

VIDEO_PROGRAM_SEGMENT												
VIDEO_PROGRAM_SEGMENT_ID	VIDEO_PROGRAM_ID	SEG_ORDER_NUM	SEG_BEG_HHMMSS_OF_PROGRAM	SEG_END_HHMMSS_OF_PROGRAM	SEG_BEG_SECONDS_IN_PROGRAM	SEG_END_SECONDS_IN_PROGRAM	ALLOW_TARGETING_DURING_SEG_IND	SEG_CONTENT_TYPE_ CODE	SEGMENT_DURATION_IN_SECONDS	SEGMENT_DESCR	SEG_POSITION_NUM	PROGRAM_SEGMENT_ TYPE
86355	14486	1	00:00:00	00:29:59	0	1799	Y	PC *(Program Content)*	1800	CONTENT	1	PROGRAM
86356	14487	1	00:00:00	00:29:59	0	1799	Y	PC *(Program Content)*	1800	CONTENT	1	PROGRAM

Table 28 - MMDM Table: STATIC_SEGMENT

STATIC_SEGMENT			
STATIC_SEGMENT_ID	PROGRAM_SEGMENT_ID	VIDEO_ASSET_ID	AIRED_PROGRAM_ID
12562501	8634903	2573603 *Granola ad*	67896
12562502	8634904	25736 *Everyday Health*	67896
12562503	8634905	2573604 *Milk ad*	67896
12562504	8634906	2573605 *Orange Juice ad*	67896
12562505	8634907	2573606 *Turkey ad*	67896
12562506	8634908	2573607 *Sausage ad*	67896
125626	86350	25737	67897
125627	86351	25738	67898
125628	86352	25739	67899
125629	86353	25740	67900
125630	86354	25741	67901
125631	86355	25742	67902
125632	86356	25743	67903

Table 29 - MMDM Table: VIDEO_ASSET

VIDEO_ASSET						
VIDEO_ASSET_ID	DURATION_IN_SECONDS	ASSET_TYPE	ASSET_CONTENT_SOURCE_CODE	PRODUCT_TYPE_CODE	INDUSTRY_ASSET_ID	ASSET_TITLE
25736 *Everyday Health Seg 1*	899	Con-tent	TV Studio	CON-TENT	EP014417750017	Everyday Health
2573601 *Cheese ad*	30	Ad	Ad Agency	FOOD		Kraft Cheese
2573602 *Crackers ad*	30	Ad	Ad Agency	FOOD		Nabisco Crackers
2573603 *Granola ad*	30	Ad	Ad Agency	FOOD		Quaker Granola
2573604 *Milk ad*	30	Ad	Ad Agency	FOOD		Farm Fresh Milk
2573605 *Orange Juice ad*	10	Ad	Ad Agency	FOOD		Dole Orange Juice
2573606 *Turkey ad*	60	Ad	Ad Agency	FOOD		Roasters Turkey
2573607 *Sausage ad*	15	Ad	Ad Agency	FOOD		Jimmy Dean Sausage
2573608 *Sun screen ad*	10	Ad	Ad Agency	SKIN CARE		Protect You Sun screen
2573609 *Skippy ad*	30	Ad	Ad Agency	FOOD		Skippy peanut butter
25736010 *Chips ad*	60	Ad	Ad Agency	FOOD		Lays Chips
25737	1800	Con-tent	TV Studio	Series	EP014418080019	Food for Thought With Claire Thomas
25738	1800	Con-tent	TV Studio	Series	SH015400490000	The Caribbean Dream Celebrity Sports Invitational
25739	3600	Con-tent	TV Studio	Series	EP014408400021	On the Spot

VIDEO_ASSET						
VIDEO_ASSET_ID	DURATION_IN_SECONDS	ASSET_TYPE	ASSET_CONTENT_SOURCE_CODE	PRODUCT_TYPE_CODE	INDUSTRY_ASSET_ID	ASSET_TITLE
25740	1800	Content	TV Studio	Series	SH014879400000	Johnny Cash, Hank Williams, George Jones
25741	5400	Content	TV Studio	Series	EP000174790546	Great Performances
25742	1800	Content	TV Studio	Series	EP007044530043	Yachting
25743	1800	Content	TV Studio	Series	SH009378210000	Landscaping Secrets

II.1.5 Mocked Up Data Elements – Lists of Values Subject Area

Table 30 - MMDM Table: SESSION_INITIATION_REF

SESSION_INITIATION_REF		
INITIATION_CODE	**INITIATION_NAME**	**INITIATION_DESC**
1	Channel Change	
2	No Action	Program change, time boundary
3	Play Video	
4	Time Shift - Other	Pause, FF, REW, etc.
5	Time Shift - Play	
6	Timed Start	
99	Undefined Transition	

Table 31 - MMDM Table: SESSION_TERMINATION_REF

SESSION_TERMINATION_REF		
TERMINATION_CODE	**TERMINATION_NAME**	**TERMINATION_DESC**
1	Channel Change	
2	Device to Standby Mode	
3	End of Program	
4	Error	
5	Forced Zombie	
6	Inactive	
7	No Action	Program change, time boundary
8	SDV Error	
9	Stop Video	
10	Time Shift - Other	Pause, FF, REW, etc.
11	Time Shift - Stop	
12	Timed End	
99	Undefined Transition	

II.2 Use Case: Linear Viewing::Single Set-top Box::Single Channel::Multiple Programs::No Time Shifting

This Use Case captures the scenario of a viewer tuning to a single channel and remaining on the channel during the viewing session while watching multiple programs and advertisements. At the end of the viewing session, the user turns off the set-top box.

II.2.1 Description

In this scenario, our subscriber tuned into "Everyday Health" on ABS affiliate KMGH at 5:05:21 pm (17:05:21) MT on June 09, 2012. At 5:30:00 pm (17:30:00) MT, "Everyday Health" ended and "Food for Thought with Clair Thomas" began. The subscriber continued watching this channel. At 6:00:00 pm (18:00:00) MT, the program ended and "The Caribbean Dream Celebrity Sports Invitational" began. The subscriber watched this program until it ended at 6:30:00 pm (18:30:00) MT. At 6:30:00 pm (18:30:00) MT, "Yachting" began. The subscriber watched this until 6:45:25 pm (18:45:25) MT, and then turned off the set-top box.

The timing diagram detailing this scenario is shown in Figure 11.

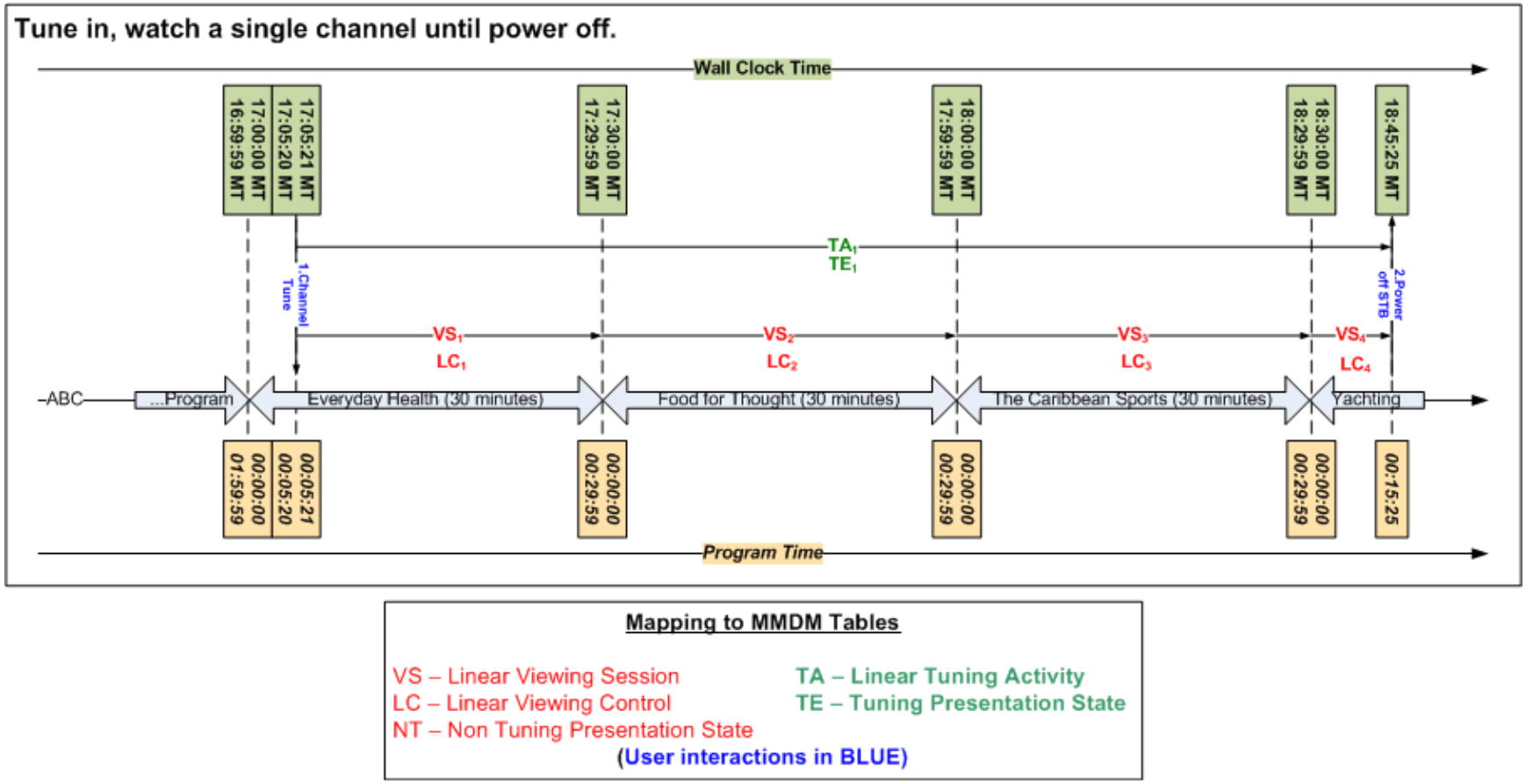


Figure 11 - Timing Diagram (LV_SC_MP)

II.2.2 Mocked Up Measurement Data

The data in these events conforms to the Media Event Data Model (MEDM) presented in the document. The definitions of the tables, their attributes, and relations between the tables are presented above.

Table 32 - MMDM Table: LINEAR_VIEWING_SESSION (VS)

LINEAR_VIEWING_SESSION (VS)									
VIEWING_SESSION_ID	AIRED_PROGRAM_ID	SESSION_BEG_LOCAL_DT	SESSION_END_LOCAL_DT	SESSION_BEG_UTC_DT	SESSION_END_UTC_DT	BEG_OFFSET_SEC_FROM_TRUE_BEG	END_OFFSET_SEC_FROM_TRUE_BEG	SESSION_INITI-ATION_CODE	SESSION_TERMI-NATION_CODE
69365421 (VS1)	67896 (Everyday Health)	2012-06-09 T17:05:20.0	2012-06-09 T17:29:59.0	2012-06-10 T00:05:20.0	2012-06-10 T00:29:59.0	319	1799	0	8
69365422 (VS2)	67897 (Food for Thought)	2012-06-09 T17:30:00.0	2012-06-09 T17:59:59.0	2012-06-10 T00:30:00.0	2012-06-10 T00:59:59.0	0	1799	10	8
69365423 (VS3)	67898 (Carib-bean)	2012-06-09 T18:00:00.0	2012-06-09 T18:29:59.0	2012-06-10 T01:00:00.0	2012-06-10 T01:29:59.0	0	1799	10	8
69365424 (VS4)	67902 (Yach-ting)	2012-0606 T18:30:00.0	2012-06-09 T18:45:25.0	2012-06-10 T01:30:00.0	2012-06-10 T00:45:25.0	0	924	10	9

Note: For each row in the preceding table, DHV_MAP_ID is 2986, GEO_AREA_CODE_ID is 8, and TUNER_ID is 1.

Table 33 - MMDM Table: LINEAR_VIEWING_CONTROL (LC)

LINEAR_VIEWING_CONTROL (LC)				
LINEAR_VIEWING_ CONTROL_ID	**VIEWING_ SESSION_ID**	**VIEWING_ MODE_CODE**	**VIEW_MODE_BEG_SEC_ FROM_TRUE_BEG**	**VIEW_MODE_END_SEC_ FROM_TRUE_BEG**
12950034 (LC1)	69365421 (VS1)	PL	320	1799
12950035 (LC2)	69365422 (VS2)	PL	0	1799
12950036 (LC3)	69365423 (VS3)	PL	0	1799
12950037 (LC4)	69365424 (VS4)	PL	0	1799

Table 34 - MMDM Table: LINEAR_TUNING_ACTIVITY (TA)

LINEAR_TUNING_ACTIVITY (TA)							
LINEAR_ TUNING_ ACTIVITY_ID	**DHV_ MAP_ID**	**TUNER_ID**	**TUNING_ ACTIVITY_ TYPE_CODE**	**CHANNEL_ CALL_SIGN**	**CHANNEL_ SOURCE_ID**	**TUNE_IN_ LOCAL_DT**	**TUNE_OUT_ LOCAL_DT**
8365491	2986	1	LIN	KMGH	ABC	2012-06-09 T17:05:20.0	2012-06-09 T18:45:25.0
TUNE_IN_ UTC_DT	**TUNE_OUT_ UTC_DT**	**GEO_AREA_ CODE_ID**	**INITIATION_ CODE**	**TERMINATION_ CODE**	**BIT_RATE**	**HIGH_DEF_ STD_DEF_IND**	
2012-06-10 T00:05:20.0	2012-06-10 T01:45:25.0	8	0	9		SD	

Table 35 - MMDM Table: TUNING_PRESENTATION_STATE (TE)

TUNING_PRESENTATION_STATE (TE)						
TUNING_PRE-SENTATION_ STATE_ID	**LINEAR_ TUNING_ ACTIVITY_ID**	**ACTIVITY_ EVENT_BEG_ LOCAL_DT**	**ACTIVITY_ EVENT_END_ LOCAL_DT**	**ACTIVITY_ EVENT_BEG_ LOCAL_DT**	**ACTIVITY_ EVENT_END_ LOCAL_DT**	**VOLUME_ LEVEL**
1002348	8365491	2012-06-09T17:05:20.0	2012-06-09T18:45:25.0	2012-06-10T00:05:20.0	2012-06-10T01:45:25.0	24
PERCENT_CON-TENT_VISIBLE	**IS_ BACKGROUND**	**IS_RECORDING**	**IS_PPV**	**IS_PIP**	**IS_CLOSED_ CAPTION**	
100	N	N	N	N	N	

II.3 Use Case: Linear Viewing::Single Set-top Box::Single Channel::Multiple Programs::With Time Shifting

This Use Case captures the scenario of a viewer tuning to a single channel and remaining on the channel during the viewing session and watching multiple programs and advertisements. This scenario also includes the user using time shifting features including pause, rewind, play, and live.

II.3.1 Description

In this scenario, our subscriber tuned into “Everyday Health” on ABC affiliate KMGH at 5:03:38 pm (17:03:38) MT on June 09, 2012. At 5:30:00 pm (17:30:00) MT, “Everyday Health” ended and “Food for Thought with Clair Thomas” began. Our subscriber continued watching this channel and paused, rewound, and then played the program, and then went to live viewing at 6:05:00 pm (18:05:00) MT. However, at 6:00 pm (18:00:00) MT, the program ended and “The Caribbean Dream Celebrity Sports Invitational” began, so when the subscriber went to live viewing, “Caribbean Dream” was playing. The subscriber watched this program until it ended at 6:30:00 pm (18:30:00) MT. At 6:30:00 pm (18:30:00) MT, “Yachting” began and the subscriber watched this until 6:35:20 pm (18:35:20) MT and then turned off the set-top box.

The timing diagram detailing this scenario is shown in Figure 12.

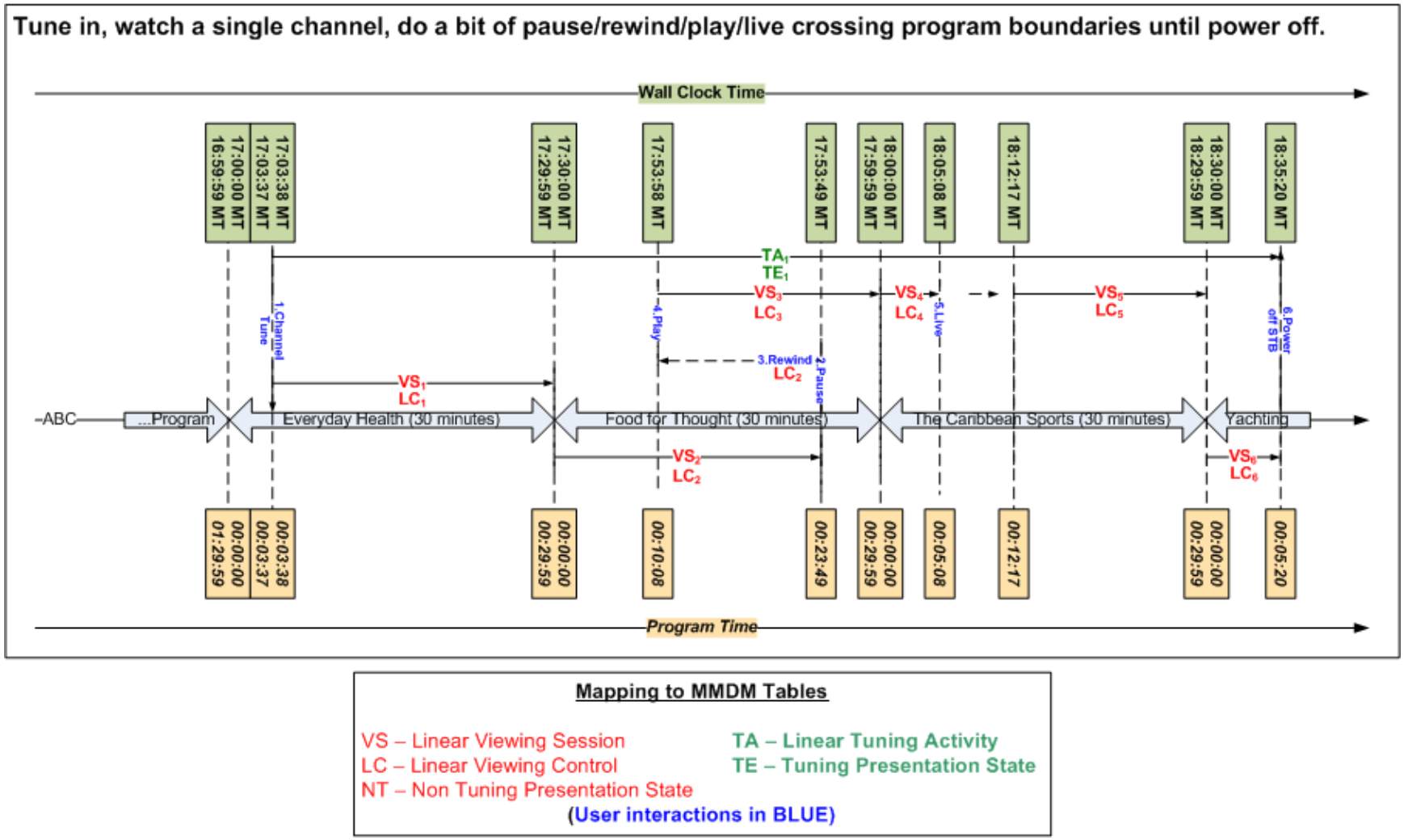


Figure 12 - Timing Diagram (LV_SC_MP_TS)

II.3.2 Mocked up Measurement Data

The data in these events conforms to the Media Event Data Model (MEDM) presented in the document. The definitions of the tables, their attributes, and relations between the tables are presented above.

Table 36 - MMDM Table: LINEAR_VIEWING_SESSION (VS)

LINEAR_VIEWING_SESSION (VS)									
VIEWING_ SESSION_ ID	AIRED_ PROGRAM_ ID	SESSION_BE G_LOCAL_ DT	SESSION_ END_ LOCAL_ DT	SESSION_ BEG_ UTC_ DT	SESSION_ END_ UTC_DT	BEG_OFF SET_SEC_ FROM_ TRUE_ BEG	END_OFF SET_SEC_ FROM_ TRUE_ BEG	SESSION _INITI- ATION _CODE	SESSION _TERMI- NATION _CODE
69365425 (VS1)	67896 (Everyday Health)	2012-06-09 T17:03:38.0	2012-06-09 T17:29:59.0	2012-06-10 T00:03:38.0	2012-06-10 T00:29:59.0	218	1799	0	10
69365426 (VS2)	67897 (Food)	2012-06-09 T17:30:00.0	2012-06-09 T17:53:49.0	2012-06-10 T00:30:00.0	2012-06-10 T00:53:49.0	0	1428	10	11
69365427 (VS3)	67897 (Food)	2012-06-09 T17:53:58.0	2012-06-09 T17:59:59.0	2012-06-10 T00:53:58.0	2012-06-10 T00:59:59.0	608	1799	11	10
69365428 (VS4)	67898 (Caribbean)	2012-06-09 T18:00:00.0	2012-06-09 T18:05:08.0	2012-06-10 T01:00:00.0	2012-06-10 T01:05:08.0	0	307	10	11
69365429 (VS5)	67898 (Caribbean)	2012-06-09 T18:12:17.0	2012-06-09 T18:29:59.0	2012-06-10 T01:12:17.0	2012-06-10 T01:29:59.0	737	1799	11	10
69365430 (VS6)	67902 (Yachting)	2012-06-09 T18:30:00.0	2012-06-09 T18:35:20.0	2012-06-10 T01:30:00.0	2012-06-10 T01:35:20.0	0	319	10	9

Note: For each row in the preceding table, DHV_MAP_ID is 2986, GEO_AREA_CODE is 8, and TUNER_ID is 1.

Table 37 - MMDM Table: LINEAR_VIEWING_CONTROL (LC)

LINEAR_VIEWING_CONTROL (LC)				
LINEAR_VIEWING_ CONTROL_ID	**VIEWING_ SESSION_ID**	**VIEWING_ MODE_CODE**	**VIEW_MODE_BEG_ SEC_FROM_TRUE_BEG**	**VIEW_MODE_END_ SEC_FROM_TRUE_BEG**
12950038	69365425 (VS1)	PL	218	1799
12950039	69365426 (VS2)	PL	0	1428
12950040	69365426 (VS2)	PA	1428	1428
12950041	69365426 (VS2)	R3	607	1428
12950042	69365426 (VS2)	PL	607	607
12950043	69365427 (VS3)	PL	608	1799
12950044	69365428 (VS4)	PL	0	307
12950045	69365428 (VS4)	LV	307	307
12950046	69365429 (VS5)	PL	737	1799
12950047	69365430 (VS6)	PL	0	319

Table 38 - MMDM Table: LINEAR_TUNING_ACTIVITY (TA)

LINEAR_TUNING_ACTIVITY (TA)							
LINEAR_TUNING_ ACTIVITY_ID	**DHV_ MAP_ID**	**TUNER_ID**	**TUNING_ACTIVITY _TYPE_CODE**	**CHANNEL_ CALL_SIGN**	**CHANNEL_ SOURCE_I D**	**TUNE_IN_ LOCAL_DT**	**TUNE_OUT_ LOCAL_DT**
8365492	2986	1	LIN	KMGH	ABC	2012-06-09 T17:03:38.0	2012-06-09 T18:35:20.0
TUNE_IN_ UTC_DT	**TUNE_OUT_ UTC_DT**	**GEO_ AREA_ CODE_ID**	**INITIATION_CODE**	**TERMINA- TION_CODE**	**BIT_ RATE**	**HIGH_DEF_ STD_DEF_IND**	
2012-06-10T00:03:38.0	2012-06-10T01:35:20.0	8	0	9		SD	

Table 39 - MMDM Table: TUNING_PRESENTATION_STATE (TE)

TUNING_PRESENTATION_STATE (TE)						
TUNING_ PRESENTATION_ STATE_ID	**LINEAR_ TUNING_ ACTIVITY_ID**	**ACTIVITY_ EVENT_BEG_ LOCAL_DT**	**ACTIVITY_ EVENT_END_ LOCAL_DT**	**ACTIVITY_ EVENT_BEG_ UTC_DT**	**ACTIVITY_ EVENT_UTC_ LOCAL_DT**	**VOLUME_ LEVEL**
1002349	8365492	2012-06-09T17:03:38.0	2012-06-09T18:35:20.0	2012-06-10T00:03:38.0	2012-06-10T01:35:20.0	42
PERCENT_ CONTENT_VISIBLE	**IS_ BACKGROUND**	**IS_RECORDING**	**IS_PPV**	**IS_PIP**	**IS_CLOSED_ CAPTION**	
100	N	N	N	N	N	

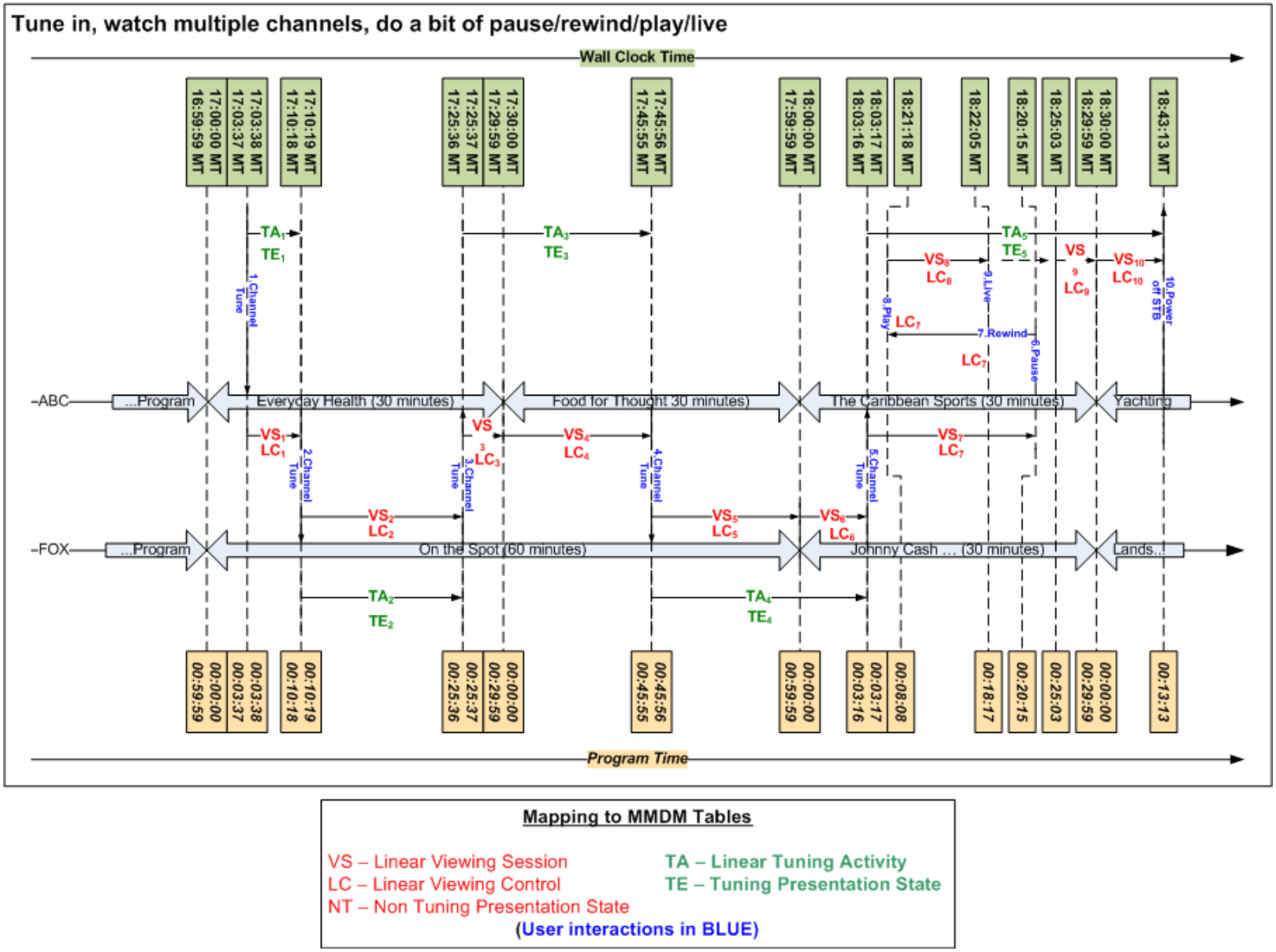
II.4 Use Case: Linear Viewing::Single Set-top Box::Multiple Channels::Multiple Programs::With Time Shifting

This Use Case captures the scenario of a viewer tuning between two channels during the viewing session and watching multiple programs and advertisements. This scenario also includes the user using time shifting features including pause, rewind, play, and live.

II.4.1 Description

In this scenario, our subscriber tuned to "Everyday Health" on ABC affiliate KMGH at 5:03:38 pm (17:03:38) MT. At 5:10:18 pm (17:10:18) MT, our subscriber tuned to Fox affiliate KDVR and began watching "On the Spot". At 5:25:37 pm (17:25:37) MT, our subscriber tuned back to ABC and continued watching "Everyday Health". At 5:30:00 pm, the program ended and "Food for Thought" began playing on ABC. At 5:45:56 pm (17:45:56) MT our subscriber tuned to "On the Spot" on FOX. At 6:00:00 pm (18:00:00) MT, "Johnny Cash" began playing on FOX and with our subscriber watching this program. At 6:03:17 pm (18:03:17) MT our subscriber tuned to "Caribbean Sports" on ABC and watched this program until 6:20:15 pm (18:20:15) MT. Beginning at this point in time the subscriber used time shifting (pause, rewind, play, live). At 6:25:03 pm the subscriber began watching again live and continued watching live broadcast until 6:43:13 pm (18:43:13) MT and then turned off the set-top box.

The timing diagram detailing this scenario is shown in Figure 13.



Mapping to MMDM Tables

VS – Linear Viewing Session
LC – Linear Viewing Control
NT – Non Tuning Presentation State
TA – Linear Tuning Activity
TE – Tuning Presentation State
(User interactions in BLUE)

Figure 13 - Timing Diagram (LV_MC_MP_TS)

II.4.2 Mocked Up Measurement Data

The data in these events conforms to the Media Event Data Model (MEDM) presented in the document. The definitions of the tables, their attributes, and relations between the tables are presented above.

Table 40 - MMDM Table: LINEAR_VIEWING_SESSION (VS)

LINEAR_VIEWING_SESSION (VS)									
VIEWING_ SESSION_ ID	AIRED_ PROGRAM_ ID	SESSION_ BEG_ LOCAL_DT	SESSION_ END_ LOCAL_DT	SESSION_ BEG_ LOCAL_DT	SESSION_ END_ LOCAL_DT	BEG_OFF-SET_SEC_ FROM_ TRUE_ BEG	END_OFF SET_SEC_ FROM_ TRUE_ BEG	SES-SION_ INITI-ATION_ CODE	SESSION_ TERMI-NATION_ CODE
69365431 (VS1)	67896 (Everyday Health)	2012-06-09 T17:03:38.0	2012-06-09 T17:10:18.0	2012-06-10 T00:03:38.0	2012-06-10 T00:10:18.0	218	618	0	0
69365432 (VS2)	67899 (On the Spot)	2012-06-09 T17:10:19.0	2012-06-09 T17:25:36.0	2012-06-10 T00:10:19.0	2012-06-10 T00:25:36.0	619	1536	0	0
69365433 (VS3)	67896 (Everyday Health)	2012-06-09 T17:25:37.0	2012-06-09 T17:29:59.0	2012-06-10 T00:25:37.0	2012-06-10 T00:29:59.0	1537	1799	0	10
69365434 (VS4)	67897 (Food for Thought)	2012-06-09 T17:30:00.0	2012-06-09 T17:45:55.0	2012-06-10 T00:30:00.0	2012-06-10 T00:45:55.0	0	955	10	0
69365435 (VS5)	67899 (On the Spot)	2012-06-09 T17:45:56.0	2012-06-09 T17:59:59.0	2012-06-10 T00:45:56.0	2012-06-10 T00:59:59.0	2756	3599	0	10
69365436 (VS6)	67900 (Johnny Cash)	2012-06-09 T18:00:00.0	2012-06-09 T18:03:16.0	2012-06-10 T01:00:00.0	2012-06-10 T01:03:16.0	0	196	10	0
69365437 (VS7)	67898 (Caribbean)	2012-06-09 T18:03:17.0	2012-06-09 T18:20:15.0	2012-06-10 T01:03:17.0	2012-06-10 T01:20:15.0	197	1215	0	11

LINEAR_VIEWING_SESSION (VS)									
VIEWING_ SESSION_ ID	AIRED_ PROGRAM_ ID	SESSION_ BEG_ LOCAL_DT	SESSION_ END_ LOCAL_DT	SESSION_ BEG_ LOCAL_DT	SESSION_ END_ LOCAL_DT	BEG_OFF-SET_SEC_ FROM_ TRUE_ BEG	END_OFF SET_SEC_ FROM_ TRUE_ BEG	SES-SION_ INITI-ATION_ CODE	SESSION_ TERMI-NATION_ CODE
69365438 (VS8)	67898 (Caribbean)	2012-06-09 T18:21:18.0	2012-06-09 T18:22:05.0	2012-06-10 T01:21:18.0	2012-06-10 T01:22:05.0	488	1097	11	11
69365439 (VS9)	67898 (Caribbean)	2012-06-09 T18:25:03.0	2012-06-09 T18:29:59.0	2012-06-10 T01:25:03.0	2012-06-10 T01:29:59.0	1503	1799	11	10
69365440 (VS10)	67902 (Yachting)	2012-06-09 T18:30:00.0	2012-06-09 T18:43:13.0	2012-06-10 T01:30:00.0	2012-06-10 T01:43:13.0	0	793	10	9

Note: For each row in the preceding table, DHV_MAP_ID is 2986, GEO_AREA_CODE_ID is 8, and TUNER_ID is 1.

Table 41 - MMDM Table: LINEAR_VIEWING_CONTROL (LC)

LINEAR_VIEWING_CONTROL (LC)				
LINEAR_VIEWING_ CONTROL_ID	VIEWING_ SESSION_ID	VIEWING_ MODE_CODE	VIEW_MODE_BEG_SEC_ FROM_TRUE_BEG	VIEW_MODE_END_SEC_ FROM_TRUE_BEG
12950048	69365431 (VS1)	PL	218	618
12950049	69365432 (VS2)	PL	619	1536
12950050	69365433 (VS3)	PL	1537	1799
12950051	69365434 (VS4)	PL	0	955
12950052	69365435 (VS5)	PL	2756	3599
12950053	69365436 (VS6)	PL	0	196
12950054	69365437 (VS7)	PL	197	1215
12950055	69365437 (VS7)	PA	1215	1215
12950056	69365437 (VS7)	R2	488	1215
12950057	69365437 (VS7)	PL	488	488
12950058	69365438 (VS8)	PL	488	1097
12950059	69365438 (VS9)	LI	1097	1503

LINEAR_VIEWING_CONTROL (LC)				
LINEAR_VIEWING_ CONTROL_ID	VIEWING_ SESSION_ID	VIEWING_ MODE_CODE	VIEW_MODE_BEG_SEC_ FROM_TRUE_BEG	VIEW_MODE_END_SEC_ FROM_TRUE_BEG
12950060	69365439 (VS9)	PL	1503	1799
12950061	69365440 (VS10)	PL	0	793

Table 42 - MMDM Table: LINEAR_TUNING_ACTIVITY (TA)

LINEAR_TUNING_ACTIVITY (TA)								
LINEAR_ TUNING_ ACTIVITY_ ID	DHV_ MAP_ ID	CHANNEL_ CALL_SIGN	CHANNEL_ SOURCE_ID	TUNE_IN_ LOCAL_ DT	TUNE_OUT_ LOCAL_DT	TUNE_IN_ UTC_ DT	TUNE_OUT_ UTC_ DT	TERMI- NATION_ CODE
8365493	2986	KMGH	ABC	2012-06-09 T17:03:38.0	2012-06-09 T17:10:18.0	2012-06-10 T00:03:38.0	2012-06-10 T00:10:18.0	0
8365494	2986	KDVR	FOX	2012-06-09 T17:10:19.0	2012-06-09 T17:25:36.0	2012-06-10 T00:10:19.0	2012-06-10 T00:25:36.0	0
8365495	2986	KMGH	ABC	2012-06-09 T17:25:37.0	2012-06-09 T17:45:55.0	2012-06-10 T00:25:37.0	2012-06-10 T00:45:55.0	0
8365496	2986	KDVR	FOX	2012-06-09 T17:45:56.0	2012-06-09 T18:03:16.0	2012-06-10 T00:45:56.0	2012-06-10 T01:03:16.0	0
8365497	2986	KMGH	ABC	2012-06-09 T18:03:17.0	2012-06-09 T18:43:13.0	2012-06-10 T01:03:17.0	2012-06-10 T01:43:13.0	9

Note: For each row in the preceding table, TUNER_ID is 1, TUNING_ACTIVITY_TYPE_CODE is LIN, GEO_AREA_CODE_ID is 8, INITIATION_CODE is 0, and HIGH_DEF_STD_DEF is SD.

Table 43 - MMDM Table: TUNING_PRESENTATION_STATE (TE)

TUNING_PRESENTATION_STATE (TE)					
TUNING_PRESEN-TATION_STATE_ID	**LINEAR_TUNING_ ACTIVITY_ ID**	**ACTIVITY_EVENT_ BEG_LOCAL_ DT**	**ACTIVITY_EVENT_ END_LOCAL_DT**	**ACTIVITY_EVENT_ BEG_UTC_ DT**	**ACTIVITY_EVENT_ END_UTC_ DT**
1002350	8365493	2012-06-09 T17:03:38.0	2012-06-09 T17:10:18.0	2012-06-10 T00:03:38.0	2012-06-10 T00:10:18.0
1002351	8365494	2012-06-09 T17:10:19.0	2012-06-09 T17:25:36.0	2012-06-10 T00:10:19.0	2012-06-10 T00:25:36.0
1002352	8365495	2012-06-09 T17:25:37.0	2012-06-09 T17:45:55.0	2012-06-10 T00:25:37.0	2012-06-10 T00:45:55.0
1002353	8365496	2012-06-09 T17:45:56.0	2012-06-09 T18:03:16.0	2012-06-10 T00:45:56.0	2012-06-10 T01:03:16.0
1002354	8365497	2012-06-09 T18:03:17.0	2012-06-09 T18:43:13.0	2012-06-10 T01:03:17.0	2012-06-10 T01:43:13.0

Note: For each row in the preceding table, VOLUME_LEVEL is 41, PERCENT_CONTENT_VISIBLE is 100, IS_BACKGROUND is N, IS_RECORDING is N, IS_PPV is N, IS_PIP is N, and IS_CLOSED_CAPTION is N.

II.5 Use Case: Digital Video Recorder Viewing::Record Program::Single Set-top Box:Single Programs::Time Shifting

This Use Case captures the scenario of a viewer recording a program and then viewing the program at a later time. This scenario also includes the user using time shifting features including pause, rewind, play, and live.

II.5.1 Description

Late in the evening of June 08, 2012, our subscriber scheduled a DVR recording of "Great Performances" which aired on June 09, 2012 at 1:00:00 am (01:00:00) MT. The program was recorded by the DVR as scheduled.

At 3:07:32 pm (15:07:32) MT, the subscriber selected the recorded program and began watching. At 3:22:17 pm (15:22:17) MT, the subscriber pressed rewind and went back to the 9:17 mark in the program and began watching. The subscriber continued watching until 3:38:57 pm (15:38:57) MT and then pressed fast-forward, moving to the 43:19 mark of the program and then pressed rewind to go back to the 38:04 mark of the program. The subscriber began watching the program at this point and then turned up the volume. At the 50:13 mark of the program, the subscriber again pressed fast forward and went to the 64:38 mark of the program and began watching again. While watching, the subscriber turned the volume down again and continued watching until the end.

Later in the day, at 10:07:32 pm (22:07:32) MT, the subscriber selected the program again, reset it to the beginning and began watching. At 10:10:14 pm (22:10:14) MT, the subscriber pressed rewind, moved back to the 10:29 mark of the program, and began watching again. At 10:23:30 pm (22:23:30) MT, the subscriber rewound back to the 25:11 mark and began playing. At 10:48:32 pm (22:48:32) MT, the subscriber stopped the program and at 10:53:03 pm (22:53:03) MT deleted the program from the DVR.

The timing diagram detailing this scenario is shown in Figure 14.

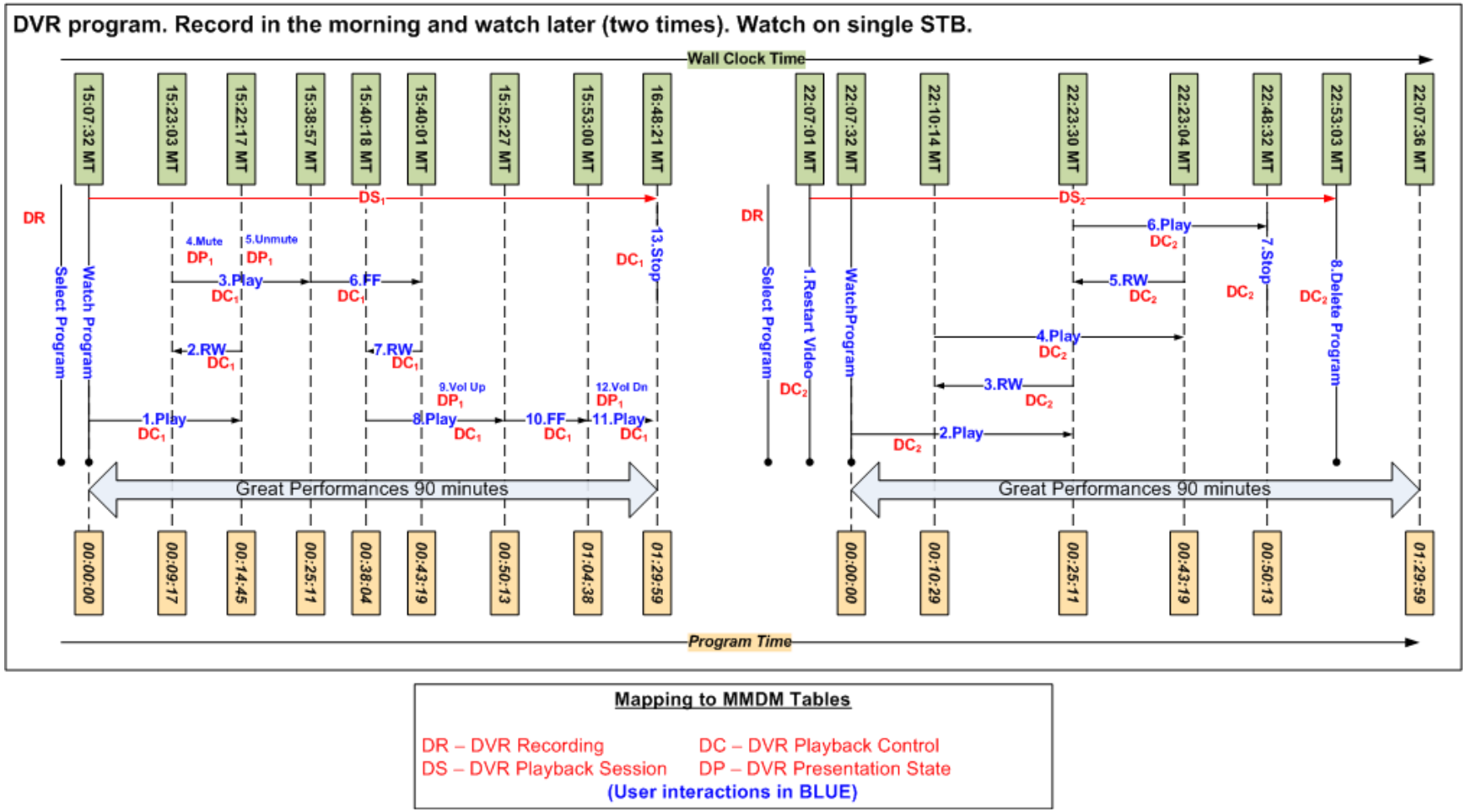


Figure 14 - Timing Diagram (DVR_RP_SS_SP_WT)

II.5.2 Mocked Up Measurement Data

The data in these events conforms to the Media Event Data Model (MEDM) presented in the document. The definitions of the tables, their attributes, and relations between the tables are presented above.

Table 44 - MMDM Table: DVR_RECORDING (DR)

DVR_RECORDING (DR)					
DVR_ RECORDING_ID	AIRED_ PROGRAM_ID	DHV_MAP_ID	TUNER_ID	RECORDING_ BEG_LOCAL_DT	RECORDING_ END_LOCAL_DT
973426	67901	2986	1	2012-06-09T01:00:00.0	2012-06-09T02:29:59.0
RECORDING_ BEG_UTC_DT	RECORDING_ END_UTC_DT	BEG_OFFSET_SEC_ FROM_TRUE_BEG	END_OFFSET_SEC_ FROM_TRUE_BEG	RECORDING_ INITIATION_CODE	RECORDING_ TERMINATION_CODE
2012-06-09T08:00:00.0	2012-06-09T09:29:59.0	0	5399	12	13

Table 45 - MMDM Table: DVR_PLAYBACK_SESSION (DS)

DVR_PLAYBACK_SESSION (DS)					
DVR_PLAYBACK_ SESSION_ID	DVR_ RECORDING_ID	GEO_AREA_ CODE_ID	TUNER_ID	PLAYBACK_ BEG_LOCAL_DT	PLAYBACK_ END_LOCAL_DT
2253841	973426	8	2	2012-06-09T15:07:32.0	2012-06-09T16:48:21.0
2253842	973426	8	1	2012-06-09T22:07:01.0	2012-06-09T23:53:03.0
PLAYBACK_ BEG_UTC_DT	PLAYBACK_ END_UTC_DT	PLAYBACK_ INITIATION_CODE	PLAYBACK_ TERMINATION_CODE	DHV_MAP_ID	AIRED_ PROGRAM_ID
2012-06-09T22:07:32.0	2012-06-09T23:48:21.0	14	15	2986	67901
2012-06-10T05:07:01.0	2012-06-10T06:53:03.0	14	15	2986	67901

Table 46 - MMDM Table: DVR_PLAYBACK_CONTROL (DC)

DVR_PLAYBACK_CONTROL (DC)				
DVR_PLAYBACK_ CONTROL_ID	**DVR_PLAYBACK_ SESSION_ID**	**PLAYBACK_ MODE_CODE**	**PB_MODE_BEG_SEC_ FROM_TRUE_BEG**	**PB_MODE_END_SEC_ FROM_TRUE_BEG**
1597632	2253841	PL	0	884
1597633	2253841	R2	557	884
1597634	2253841	PL	557	1511
1597635	2253841	F1	1512	2599
1597636	2253841	R3	2284	2598
1597637	2253841	PL	2284	3013
1597638	2253841	F3	3014	3878
1597639	2253841	PL	3789	5399
1597640	2253841	ST	5399	5399
1597641	2253842	RS	5399	0
1597642	2253842	PL	0	1511
1597643	2253842	R1	629	1510
1597644	2253842	PL	629	2599
1597645	2253842	R3	1511	2598
1597646	2253842	PL	1511	3013
1597647	2253842	ST	3013	3013
1597648	2253842	DL	3013	3013

Table 47 - MMDM Table: DVR_PRESENTATION_STATE (DP)

DVR_PRESENTATION_STATE (DP)							
DVR_ PRESENTATION _STATE_ID	DVR_PLAYBACK _CONTROL_ID	EVENT_BEG_SEC_ FROM_TRUE_BEG	EVENT_END_SEC_ FROM_TRUE_BEG	VOLUME_ LEVEL_NUM	PERCENT_ CONTENT_ VISIBLE	IS_ BACK-GROUND	IS_ CLOSED_ CAPTION
759146	1597634	557	1000	0	100	N	N
759147	1597634	1001	1511	42	100	N	N
759148	1597637	2284	3013	50	100	N	N
759149	1597646	3878	5399	45	100	N	N

II.6 Use Case: Video on Demand Viewing::Lease Program::Single Set-top Box::Single Asset::With Time Shifting

This Use Case captures the scenario of a viewer purchasing a VOD asset then viewing that asset. This scenario also includes the user using time shifting features including pause, rewind, play, and live.

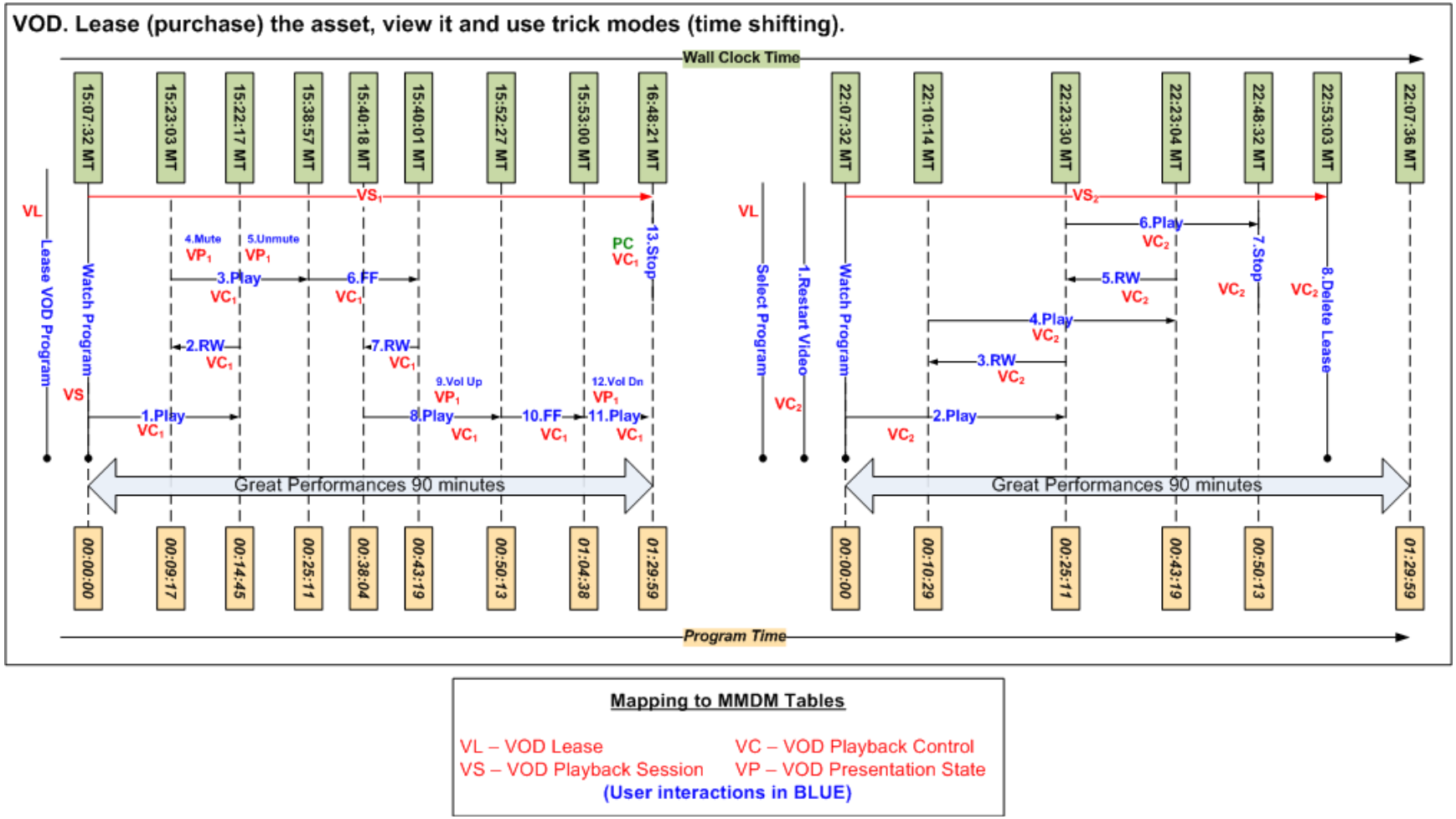
II.6.1 Description

Around noon on June 09, 2012, the subscriber selected and leased “Great Performances” from the VOD menu.

At 3:07:32 pm (15:07:32) MT, the subscriber selected the leased program and began watching. At 3:22:17 pm (15:22:17) MT, the subscriber pressed rewind and went back to the 9:17 mark in the program and began watching. The subscriber continued watching until 3:38:57 pm (15:38:57) MT and then pressed fast-forward, moving to the 43:19 mark of the program and then pressed rewind to go back to the 38:04 mark of the program. The subscriber began watching the program at this point and then turned up the volume. At the 50:13 mark of the program, the subscriber again pressed fast forward and went to the 64:38 mark of the program and began watching again. While watching, the subscriber turned the volume down again and continued watching until the end.

At around 10:05 pm (22:05) MT our subscriber restarted the video program to the beginning. At 10:07:32 pm (22:07:32) MT, the subscriber selected the program again and began watching. At 10:10:14 pm (22:10:14) MT, the subscriber pressed rewind, moved back to the 10:29 mark of the program, and began watching again. At 10:23:30 pm (22:23:30) MT, the subscriber rewound back to the 25:11 mark and began playing. At 10:48:32 pm (22:48:32) MT, the subscriber stopped the program and at 10:53:03 pm (22:53:03) MT deleted the program from the VOD Lease.

The timing diagram detailing this scenario is shown in Figure 15.



Mapping to MMDM Tables

VL – VOD Lease
VC – VOD Playback Control
VS – VOD Playback Session
VP – VOD Presentation State
(User interactions in BLUE)

Figure 15 - Timing Diagram (VOD_SA_WT)

II.6.2 Mocked Up Measurement Data

The data in these events conforms to the Media Event Data Model (MEDM) presented in the document. The definitions of the tables, their attributes, and relations between the tables are presented above.

Table 48 - MMDM Table: VOD_LEASE (VL)

VOD_LEASE (VL)						
VOD_ LEASE_ID	VIDEO_ PROGRAM_ID	DHV_ MAP_ID	LEASE_START_ LOCAL_DT	LEASE_END_ LOCAL_DT	LEASE_START_ UTC_DT	LEASE_END_ UTC_DT
9130212	14485	2986	2012-06-09T15:06:00.0	2012-06-10T15:05:59.0	2012-06-09T22:06:00.0	2012-06-10T22:05:59.0

Table 49 - MMDM Table: VOD_PLAYBACK_SESSION (VS)

VOD_PLAYBACK_SESSION (VS)				
VOD_PLAYBACK_ SESSION_ID	VOD_LEASE_ID	GEO_AREA_ CODE_ID	PLAYBACK_BEG_ LOCAL_DT	PLAYBACK_ END_LOCAL_DT
128365411	9130212	8	2012-06-09T15:07:32.0	2012-06-09T16:48:21.0
128365412	9130212	8	2012-06-09T22:07:32.0	2012-06-09T23:53:03.0
PLAYBACK_ BEG_UTC_DT	**PLAYBACK_ END_UTC_DT**	**PLAYBACK_ INITIATION_CODE**	**PLAYBACK_ TERMINATION_CODE**	**DHV_ MAP_ID**
2012-06-09T22:07:32.0	2012-06-09T23:48:21.0	14	15	2086
2012-06-10T05:07:32.0	2012-06-10T06:53:03.0	14	15	2986

Table 50 - MMDM Table: VOD_PLAYBACK_CONTROL (VC)

VOD_PLAYBACK_CONTROL (VC)				
VOD_PLAYBACK_ CONTROL_ID	**VOD_PLAYBACK_ SESSION_ID**	**PLAYBACK_ MODE_CODE**	**PB_MODE_BEG_SEC_ FROM_TRUE_BEG**	**PB_MODE_END_SEC_ FROM_TRUE_BEG**
58023112	128365411	PL	0	884
58023113	128365411	R2	557	884
58023114	128365411	PL	557	1511
58023115	128365411	F1	1512	2599
58023116	128365411	R3	2284	2598
58023117	128365411	PL	2284	3013
58023118	128365411	F3	3014	3878
58023119	128365411	PL	3879	5399
58023120	128365411	ST	5399	5399
58023121	128365412	RS	5399	0
58023122	128365412	PL	0	1511
58023123	128365412	R1	629	1510
58023124	128365412	PL	629	2599
58023125	128365412	R3	1511	2598
58023126	128365412	PL	1511	3013
58023127	128365412	ST	3013	3013
58023128	128365412	DL	3013	3013

Table 51 - MMDM Table: VOD_PRESENTATION_STATE (VP)

VOD_PRESENTATION_STATE (VP)				
VOD_PRESENTATION_ STATE_ID	**VOD_PLAYBACK_ CONTROL_ID**	**EVENT_BEG_SEC_ FROM_TRUE_BEG**	**EVENT_END_SEC_ FROM_TRUE_BEG**	**VOLUME_ LEVEL**
759146	1597634	557	1000	0
759147	1597634	1001	1511	42
759148	1597637	2284	3013	50
759149	1597646	3878	5399	45
PERCENT_CONTENT_ VISIBLE	**IS_ BACKGROUND**	**IS_RECORDING**	**IS_PPV**	**IS_CLOSED_ CAPTION**
100	N	N	N	N
100	N	N	N	N
100	N	N	N	N
100	N	N	N	N

Appendix III Acknowledgements

We wish to thank the CableLabs member and vendor participants contributing directly to this document:

Barry Pratt	Rogers
Bob Orlowski	Comcast
Bob Rittler	Comcast
Colleen Moraghan	Cablevision
Craig Berkley	Charter
Craig Engel	Time Warner Cable
Domenic Centofanti	Canoe Ventures
Frank Sandoval	Comcast
Jason Canney	Canoe Ventures
Justin Tidwell	Time Warner Cable
Ken Barringer	CableLabs
Mike Welsh	Charter
Steve Newkirk	Charter
Walt Michel	Comcast

Dan Lavender, CableLabs