

Electronic Program Guide (EPG) Data

Definition of EPG Schedule, Channel, Program, and Policy Data

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REVISION HISTORY

Version	Date	Description
1.0	TBD	Initial Release

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1 INTRODUCTION

Electronic Program Guides (EPGs) have long existed in broadcast television. The concept of EPGs also applies to streaming television, referred to Free Ad Supported Television (FAST). Some concepts carry over from broadcast, and some are unique to FAST.

This document defines a means to communicate EPG data. Primary components are schedules, programs, channels, and policies.

Data is defined in XML. EPG builds on MovieLabs Common Metadata and Media Entertainment Core (MEC) for many of its data types.

A Program is content to be streamed. A Channel is a single stream of Programs that are aired at specific times. No more than one Program can be aired on a Channel at a given time in a given location. Channels may have dead time when nothing is streamed. A Schedule defines the specific airings on a Channel.

1.1 Document Organization

This document is organized as follows:

1. Introduction—Background, scope and conventions
2. How to use this specification
3. Electronic Program Guide (EPG)
4. Schedule
5. Channel List
6. Policy List

1.2 Document Notation and Conventions

The document uses the conventions of Common Metadata [CM].

1.3 Normative References

[CM] TR-META-CM MovieLabs Common Metadata, v2.5, <https://www.movielabs.com/md/md>

[MEC] TR-META-CM Media Entertainment Core (MEC), <https://www.movielabs.com/md/mec>

[SCTE224] ANSI/SCTE 224 2021, Event Scheduling and Notification Interface (ESNI). <https://www.scte.org/standards/library/catalog/scte-224-event-scheduling-and-notification-interface/> Schemas at this location are needed to validate with the epg schema.

1.4 Informative References

[EIDR-TO] *EIDR Technical Documentation*. <http://eidr.org/technology>

1.5 XML Namespaces

This document defines:

- epg: includes EPG data data

‘epg builds on

- md: Common Metadata corresponding with Common Metadata [CM]
- mdmec: Media Entertainment Core [MEC]

1.6 Identifiers

Identifiers must be universally unique. Recommended identifier schemes may be found in Common Metadata [CM].

The use of Entertainment Identifier Registry identifiers (www.eidr.org) is strongly encouraged. Please see <https://eidr.org>

1.7 Status

This specification is NOT completed and ready for implementation. Although tested, we anticipate that additional implementation experience will yield recommendation for changes. Implementers should anticipate one or more revisions. Reasonable measures will be taken to ensure changes are backwards compatible. See Backwards Compatibility Best Practices in [CM]

2 HOW TO USE THIS SPECIFICATION

A full EPG requires information about channels, schedules, programs, and policies. This specification provides the capability to exchange these data, while being flexible to allow parties to include only the parts that they need while ignoring the rest. Which of these data are included in any given interface is up to the parties at either end of that interfaces. That is, work with your partners to decide what works for you.

For example, this specification will allow parties to exchange schedule data while sending program, channel, and policy data via other mechanisms.

That said, this specification provides specific rules about how it is used. Which elements and attributes are always required is defined in the schema. Additional elements and attributes may be required for specific use cases.

Best Practices will be developed to accompany this specification. These Best Practices might include rules for specific use cases, controlled vocabulary, encoding guidelines, and other useful information.

2.1 Required and Optional Elements

Program information

- ProgramID is needed
- If you want, use MEC, otherwise do your own thing...

Policies

- Use what's in the spec, or reference externally – both are compliant with spec

...

2.2 Use Cases

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2.2.1 Channel Type Use Cases

Use Case	Category	Attribute	EPG Update Latency	Notes
Single-series (e.g., Star Trek)	Pre-recorded			
Genre Channels	Pre-recorded			
Rebroadcast (OTA channels)	Pre-recorded			
Daily mix	Pre-recorded			Traditional programming like local channels
Genre-based	Pre-recorded			For example, "movies", "classic TV"
Sport	Pre-recorded			Traditional, e-sport (Twitch), Cards/etc.

Sport	Primarily Live	Open Ended	Low for open end	Traditional, e-sport (Twitch), Cards/etc.
Viewer Participation	Primarily Live	Open Ended	Low for open end	Voting, Shopping, etc. (could include synchronized app)
Award Show?	Primarily Live	Open Ended	Low for open end	
Concert	Primarily Live	Open Ended	Low for open end	
News	Primarily Live	Closed-ended	Low for update on breaking news	
Audio-primary station				Music with slate (audio is primary)
Pay-Per-View (PPV) Event		Open or closed ended		Promoted before schedule established. Initially unscheduled
Pay-Per-View (PPV) Subscription		Open or closed ended		Promoted before schedule established. Initially unscheduled

2.2.2 Programming Use Case

Use Case	Category	Attribute	EPG Update Latency	Notes
Standard programming				
Repeating (1 show repeats forever)				
Repeating blocks				

2.2.3 Change Use Cases

Use Case	Category	Attribute	EPG Update Latency	Notes
Schedule Change in advance	Schedule Changes			>1 program impacted
Program Change in advance	Program Changes			Entire program change
Program Metadata Change in advance	Program Changes			Metadata modified for existing program (e.g., waiting on naming players based on earlier round)
Schedule Change close to air time	Schedule Changes			>1 program impacted (e.g., rain delay)
Program Change close to air time	Program Changes	Pre-emption		Show replaced, possibly with different timing
Channel Not Available	Policy			Time-based (territory or other rules)
Emergency Broadcast	Special		Not on schedule	
Program Blackouts	Special			Individual program With or without replacement
Programming Gaps	Special			Station does not have 24x7 stream
Muti-track audio	Tracks			
Multi-caption	Tracks			
Mutli-subtitle	Tracks			
Mutli-video (multi-angle)	Tracks			

2.2.4 Notes and Questions

If a show is open ended and runs short, it might be filled by 'shoulder content' like a commentator wrap-up or slate. If it runs long (overlaps following shows), one show or the other will be cut short/start late.

Latency refers to the time delay between sending an EPG update and the time information can be presented to a user/

Any station that can be preempted should support low latency

Unless specified, < 24 hours should be the target

Should we support realtime EPG updates (e.g., when a sporting event runs long). Analogous to SCTE224 inband signaling?

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3 ELECTRONIC PROGRAM GUIDE (EPG)

The section defines the EPG element and all its associated types.

3.1 EPG

The EPG element is defined by the EPG-type complex type.

Element	Attribute	Definition	Value	Card.
EPG-type				
	updateNum, workflow, updateDeliveryType, versionDescription, timestamp	Common Metadata workflow attributes	md:Workflow-attr	
	epgID	ID of EPG	md:id-type	
Schedule		Defines a schedule for a channel at a given start date and time.	epg:Schedule-type	1..n
Program		Metadata for Programs associated with Schedule. It is based on Media Entertainment Core [MEC]	mdmec:CoreMetadata-type	0..n
Channel		Channels associated with Schedule	epg:Channel-type	0..n
Policy		Policies associated with Schedule	epg:Policy-type	0..n

4 SCHEDULE

4.1 Schedule Type

Element	Attribute	Definition	Value	Card.
Schedule-type				
	scheduleID	ID of Schedule	md:id-type	
ChannelID		ID of channel. Can reference Channel-type/@channelID	md:id-type	
StartDateTime		Start time of schedule	xs:dateTime	0..n
ScheduleTotalDuration		Duration of schedule	xs:duration	0..n
RepeatCount		Number of times schedule repeats. Default is 0.	xs:nonNegativeInteger	0..n
Airing		A program airing	epg:Airing-type	0..n
Deadtime		A period of deadtime.	epg:Deadtime-type	0..n

Schedule repeats start immediately following the end of the last airing or deadtime period. A value of 0 means no repeats. 1 means one repeat (i.e., play schedule twice), and so forth.

Airing and Deadtime periods shall not overlap.

Airing and Deadtime periods shall collectively cover all time from StartDateTIme for a period of ScheduleTotalDuration. [CHS: Is this true?]

4.1.1 Airing Type

Element	Attribute	Definition	Value	Card.
Airing-type				
	airingID	Unique ID for airing	md:id-type	0..1
StartTime		Start time of airing	xs:dateTime	
EndTime		End time of airing	xs:dateTime	
ContentRuntime		Duration of content (may be less than StartTime+EndTime.	xs:duration	0..1

ProgramID		ID referencing program. Assumed to reference Program/@programID.	md:id-type	
Language		Primary language of Program	xs:language	
OtherLanguage		Other languages in content [CHS: Audio, video, signed, text???	xs:language	0..n
Override		Localized Description, Title, Genre, Keyword, and Image overrides	xs:string	0..n
RatingOverride		Rating that supersedes title in Program definition	md:ContentRatings-type	0..n
PolicyID		Identifier for policy within a given namespace.	xs:string	0..n
	namespace	Policy namespace. If absent, assumed to reference epg:Policy-type/@PolicyID	xs:string	0..1
	priority	Allows policies to be ranked .[Is low number or high number higher?]	xs:integer	0..1
SignalOverride		If there are multiple simultaneous airings (e.g., two sporting events in different territories), This would reference the source feed for this airing.	xs:string	0..1
AiringSpecificTag		[???	xs:string	0..n
	name	[???	xs:string	0..1

4.1.2 Deadtime

Element	Attribute	Definition	Value	Card.
Deadtime-type				
StartTime		Start time of dead time	xs:dateTime	
EndTime		Duration of dead time	xs:duration	
ProgramID		ID of Program that shows during dead time.	md:id-type	0..n

AiringSpecificTag		???	xs:string	0..n
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5 CHANNEL LIST

A Channel List is a list of channels. It is defined as its own element so it can be sent as its own document (i.e., distinct from an EPG document).

5.1 ChannelList

ChannelList element is a list of channels, defined by ChannelList-type complex type.

Element	Attribute	Definition	Value	Card.
ChannelList-type				
	updateNum, workflow, updateDeliveryType, versionDescription, timestamp	Common Metadata workflow attributes	md:Workflow-attr	
	chanelListID	ID for Chanel List	md:id-type	0..1
Channel		Data describing a channel	epg:Channel-type	1..n

5.1.1 Channel-type

Channel-type is a complex type describing a channel.

Element	Attribute	Definition	Value	Card.
Channel-type				
	channelID	Identifier for channel	md:id-type	
ChanLocalizedInfo		Information about channel. Can be localized.	epg:ChannelLocalizedInfo-type	1..n
EffectiveDate		Date channel information becomes applicable.	xs:dateTime	0..1
ExpireDate		[[??]]	xs:dateTime	0..1
Region		Regions where policies apply	md:RegionUntion-type	1..n
ExcludedRegion		Regions where policies do not apply	md:RegionUntion-type	1..n
				0..n choice

RatingDefault		Default rating for channel, generally highest rating of content aired.	md:ContentRating	0..n
GroupID		Used to group channels	xs:nonNegativeInteger	0..1
PolicyID		Identifier for policy within a given namespace.	xs:string	0..n
	namespace	Policy namespace. If absent, assumed to reference epg:Policy-type/@PolicyID	xs:string	0..1
	priority	Allows policies to be ranked .[Is low number or high number higher?]	xs:integer	0..1
CallLetters		Station call letters	xs:string	0..1
	broadcastChannel	Channel number for broadcast channel (can be virtual channel)	xs:integer	0..1
BroadcastTriplet		A broadcast triplet (see below)	xs:string	0..1
SignalDistributor		Entity delivering broadcast feed	xs:string	0..1
SignalDefault		If there are multiple simultaneous airings (e.g., two sporting events in different territories), This would reference the source feed for this airing.	xs:string	0..1
ChannelRightsHolder		Entity that has rights to content	xs:string	0..1
Terms		Any additional items (name/value pairs)	md:Terms-type	0..n

PolicyID references a policy. If @namespace is not stated, it is assumed to reference a PolicyID in a Policy element. If it is a direct reference to SCTE 224, @namespace = 'SCTE224'. Other policy namespaces may be defined in best practices.

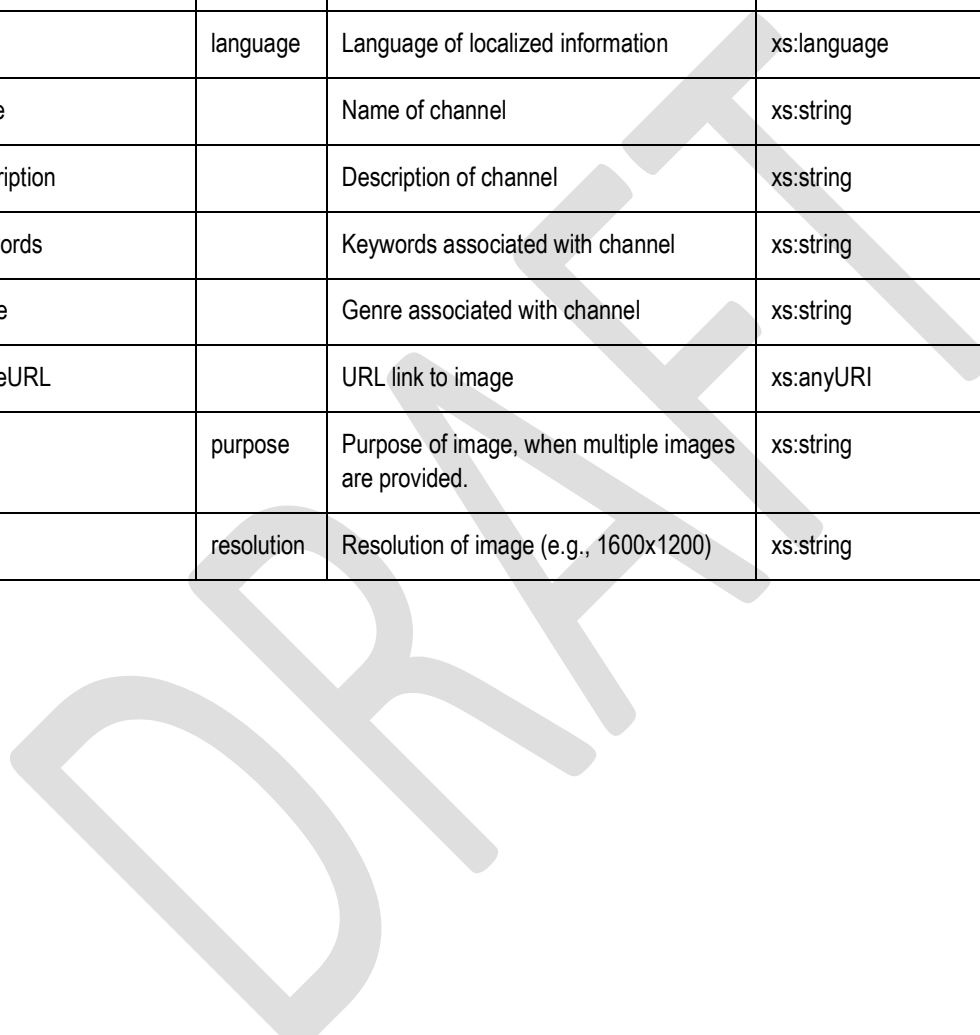
A DVB Broadcast Triplet consists of three parts: A unique identifier for a service that consists of three parts: Original Network ID (ONID), Transport Stream ID (TSID), and Service ID (SID). [CHS: Is this the right reference? How do we encode? Normative reference???]

[CHS: orgs like Signal Distributor. Should they be md:org-type?]

5.1.2 ChannelLocalizedInfo-type

This complex type supports localization of channel names and descriptions

Element	Attribute	Definition	Value	Card.
ChannelLocalizedInfo-type				
	language	Language of localized information	xs:language	0..1
Name		Name of channel	xs:string	
Description		Description of channel	xs:string	0..1
Keywords		Keywords associated with channel	xs:string	0..n
Genre		Genre associated with channel	xs:string	0..n
ImageURL		URL link to image	xs:anyURI	0..n
	purpose	Purpose of image, when multiple images are provided.	xs:string	0..1
	resolution	Resolution of image (e.g., 1600x1200)	xs:string	0..1



6 POLICY LIST

Policies are rules that govern where when and how content can be streamed. Given that FAST mirrors broadcast, the policies mechanisms from broadcast apply here. These are based on SCCE 224 [SCTE 224].

A Policy List is a list of policies. It is defined as its own element so it can be sent as its own document (i.e., distinct from an EPG document).

The EPG schema references the SCTE 224 schemas. Those schemas can be found at [SCTE224].

6.1 PolicyList

A PolicyList element is defined by epg:PolicyList-type

Element	Attribute	Definition	Value	Card.
PolicyList-type				
	updateNum, workflow, updateDeliveryType, versionDescription, timestamp	Common Metadata workflow attributes	md:Workflow-attr	
	policyListID	ID for policy list	md:id-type	0..1
Policy		Policy associated with channel or program airing	epg:Policy-type	1..n

6.1.1 Policy-type

Element	Attribute	Definition	Value	Card.
Policy-type				
	policyID	ID for list of policies	md:id-type	0..1
Region		Regions where policies apply	md:RegionUnion-type	1..n 0..1 choice
ExcludedRegion		Regions where policies do not apply	md:RegionUnion-type	
Entitlement				0..n
SCTE224Policy		Policy as defined by [SCTE224]	scte:PolicyType	0..n

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