

SCTE • ISBE[®]

S T A N D A R D S

Digital Video Subcommittee

AMERICAN NATIONAL STANDARD

ANSI/SCTE 130-9 2020

**Recommended Practices for SCTE 130
Digital Program Insertion—Advertising Systems
Interfaces**

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1 Introduction

The goal of this recommended practices document is to serve as an informational enhancement to SCTE 130, Digital Program Insertion—Advertising Systems Interfaces. SCTE 130 is necessarily brief in many areas in order to maintain conciseness and accuracy. This document serves as a companion to SCTE 130.

This document makes reference to versions of SCTE 130 documents from both the first edition (now *deprecated*) and second edition of the standard, as outlined in Section 2. For further details concerning the differences between the first and second editions of SCTE 130, see SCTE130-1 2013: Digital Program Insertion—Advertising Systems Interfaces Part 1 – Overview.

2 Informative References

At the time of publication, the editions indicated below were current. All standards are subject to revision, and parties to agreement based on this document are encouraged to apply the most recent editions of the documents listed below when appropriate.

[CLADI1-1]	CableLabs Asset Distribution Interface Specification Version 1.1: MD-SP-ADI1.1-I04-060505, http://www.cablelabs.com/specifications/MD-SP-ADI1.1-I04-060505.pdf
[SCTE130-1]	SCTE 130-1 20xx: Digital Program Insertion—Advertising Systems Interfaces Part 1 – Advertising Systems Overview.
[SCTE130-2]	SCTE 130-2 20xx: Digital Program Insertion—Advertising Systems Interfaces Part 2 – Core Data Elements.
[SCTE130-3]	SCTE 130-3 20xx: Digital Program Insertion—Advertising Systems Interfaces Part 3 – Ad Management Service Interface.
[SCTE130-4]	SCTE 130-4 2015: Digital Program Insertion—Advertising Systems Interfaces Part 4 – Content Information Service.
[SCTE130-5]	SCTE 130-5 2016: Digital Program Insertion—Advertising Systems Interfaces Part 5 – Placement Opportunity Information Service.
[SCTE130-6]	SCTE 130-6 20xx: Digital Program Insertion—Advertising Systems Interfaces Part 6 – Subscriber Information Service.
[SCTE130-7]	SCTE 130-7 2015: Digital Program Insertion – Advertising Systems Interfaces Part 7 – Message Transport.
[SCTE130-8]	SCTE 130-8 20xx: Digital Program Insertion —Advertising Systems Interfaces Part 8—General Information Service.
[SCTE 130-10]	SCTE 130-10 20xx: Digital Program Insertion – Advertising Systems Interfaces Part 10 – Stream Restriction Data Model.
[SCTE35]	ANSI/SCTE 35 2019r1—Digital Program Insertion Cueing Message for Cable.

3 Glossary of Terms

Throughout this standard the terms below have specific meanings. Because some of the terms are defined in other SCTE documents having very specific technical meanings, the reader is referred to the original source for their definition. For terms defined by this standard, brief definitions are given below.

All SCTE 130 Part 1, SCTE 130 Part 2, SCTE 130 Part 3, SCTE 130 Part 4, SCTE 130 Part 5, SCTE 130 Part 6, SCTE 130 Part 7 and SCTE 130 Part 8 definitions are included herein. See [\[SCTE130-1\]](#), [\[SCTE130-2\]](#), [\[SCTE130-3\]](#), [\[SCTE130-4\]](#), [\[SCTE130-5\]](#), [\[SCTE130-6\]](#), [\[SCTE130-7\]](#), [\[SCTE130-8\]](#), and [\[SCTE130-10\]](#) for additional information.

This document additionally defines the following terms:

Intermediary: A SCTE 130 compliant server deployed between one or more ADMs and one or more ADSs.

4 Abbreviations

All SCTE 130 Part 1, SCTE 130 Part 2, SCTE 130 Part 3, SCTE 130 Part 4, SCTE 130 Part 5, SCTE 130 Part 6, SCTE 130 Part 7 and SCTE 130 Part 8 abbreviations are included herein. See [\[SCTE130-1\]](#), [\[SCTE130-2\]](#), [\[SCTE130-3\]](#), [\[SCTE130-4\]](#), [\[SCTE130-5\]](#), [\[SCTE130-6\]](#), [\[SCTE130-7\]](#), [\[SCTE130-8\]](#), and [\[SCTE130-10\]](#) for additional information.

5 Overview

This document provides an informative (i.e., non-normative) set of recommended practices for SCTE 130, a standardized and extensible message based interface defining a minimal set of cooperating logical services necessary to communicate placement opportunities, placement decisions, and placement related event data necessary for accountability measurements. Use cases are presented for placement decision messaging, information service messaging, as well as several advanced topics that warranted a more in depth discussion than was offered in the core SCTE 130 suite of standards.

5.1 Scope of the Recommended Practices Document

This document is an informational companion to the SCTE 130 suite of standards. It is not in itself a specification or a standard. The information within is intended as guidelines and recommendations for implementers of the standard. Where this document contradicts with the SCTE 130 suite of standards, the SCTE 130 suite of standards take precedence.

5.2 Purpose

While the standards encompassing SCTE 130 have sufficient depth for their respective services, they individually lack the breadth necessary to understand the entire ecosystem. This document seeks to provide a complete view of the SCTE 130 architecture, describes the interaction among all of the services via common use cases, and provides end-to-end messaging examples to show how the data flows through the system throughout the course of a viewing session.

5.3 Example Messaging and UUIDs

This document contains many example messages, all of which have the @messageId attribute. The data type of the @messageId attribute is messageIdAttrType, which Section 11.2.2 (idAttrType Attribute Type) of [[SCTE130-2](#)] defines as:

...a service channel unique identifier for a message. Every SCTE 130 message instance shall have a service channel unique value and shall not be empty. The attribute should be a Universally Unique Identifier as defined by RFC 4122 . . .

For readability and formatting purposes, this document uses values like “uuid-x” instead of a true UUID.

Other identifiers, such as PlacementOpportunity/@id, Query/@queryId, and Cursor/@cursorId, are all of different data types, but should also be UUIDs. For the same reasons stated in the previous paragraph, these attributes contain values such as “uuid-x” or “query-x”.

6 Structure and Summary

This document contains three main sections: Placement Decision Usage Patterns, Information Service Usage Patterns, and Advanced Topics. Throughout all sections of this document, whenever a message or message pair is described, a small sequence diagram is used to show which service initiates the message and the order in which the messages are sent. Certain attributes or elements within some of the example messages are highlighted for emphasis, with explanations of their significance immediately before or after the message.

Placement Decision Usage Patterns Summary

The Placement Decision Usage Patterns section contains the majority of the ADS/ADM message examples in the document. Three complete VOD use cases are displayed, as well as registration, and both ADM and ADS initiated registration. All of the top level sections in Placement Decision Usage Patterns start with a diagram showing the different services and the way data flows through the ecosystem, followed by a sequence diagram that shows the specific messages traveling between services and the order in which they are sent. See Section 7 (Placement Decision Usage Patterns) for details.

ADS/ADM Registration Messaging

This section details the registration messaging between the ADM and ADS.

ListADMServicesRequest/Response, ListADSRegistrationRequest/Response, and ADSRegistrationRequest/Response are covered with example messaging, as well as the @version attribute and its relation to PODM support. See Section 7.1 (ADS/ADM Registration) for details.

ADS-Centric VOD

In this scenario, the ADS is responsible for making calls to the information services and using that data to aid in its placement decisions. After the placement, event data is obtained by the ADM and sent to the ADS. The complete lifecycle of the placement is shown along with example messages. See Section 7.2 (ADS-centric VOD) for details.

ADM-Centric VOD

In this scenario, the ADM is responsible for making calls to the information services and using that data to decorate the PlacementRequest, which it then forwards to the ADS. After the placement, event data is obtained by the ADM and sent to the ADS. The complete lifecycle of the placement is shown along with example messages. See Section 7.3 (ADM-centric VOD) for details.

VOD with an Intermediary

For the Intermediary use case, an ADM sends a bare bones PlacementRequest to an Intermediary. The Intermediary is responsible for making calls to the information services and using that data to decorate the PlacementRequest before forwarding it to the ADS. After the placement, event data is obtained by the ADM and travels through the Intermediary before reaching the ADS. The complete lifecycle of the placement is shown along with example messages. See Section 7.4 (VOD with an Intermediary) for details.

ADS Initiated Deregistration

This section details the ADS initiated deregistration messaging between the ADM and ADS. ADSDeregisterRequest/Response is covered in detail, including the difference in behavior of the ADM based on the presence of the @registrationRef attribute. See Section 7.5 (ADS Initiated Deregistration) for details.

ADM Initiated Deregistration

This section details the ADM initiated deregistration messaging between the ADM and ADS. ADSDeregistrationNotification/Acknowledgement is covered in detail, including the difference in behavior of the ADS based on the presence of the @registrationRef attribute. See Section 7.6 (ADM Initiated Deregistration) for details.

Information Service Usage Pattern Summary

For each of the three Information Services, four use cases are explored that aid a client in retrieving data: Feature Discovery, Notifications, Queries, and Cursors. There is some overlap in the Query section with some of the VOD Placement Decision Usage Patterns, but these sections also detail querying with a non-unique identifier, such as a regular expression. Each of the four use cases contain a sequence diagram that shows the specific messages traveling between services and the order in which they are sent. See Section 8 (Information Service Usage Patterns) for details.

Advanced Topics Summary

Some topics warranted a more in depth discussion than was offered in the SCTE 130 suite of standards, and the purpose of this section is to explore those advance topics and expand on the explanations in the existing SCTE 130 suite of standards. See Section 9 (Advanced Topics) for details.

7 Placement Decision Usage Patterns

This section contains the majority of the ADS/ADM message examples contained in the document. Three complete VOD use cases are displayed, as well as registration, and both ADM and ADS initiated registration. All of the top level sections in Placement Decision Usage Patterns start with a diagram showing the different services and the way data flows through the ecosystem, followed by a sequence diagram that shows the specific messages traveling between services and the order in which they are sent.

7.1 ADS/ADM Registration

This section details the registration messaging between the ADM and ADS. ListADMServiceRequest/Response, ListADSRegistrationRequest/Response, and ADSRegistrationRequest/Response are covered with example messaging, as well as the @version attribute and it's relation to PODM support.



Figure 1: Registration Messaging Overview

The ADS is responsible for initiating registration messaging. The ADS queries the ADM for available services via the ListADMServiceRequest, determines if it already has registrations with a ListADSRegistrationRequest, then registers with an ADSRegistrationRequest. The sequence diagram below shows registration message flow between the ADM and the ADS.

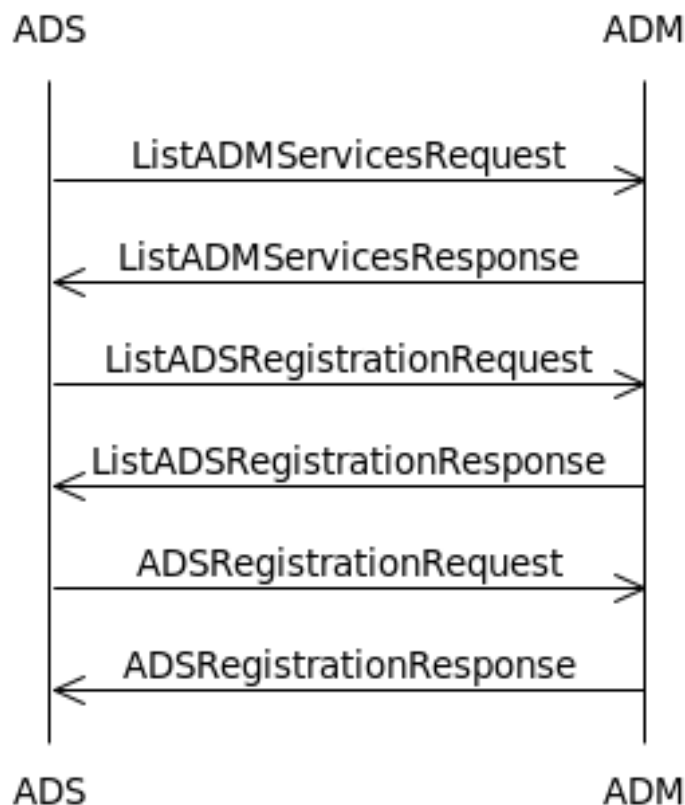


Figure 2: Registration Sequence Diagram

7.1.1 ListADMServicesRequest/ListADMServicesResponse

The ADS first initiates a ListADMServicesRequest to learn about the capabilities and services offered by the ADM. For more detail on the ListADMServices messages, see Section 11.2 (List ADM Placement Services) of [\[SCTE130-3\]](#).



Figure 3: List ADM Placement Services Message Exchange

Below is an example ListADMServicesRequest initiated by the ADS.

```
<ListADMServicesRequest messageId="uuid-1" version="1.1"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5"
system="ads"/>
```

Example 1

In the following example, the ADM's ListADMServicesResponse contains a single service for preRoll ads (highlighted below).

```
<ListADMServicesResponse messageId="uuid-2" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4"
system="adm" messageRef="uuid-1">
  <core:StatusCode class="0"/>
  <ADMCapabilities placementStatusOnlyRegistration="false"/>
  <ServiceDescription>
    <SystemContext/>
    <Service id="Service1" opportunityType="preRoll" />
  </ServiceDescription>
  <core:Callout>
    <core:Address>www.adshark.com/allMessages</core:Address>
  </core:Callout>
</ListADMServicesResponse>
```

Example 2

The value of the version attribute can signify use of the Placement Opportunity Data Model (PODM). An ADS can query the ADM with @version="1.2" (highlighted below) to determine if the ADM supports PODM.

```
<ListADMServicesRequest messageId="uuid-3" version="1.2"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5"
system="ads"/>
```

Example 3

If the ADM supports PODM, it responds with @version="1.2" in the ListADMServiceResponse message. Otherwise, it responds with an error and a core:StatusCode/@detail attribute having the value core:UnsupportedProtocol or it responds with a successful ListADMServicesResponse message having the @version attribute set to the value "1.1".

Further discussion of the version attribute with respect to ADM/ADS messaging is located in Appendix D (THE PLACEMENT OPPORTUNITY DATA MODEL (NORMATIVE)) of [\[SCTE130-3\]](#).

7.1.2 ListADSRegistrationRequest/ListADSRegistrationResponse

Before the ADS registers for an ADM offered service, it should check the ADM to ensure it has not already registered for that service by using a ListADSRegistrationRequest. For more detail on the ListADSRegistration message, see Section 11.4 (List ADS Registrations) of [[SCTE130-3](#)].



Figure 4: ADM Registration Status Message Exchange

Below is a typical ListADSRegistrationRequest that will request all registrations for the ADS, due to the lack of a @registrationRef attribute in the message.

```
<ListADSRegistrationRequest messageId="uuid-4" version="1.1"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5"
system="ads"/>
```

Example 4

This ADM's ListADSRegistrationResponse shows that the ADS has no active registrations on the ADM.

```
<ListADSRegistrationResponse messageId="uuid-5" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4"
system="adm" messageRef="uuid-4">
  <core:StatusCode class="0">
    <core:Note>There are currently no ADS registrations.</core:Note>
  </core:StatusCode>
</ListADSRegistrationResponse>
```

Example 5

Alternatively, there may already be registrations on the ADM as illustrated in the following example.

```

<ListADSRegistrationResponse messageId="uuid-6" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4"
system="adm" messageRef="uuid-4">
  <core:StatusCode class="0"/>
  <ADSRegistrationRequest messageId="uuid-7" version="1.1"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5"
system="ads">
    <ServiceDescription>
      <SystemContext/>
      <Service id="Service1" opportunityType="interstitial">
        <ContentProvider providerID="espn.com"/>
        <ProductType>MOD</ProductType>
        <Scope>National</Scope>
      </Service>
      <Service id="Service2" opportunityType="interstitial">
        <ContentProvider providerID="espn.com"/>
        <ProductType>FOD</ProductType>
        <Scope>National</Scope>
      </Service>
      <Service id="Service4" opportunityType="postRoll">
        <Scope>Local</Scope>
      </Service>
    </ServiceDescription>
    <core:Callout message="PlacementRequest">
      <core:Address>adselector1.ads.com</core:Address>
    </core:Callout>
    <core:Callout message="PlacementStatusNotification">
      <core:Address>adstatus1.ads.com</core:Address>
    </core:Callout>
    <!--Default handler for all other messages.-->
    <core:Callout>
      <core:Address>adselectorgeneral.ads.com</core:Address>
    </core:Callout>
  </ADSRegistrationRequest>
  <ADSRegistrationRequest messageId="uuid-8" version="1.1" system="ads"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5">
    <ServiceDescription>
      <SystemContext/>
      <Service id="All Services"/>
    </ServiceDescription>
    <core:Callout>
      <core:Address
type="HTTP">http://192.168.201.7:80/SCTE130Msgs</core:Address>
      <core:Address
type="HTTP">http://192.168.208.9:80/SCTE130Msgs</core:Address>
    </core:Callout>
  </ADSRegistrationRequest>
</ListADSRegistrationResponse>

```

Example 6

It is important to note that, although the standard does not prohibit the ADM from returning a complete list of all active registrations, in practice it should only return registrations matching the identity of the ADS currently querying. An ADS should not see another ADS's registration in a ListADSRegistrationResponse, regardless of the presence of the @registrationRef attribute.

7.1.3 ADSRegistrationRequest/ADSRegistrationResponse

After the ADS sends an ADSRegistrationRequest to an ADM, the ADM may block and verify the Callouts before responding with an ADSRegistrationResponse. For more detail on the ADSRegistration messages, see Section 11.3 (Registration) of [\[SCTE130-3\]](#).



Figure 5: Registration Message Exchange

```

<ADSRegistrationRequest messageId="uuid-9" version="1.1" system="ads"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5">
  <ServiceDescription>
    <SystemContext/>
    <Service id="Service1" opportunityType="preRoll" />
  </ServiceDescription>
  <core:Callout>
    <core:Address>www.adshark.com/allMessages</core:Address>
  </core:Callout>
</ADSRegistrationRequest>
  
```

Example 7

Now, the ADM initiates a ServiceCheckRequest to verify the Callout. For more detail on the ServiceCheck messages, see Section 10.1 (Service Check Messages) of [\[SCTE130-2\]](#).

```

<ServiceCheckRequest messageId="uuid-10"
version="1.1" identity="ADMLogicalService_1170FEF4-C19B-450E-B624-
421B23F525F4" system="adm"/>
  
```

Example 8

The ADS will respond with a ServiceCheckResponse, verifying that the endpoint it defined in the ADSRegistrationRequest is able to receive messages in the future.

```
<ServiceCheckResponse messageId="uuid-11"
version="1.1" identity="ADSLogicalService_1170FEF4-C19B-450E-B624-
421B23F525F5" system="ads" messageRef="uuid-10">
  <StatusCode class="0"/>
</ServiceCheckResponse>
```

Example 9

The ADM then responds with an ADSRegistrationResponse that acknowledges the registration.

```
<ADSRegistrationResponse messageId="uuid-12" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4"
system="adm" messageRef="uuid-9">
  <core:StatusCode class="0"/>
</ADSRegistrationResponse>
```

Example 10

The value of the version attribute can signify use of the Placement Opportunity Data Model (PODM). An ADS can attempt to register with the ADM with @version="1.2" in order to utilize the PODM.

```
<ADSRegistrationRequest messageId="uuid-13" version="1.2" system="ads"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5">
  <ServiceDescription>
    <SystemContext/>
    <Service id="Service1" opportunityType="preRoll" />
  </ServiceDescription>
  <core:Callout>
    <core:Address>www.adshark.com/allMessages</core:Address>
  </core:Callout>
</ADSRegistrationRequest>
```

Example 11

If the ADM supports PODM, it responds with @version="1.2" in the ListADMServiceResponse message. Otherwise, it responds with an error and a core:StatusCode/@detail attribute having the value core:UnsupportedProtocol or it responds with a successful ListADMServiceResponse message having the @version attribute set to the value "1.1".

Further discussion of the version attribute with respect to ADM/ADS messaging is located in Appendix D (THE PLACEMENT OPPORTUNITY DATA MODEL (NORMATIVE)) of [\[SCTE130-3\]](#).

7.2 ADS-centric VOD

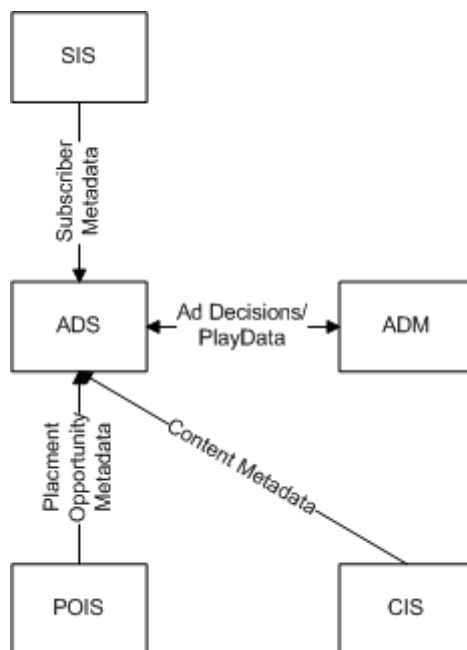


Figure 6: ADS-centric VOD Messaging Overview

In an ADS-centric view of SCTE 130 (shown above), the ADS is responsible for communication with the other SCTE 130 information services and the ADM will place the ad decisions dictated by the ADS. Registration is required between the ADS and ADM (outlined in Section 0) before the placement messaging shown in the sequence diagram below is attempted.

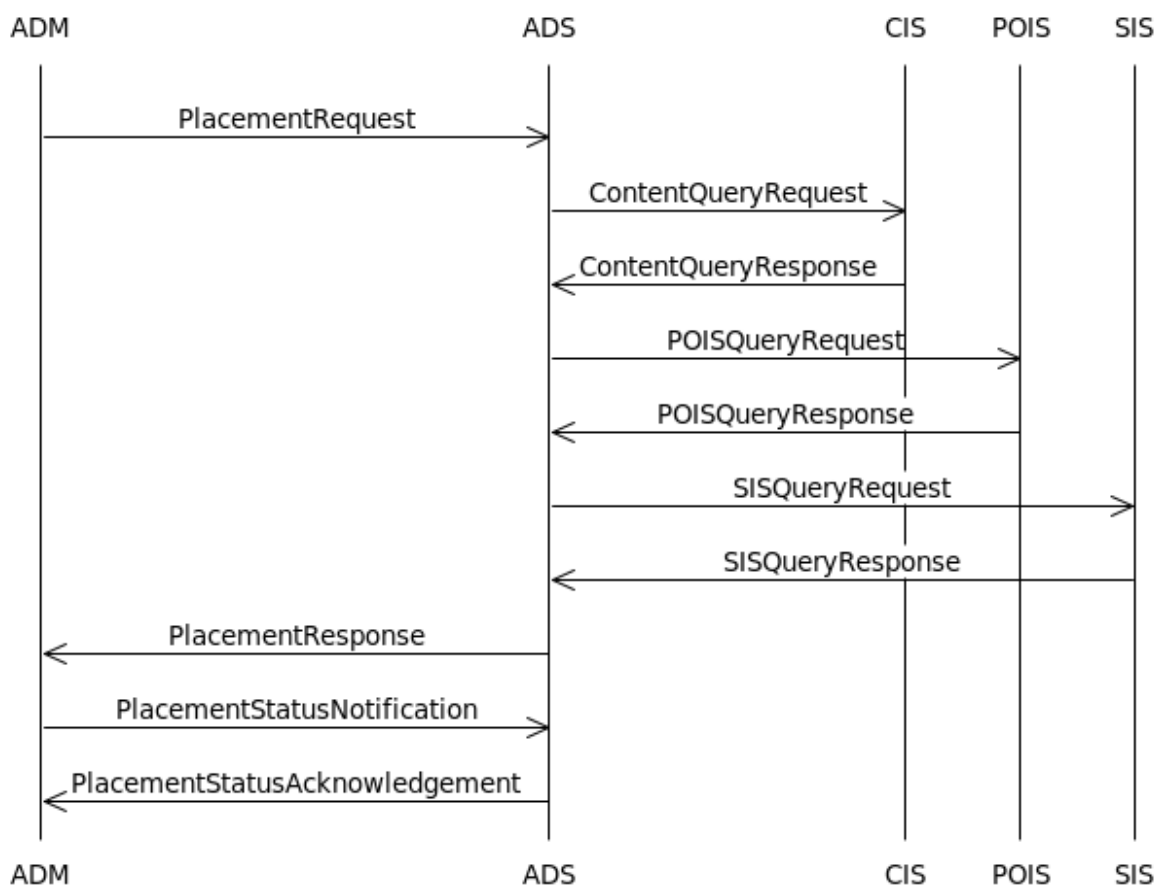


Figure 7: ADS-centric VOD Sequence Diagram

7.2.1 PlacementRequest

At the start of a VOD session, the ADM will query the ADS with a PlacementRequest. For more detail on the Placement messages, see Section 12.1 (Placement Messaging) of [\[SCTE130-3\]](#).

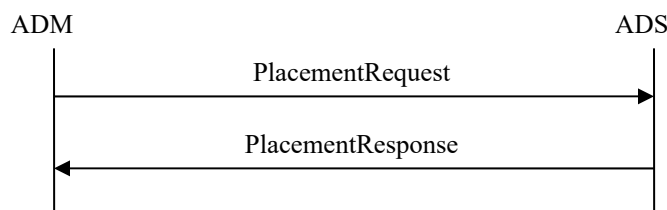


Figure 8: ADS-centric VOD Placement Request Message Exchange

The ADM's PlacementRequest contains one PlacementOpportunity as required by the schema, but the ADM has no metadata for the content, placement opportunity, or subscriber other than the client device's MAC address and the provider ID and asset ID of the entertainment content. This leaves the ADS responsible for querying information services (if available) to make an informed ad decision.

```
<PlacementRequest messageId="uuid-14" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4"
system="adm" updatesAllowed="true">
  <Entertainment>
    <core:Content>
      <core:AssetRef providerID="entertainment.com"
assetID="ABCD0123456789012345"/>
    </core:Content>
  </Entertainment>
  <Client>
    <TerminalAddress type="MAC">03-55-78-90-03-02</TerminalAddress>
  </Client>
  <PlacementOpportunity id="uuid-15" serviceRegistrationRef="ServiceRef1">
  </PlacementOpportunity>
</PlacementRequest>
```

Example 12

7.2.2 ContentQueryRequest/ContentQueryResponse

Before making an ad decision and returning a PlacementResponse to the ADM, the ADS may query the CIS for additional information about the entertainment asset to aid in its decision. For more detail on the ContentQuery messages, see Section 10.15 (Content Query Request and Response) and Appendix E.2 (Content Query Request and Response) of [\[SCTE130-4\]](#).

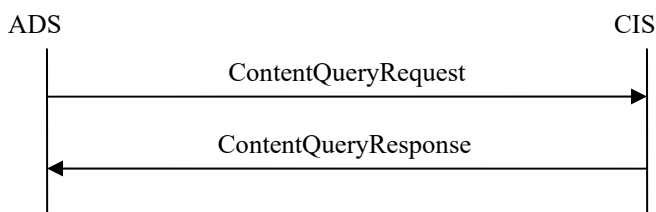


Figure 9: ADS-Centric VOD Content Query Message Exchange

In order to retrieve the complete metadata for the asset, the @expandOutput attribute is required to be set to true.

```

<ContentQueryRequest messageId="uuid-16" system="sys-1" version="1.1"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <ContentQuery expandOutput="true" contentQueryId="1">
    <core:ContentDataModel type="CLADI_1.1">URI</core:ContentDataModel>
    <QueryFilter>
      <FilterElement name="Provider_ID" value="entertainment.com" />
      <FilterElement name="Asset_ID" value="ABCD0123456789012345" />
    </QueryFilter>
  </ContentQuery>
</ContentQueryRequest>

```

Example 13

The CIS will respond with the full metadata in the specified content data model, CLADI 1.1 [[CLADI 1.1](#)].

```

<ContentQueryResponse messageId="uuid-17" system="acs-1" version="1.1"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" messageRef="uuid-16">
  <core:StatusCode class="0"/>
  <ContentQueryResult resultSetSize="1" contentQueryRef="1">
    <BasicQueryResultList>
      <core:Content>
        <core:ContentLocation
mediaAvailable="true">URI</core:ContentLocation>
        <core:Ext>
          <ADI>
            <Metadata> <AMS Asset_Name="..." /> ...</Metadata>
          </ADI>
        </core:Ext>
      </core:Content>
    </BasicQueryResultList>
  </ContentQueryResult>
</ContentQueryResponse>

```

Example 14

For readability, the actual CLADI 1.1 [[CLADI 1.1](#)] metadata has been removed and posted below.

```

<ADI>
  <Metadata>
    <AMS Asset_Class="package" Asset_ID="ABCD0123456789012343" Asset_Name="SCTE 130: The Movie"
    Creation_Date="2008-02-11" Description="SCTE 130: The Movie" Product="MOD"
    Provider="entertainment" Provider_ID="entertainment.com" Version_Major="1" Version_Minor="0"/>
    <App_Data App="MOD" Name="Metadata_Spec_Version" Value="CableLabsVOD1.1"/>
    <App_Data App="MOD" Name="Provider_Content_Tier" Value="ENTERTAINMENT_NEWRELEASE"/>
  </Metadata>
  <Asset>
    <Metadata>
      <AMS Asset_Class="title" Asset_ID="ABCD0123456789012344" Asset_Name="SCTE 130: The Movie"
      Creation_Date="2008-02-11" Description="SCTE 130: The Movie" Product="MOD"
      Provider="entertainment" Provider_ID="entertainment.com" Version_Major="1" Version_Minor="0"/>
      <App_Data App="MOD" Name="Title" Value="SCTE 130: The Movie"/>
      <App_Data App="MOD" Name="Title_Brief" Value="SCTE 130: The Movie"/>
      <App_Data App="MOD" Name="Type" Value="title"/>
      <App_Data App="MOD" Name="Year" Value="2009"/>
      <App_Data App="MOD" Name="Director" Value="Bryan Santangelo"/>
      <App_Data App="MOD" Name="Actors_Display" Value="John Mick, Corey Brown"/>
      <App_Data App="MOD" Name="Actors" Value="John Mick"/>
      <App_Data App="MOD" Name="Actors" Value="Corey Brown"/>
      <App_Data App="MOD" Name="Genre" Value="Action & Adventure"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/High Definition/HD Movies"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/Movies/HD Movies"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/Movies/Movies By Title/Movies S - Z"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/Movies/New Releases/High Definition"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/What's Hot/HD Movies"/>
      <App_Data App="MOD" Name="Billing_ID" Value="60671"/>
      <App_Data App="MOD" Name="Box_Office" Value="24000000"/>
      <App_Data App="MOD" Name="Closed_Captioning" Value="Y"/>
      <App_Data App="MOD" Name="Contract_Name" Value="ENT"/>
      <App_Data App="MOD" Name="Display_As_Last_Chance" Value="7"/>
      <App_Data App="MOD" Name="Display_As_New" Value="7"/>
      <App_Data App="MOD" Name="Display_Run_Time" Value="02:03"/>
      <App_Data App="MOD" Name="Distributor_Name" Value="ENT"/>
      <App_Data App="MOD" Name="Distributor_Royalty_Minimum" Value="2.59"/>
      <App_Data App="MOD" Name="Distributor_Royalty_Percent" Value="65.0"/>
      <App_Data App="MOD" Name="Licensing_Window_End" Value="2015-01-01"/>
      <App_Data App="MOD" Name="Licensing_Window_Start" Value="2008-03-21"/>
      <App_Data App="MOD" Name="Maximum_Viewing_Length" Value="01:00:00"/>
      <App_Data App="MOD" Name="Preview_Period" Value="300"/>
      <App_Data App="MOD" Name="Provider_QA_Contact" Value="help@ent.com"/>
      <App_Data App="MOD" Name="Rating" Value="R"/>
      <App_Data App="MOD" Name="Run_Time" Value="02:03:58"/>
      <App_Data App="MOD" Name="Studio" Value="SCTE"/>
      <App_Data App="MOD" Name="Studio_Name" Value="SCTE"/>
      <App_Data App="MOD" Name="Suggested_Price" Value="5.99"/>
      <App_Data App="MOD" Name="Summary_Short" Value="The adventures of a DVS subcommittee"/>
    </Metadata>
  </Asset>
  <Asset>
    <Metadata>
      <AMS Asset_Class="movie" Asset_ID="ABCD0123456789012345" Asset_Name="SCTE 130: The Movie"
      Creation_Date="2008-02-11" Description="SCTE 130: The Movie" Product="MOD"
      Provider="entertainment" Provider_ID="entertainment.com" Version_Major="1" Version_Minor="0"/>
      <App_Data App="MOD" Name="Audio_Type" Value="Stereo"/>
      <App_Data App="MOD" Name="Type" Value="movie"/>
      <App_Data App="MOD" Name="HDContent" Value="Y"/>
    </Metadata>
    <Content Value="entertainment.com::TVNX10084127342::On_Demand.mpeg"/>
  </Asset>
  <Asset>
    <Metadata>
      <AMS Asset_Class="preview" Asset_ID="ABCD0123456789012346" Asset_Name="SCTE 130: The
      Movie" Creation_Date="2008-02-11" Description="SCTE 130: The Movie" Product="MOD"
      Provider="entertainment" Provider_ID="entertainment.com" Version_Major="1" Version_Minor="0"/>
      <App_Data App="MOD" Name="Audio_Type" Value="Stereo"/>
      <App_Data App="MOD" Name="Rating" Value="R"/>
      <App_Data App="MOD" Name="Run_Time" Value="00:05:00"/>
      <App_Data App="MOD" Name="Type" Value="preview"/>
    </Metadata>
    <Content Value="entertainment.com::TVNX10084127343::On_Demand.mpeg"/>
  </Asset>

```

```

    </Asset>
  </Asset>
</ADI>

```

Example 15

With all of the calls to the SCTE 130 information services (CIS, SIS, POIS), an ADS may prefer to register for notifications and cache metadata in an effort to improve performance.

7.2.3 POISQueryRequest/POISQueryResponse

The ADS now needs to obtain additional metadata for any placement opportunities that may exist in the entertainment. For more detail on the POISQuery messages, see Section 11.14 (POISQueryRequest and Response Messages) and Appendix A.3 (POISQueryRequest and Response Message Examples) of [\[SCTE130-5\]](#).

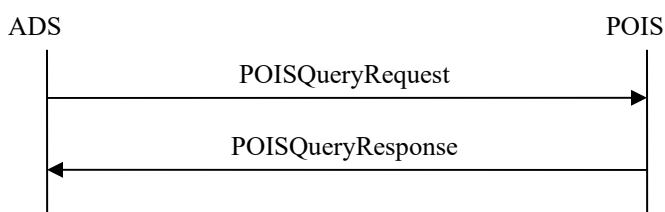


Figure 10: ADS-Centric VOD POIS Query Message Exchange

Using BasicQueryFilters, the ADS can query for PlacementOpportunity information for a specified asset.

```

<POISQueryRequest messageId="uuid-18" system="POISClient" identity="40DA910E-01AF-5050-C7EA-5D7B4A475757" version="1.0">
  <gis:Query queryId="pois-98765" expandOutput="true" uniqueQualifierNameRef="P3-PODM">
    <gis:ServiceDataModel>"http://www.scte.org/schemas/130-3/2008a/adm/podm"</gis:ServiceDataModel>
    <gis:BasicQueryFilter>
      <gis:BasicFilterElement value="ABCD0123456789012345" name="assetId"/>
    </gis:BasicQueryFilter>
    <gis:BasicQueryFilter>
      <gis:BasicFilterElement value="entertainment.com" name="providerId"/>
    </gis:BasicQueryFilter>
  </gis:Query>
</POISQueryRequest>

```

Example 16

The POIS then responds with a POISQueryResponse that includes all of the PlacementOpportunity metadata it has for the entertainment. The example below illustrates that the content contains one 30-second, local, preRoll placement opportunity available for ad placement.

```

<POISQueryResponse version="1.0" messageId="uuid-19" messageRef="uuid-18"
system="POISServer" identity="50DA910E-01AF-5050-C7EA-5D7B4A475759">
  <core:StatusCode class="0"/>
  <gis:QueryResult resultSetSize="1" queryRef="pois-98765">
    <podm:PODMBasicQueryResult>
      <podm:PlacementOpportunityV2 serviceRegistrationRef="-"
id="uuid-20">
        <adm:Entertainment>
          <core:Content>
            <core:AssetRef
providerID="entertainment.com" assetID="ABCD0123456789012345"/>
          </core:Content>
        </adm:Entertainment>
        <adm:OpportunityBinding opportunityType="preRoll"
opportunitiesExpected="1" opportunityNumber="1"/>
        <podm:OpportunityConstraintsV2>
          <core:Duration>PT30S</core:Duration>
          <adm:Scope>Local</adm:Scope>
        </podm:OpportunityConstraintsV2>
      </podm:PlacementOpportunityV2>
    </podm:PODMBasicQueryResult>
  </gis:QueryResult>
</POISQueryResponse>

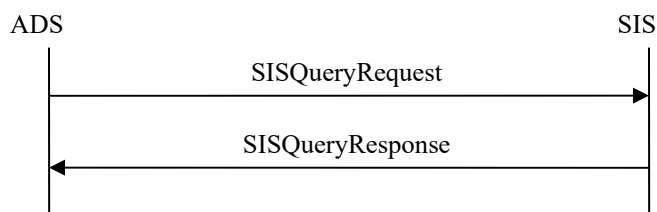
```

Example 17

While the previous section mentioned that caching and registering for notifications may improve performance, this may not be advisable in all situations due to the nature of some VOD ecosystems. In a situation where ad decisions are not all determined at the start of a VOD session and requested in real time as they occur in the stream, the ADS could be overwhelmed with notifications if the POIS is manipulating PlacementOpportunity metadata based on time of day.

7.2.4 SISQueryRequest/SISQueryResponse

The ADS may also obtain additional profile data for the subscriber initiating the VOD session. For more detail on the SISQuery messages, see Section 10.14 (SISQueryRequest and SISQueryResponse) and Appendix A.3 (SIS Query Request and Response) of [\[SCTE130-6\]](#).

**Figure 11: ADS-Centric VOD SIS Query Message Exchange**

Using a UniqueQualifier with the client terminal's MAC address, the ADS can query for subscriber information.

```

<SISQueryRequest messageId="uuid-21" system="SISClient" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <gis:Query queryId="233" expandOutput="false">
    <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel
  >
    <gis:UniqueQualifier>
      <gis:Qualifier name="MACAddress" value="03-55-78-90-03-
02"/>
    </gis:UniqueQualifier>
  </gis:Query>
</SISQueryRequest>

```

Example 18

The SIS then responds with a SISQueryResponse that includes audience qualifiers it has for the queried subscriber.

```

<SISQueryResponse messageId="uuid-22" system="SISServer" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" messageRef="uuid-21">
  <core:StatusCode class="0"/>
  <gis:QueryResult queryRef="233" resultSetSize="1"
totalResultSetSize="1">
    <gis:BasicQueryResult>
      <gis:QualifierSet>
        <gis:Qualifier name="MACAddress" value="03-55-78-90-
03-02"/>
        <gis:Qualifier name="Age" value="Under20"/>
        <gis:Qualifier name="Income" value="Under50K"/>
        <gis:Qualifier name="ZipCode" value="01720"/>
        <gis:Qualifier name="CreditLimit" value="100.00"/>
        <gis:Qualifier name="SportsInterest"
value="Basketball"/>
      </gis:QualifierSet>
    </gis:BasicQueryResult>
  </gis:QueryResult>
</SISQueryResponse>

```

Example 19**7.2.5 PlacementResponse**

Armed with all of the entertainment asset metadata, PlacementOpportunity parameters, and subscriber audience qualifiers the ADS can now make an informed ad decision. For more detail on the Placement messages, see Section 12.1 (Placement Messaging) of [\[SCTE130-3\]](#).

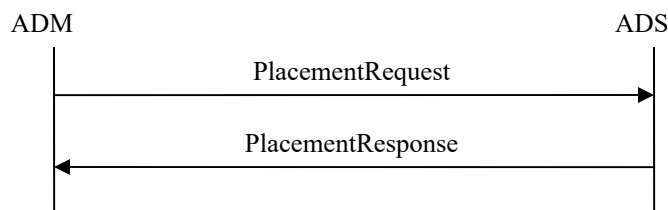


Figure 12: ADS-centric VOD Placement Response Message Exchange

The ADS responds to the ADM with an ad placement for the preRoll placement opportunity.

```

<PlacementResponse messageId="uuid-23" version="1.1"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5"
system="ads" messageRef="uuid-14">
  <core:StatusCode class="0"/>
  <PlacementDecision id="PD1" placementOpportunityRef="5B8ECCED-979B-421E-
8A6E-E2192B115162">
    <Placement id="uuid-20" action="fill">
      <core:Content>
        <core:AssetRef providerID="adsrus.com"
assetID="ZXYW0123456789012345"/>
        <core:Tracking>uuid-24</core:Tracking>
      </core:Content>
    </Placement>
  </PlacementDecision>
</PlacementResponse>
  
```

Example 20

The VOD system is responsible for the ad being inserted before the entertainment content starts.

7.2.6 PlacementStatusNotification/PlacementStatusAcknowledgement

After the VOD session ends, event data is required to be returned to the ADS from the ADM via PlacementStatusNotification. For more detail on the PlacementStatus messages, see Section 12.3 (Placement Status Messaging) of [\[SCTE130-3\]](#).

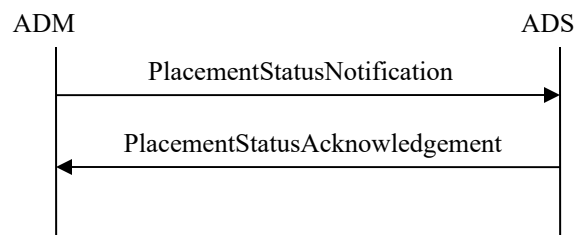


Figure 13: ADS-centric VOD Placement Status Message Exchange

The PlacementStatusNotification contains startPlacement and endPlacement events for the preRoll ad that was played prior to the entertainment content.

```

<PlacementStatusNotification messageId="uuid-25" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4"
system="adm">
  <PlayData identityADS="ADSLogicalService_1170FEF4-C19B-450E-B624-
421B23F525F5">
    <Events>
      <PlacementStatusEvent type="startPlacement" time="2007-01-
09T14:20:00.0Z">
        <Spot>
          <core:Content>
            <core:AssetRef providerID="adrsus.com"
assetID="ZXYW0123456789012345"/>
            <core:Tracking>uuid-24</core:Tracking>
          </core:Content>
          <SpotNPT scale="1">0</SpotNPT>
        </Spot>
      </PlacementStatusEvent>
      <PlacementStatusEvent type="endPlacement" time="2007-01-
09T14:20:30.0Z">
        <Spot>
          <core:Content>
            <core:AssetRef providerID="adrsus.com"
assetID="ZXYW0123456789012345"/>
            <core:Tracking>uuid-24</core:Tracking>
          </core:Content>
          <SpotNPT scale="1">30</SpotNPT>
        </Spot>
      </PlacementStatusEvent>
    </Events>
  </PlayData>
</PlacementStatusNotification>
  
```

Example 21

The ADS responds with a PlacementStatusAcknowledgement.

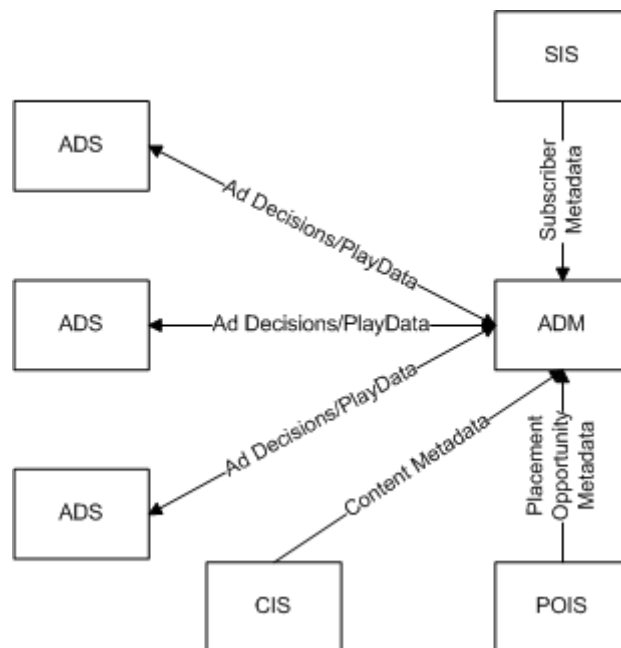
```

<PlacementStatusAcknowledgement messageId="uuid-26" version="1.1"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5"
system="ads" messageRef="uuid-25" >
  <core:StatusCode class="0"/>
</PlacementStatusAcknowledgement>

```

Example 22

7.3 ADM-centric VOD

**Figure 14: ADM-centric VOD Messaging Overview**

In an ADM-centric view of SCTE 130 (shown above), the ADM is responsible for communication with the other SCTE 130 information services to obtain entertainment asset metadata, details of Placement Opportunities, and subscriber profile information. In this model the ADM may issue requests to multiple ADSs which have registered for various services and/or PO types/scopes which the ADM is thus able to distinguish. The ADM will place the ad decisions determined by the ADS. Registration is required between each ADS and the ADM (outlined in Section 0) before the placement messaging in the sequence diagram below is attempted. In the case of multiple ADSs, the registration process is repeated for each server.

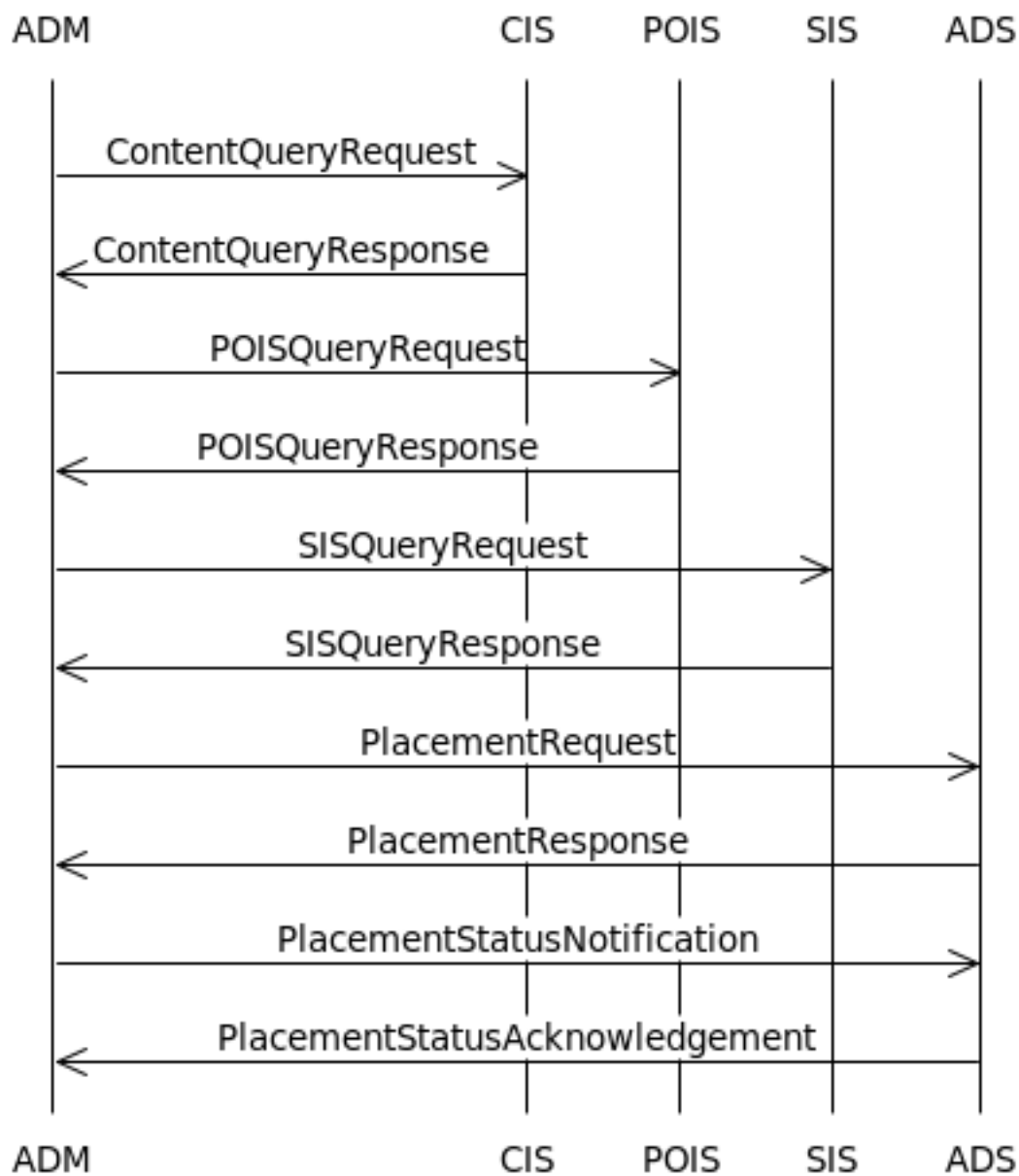


Figure 15: ADM-centric VOD Sequence Diagram

7.3.1 ContentQueryRequest/ContentQueryResponse

Before sending a PlacementRequest to the ADS, the ADM may query the CIS for additional information about the entertainment asset to provide the ADS with more metadata to aid in its decision.

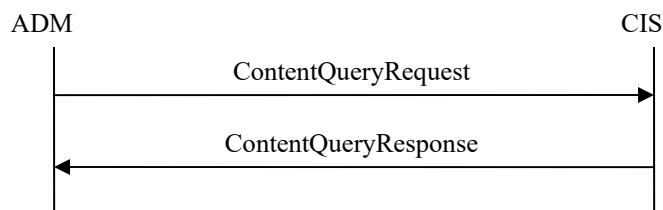


Figure 16: ADM-centric VOD Content Query Message Exchange

In order to retrieve the complete metadata for the asset, the `@expandOutput` attribute is required to be set to true.

```

<ContentQueryRequest messageId="uuid-27" system="sys-1" version="1.1"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <ContentQuery expandOutput="true" contentQueryId="1">
    <core:ContentDataModel type="CLADI_1.1">URI</core:ContentDataModel>
    <QueryFilter>
      <FilterElement name="Provider_ID" value="entertainment.com" />
      <FilterElement name="Asset_ID" value="ABCD0123456789012345" />
    </QueryFilter>
  </ContentQuery>
</ContentQueryRequest>
  
```

Example 23

The CIS will respond with the full metadata in the specified content data model, CLADI 1.1.

```

<ContentQueryResponse messageId="uuid-28" system="acs-1" version="1.1"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" messageRef="uuid-27">
  <core:StatusCode class="0"/>
  <ContentQueryResult resultSetSize="1" contentQueryRef="1">
    <BasicQueryResultList>
      <core:Content>
        <core:ContentLocation
mediaAvailable="true">URI</core:ContentLocation>
        <core:Ext>
          <ADI>
            <Metadata> <AMS Asset_Name="..." /> ...</Metadata>
          </ADI>
        </core:Ext>
      </core:Content>
    </BasicQueryResultList>
  </ContentQueryResult>
</ContentQueryResponse>
  
```

Example 24

For readability, the actual CLADI 1.1 metadata has been removed and posted below. The Product, highlighted below, will correspond to the ProductType in the PlacementRequest sent by the ADM.

```

<ADI>
  <Metadata>
    <AMS Asset_Class="package" Asset_ID="ABCD0123456789012343" Asset_Name="SCTE 130: The Movie"
    Creation_Date="2008-02-11" Description="SCTE 130: The Movie" Product="MOD"
    Provider="entertainment" Provider_ID="entertainment.com" Version_Major="1" Version_Minor="0"/>
    <App_Data App="MOD" Name="Metadata_Spec_Version" Value="CableLabsVOD1.1"/>
    <App_Data App="MOD" Name="Provider_Content_Tier" Value="ENTERTAINMENT_NEWRELEASE"/>
  </Metadata>
  <Asset>
    <Metadata>
      <AMS Asset_Class="title" Asset_ID="ABCD0123456789012344" Asset_Name="SCTE 130: The Movie"
      Creation_Date="2008-02-11" Description="SCTE 130: The Movie" Product="MOD"
      Provider="entertainment" Provider_ID="entertainment.com" Version_Major="1" Version_Minor="0"/>
      <App_Data App="MOD" Name="Title" Value="SCTE 130: The Movie"/>
      <App_Data App="MOD" Name="Title_Brief" Value="SCTE 130: The Movie"/>
      <App_Data App="MOD" Name="Type" Value="title"/>
      <App_Data App="MOD" Name="Year" Value="2009"/>
      <App_Data App="MOD" Name="Director" Value="Bryan Santangelo"/>
      <App_Data App="MOD" Name="Actors_Display" Value="John Mick, Corey Brown"/>
      <App_Data App="MOD" Name="Actors" Value="John Mick"/>
      <App_Data App="MOD" Name="Actors" Value="Corey Brown"/>
      <App_Data App="MOD" Name="Genre" Value="Action & Adventure"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/High Definition/HD Movies"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/Movies/HD Movies"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/Movies/Movies By Title/Movies S - Z"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/Movies/New Releases/High Definition"/>
      <App_Data App="MOD" Name="Category" Value="On Demand/What's Hot/HD Movies"/>
      <App_Data App="MOD" Name="Billing_ID" Value="60671"/>
      <App_Data App="MOD" Name="Box_Office" Value="24000000"/>
      <App_Data App="MOD" Name="Closed_Captioning" Value="Y"/>
      <App_Data App="MOD" Name="Contract_Name" Value="ENT"/>
      <App_Data App="MOD" Name="Display_As_Last_Chance" Value="7"/>
      <App_Data App="MOD" Name="Display_As_New" Value="7"/>
      <App_Data App="MOD" Name="Display_Run_Time" Value="02:03"/>
      <App_Data App="MOD" Name="Distributor_Name" Value="ENT"/>
      <App_Data App="MOD" Name="Distributor_Royalty_Minimum" Value="2.59"/>
      <App_Data App="MOD" Name="Distributor_Royalty_Percent" Value="65.0"/>
      <App_Data App="MOD" Name="Licensing_Window_End" Value="2015-01-01"/>
      <App_Data App="MOD" Name="Licensing_Window_Start" Value="2008-03-21"/>
      <App_Data App="MOD" Name="Maximum_Viewing_Length" Value="01:00:00"/>
      <App_Data App="MOD" Name="Preview_Period" Value="300"/>
      <App_Data App="MOD" Name="Provider_QA_Contact" Value="help@ent.com"/>
      <App_Data App="MOD" Name="Rating" Value="R"/>
      <App_Data App="MOD" Name="Run_Time" Value="02:03:58"/>
      <App_Data App="MOD" Name="Studio" Value="SCTE"/>
      <App_Data App="MOD" Name="Studio_Name" Value="SCTE"/>
      <App_Data App="MOD" Name="Suggested_Price" Value="5.99"/>
      <App_Data App="MOD" Name="Summary_Short" Value="The adventures of a DVS subcommittee"/>
    </Metadata>
  </Asset>
  <Asset>
    <Metadata>
      <AMS Asset_Class="movie" Asset_ID="ABCD0123456789012345" Asset_Name="SCTE 130: The Movie"
      Creation_Date="2008-02-11" Description="SCTE 130: The Movie" Product="MOD"
      Provider="entertainment" Provider_ID="entertainment.com" Version_Major="1" Version_Minor="0"/>
      <App_Data App="MOD" Name="Audio_Type" Value="Stereo"/>
      <App_Data App="MOD" Name="Type" Value="movie"/>
      <App_Data App="MOD" Name="HDContent" Value="Y"/>
    </Metadata>
    <Content Value="entertainment.com::TVNX10084127342::On_Demand.mpeg"/>
  </Asset>
  <Asset>
    <Metadata>
      <AMS Asset_Class="preview" Asset_ID="ABCD0123456789012346" Asset_Name="SCTE 130: The
      Movie" Creation_Date="2008-02-11" Description="SCTE 130: The Movie" Product="MOD"
      Provider="entertainment" Provider_ID="entertainment.com" Version_Major="1" Version_Minor="0"/>
      <App_Data App="MOD" Name="Audio_Type" Value="Stereo"/>
      <App_Data App="MOD" Name="Rating" Value="R"/>
      <App_Data App="MOD" Name="Run_Time" Value="00:05:00"/>
      <App_Data App="MOD" Name="Type" Value="preview"/>
    </Metadata>
    <Content Value="entertainment.com::TVNX10084127343::On_Demand.mpeg"/>
  </Asset>

```

```

    </Asset>
  </Asset>
</ADI>

```

Example 25

The figure below illustrates the link between the data returned in the ContentQueryResponse and the PlacementRequest. The top section is an excerpt from the ContentQueryResponse in Example 25 (specifically, the metadata excerpt in Example 25), and the bottom section is from the PlacementRequest in Example 30.

```

<AMS Asset Class="movie" Asset ID="ABCD0123456789012345" Asset Name="SCTE 130: The Movie"
Creation Date="2008-02-11" Description="SCTE 130: The Movie" Product="MOD"
Provider="entertainment" Provider ID="entertainment.com" Version Major="1" Version Minor="0"/>

<Service id="Service1">
  <<ProductType>MOD</ProductType>
</Service>

```

Figure 17: ADM-centric VOD CIS/PlacementRequest Link

With all of the calls to the SCTE 130 information services (CIS, SIS, POIS), an ADM may prefer to register for notifications and cache metadata in an effort to improve performance.

7.3.2 POISQueryRequest/POISQueryResponse

The ADM now needs to query the POIS to determine if any placement opportunities exist in the content.

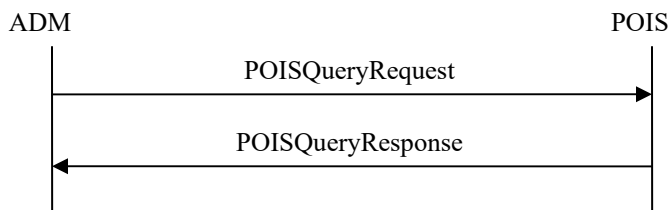


Figure 18: ADM-centric VOD POIS Query Message Exchange

Using BasicQueryFilters, the ADM can query for PlacementOpportunity information for a specified asset.

```

<POISQueryRequest messageId="uuid-29" system="POISClient" identity="40DA910E-
01AF-5050-C7EA-5D7B4A475757" version="1.0">
  <gis:Query queryId="pois-98765" expandOutput="true"
uniqueQualifierNameRef="P3-PODM">
    <gis:ServiceDataModel>"http://www.scte.org/schemas/130-
3/2008a/adm/podm"</gis:ServiceDataModel>
    <gis:BasicQueryFilter>
      <gis:BasicFilterElement value="ABCD0123456789012345"
name="assetId"/>
    </gis:BasicQueryFilter>
    <gis:BasicQueryFilter>
      <gis:BasicFilterElement value="entertainment.com"
name="providerId"/>
    </gis:BasicQueryFilter>
  </gis:Query>
</POISQueryRequest>

```

Example 26

The POIS then responds with a POISQueryResponse that includes all of the metadata it has for the queried content. In this response, the ADM learns that one preRoll PlacementOpportunity exists. The Duration, Scope, and @opportunityType attribute highlighted below will correspond to the Duration, Scope, and @opportunityType attribute in the PlacementRequest sent by the ADM.

```

<POISQueryResponse version="1.1" messageId="uuid-30" messageRef="uuid-29"
system="POISServer" identity="50DA910E-01AF-5050-C7EA-5D7B4A475759">
  <core:StatusCode class="0"/>
  <gis:QueryResult resultSetSize="1" queryRef="pois-98765">
    <podm:PODMBasicQueryResult>
      <podm:PlacementOpportunityV2 serviceRegistrationRef="-"
id="uuid-31">
        <adm:Entertainment>
          <core:Content>
            <core:AssetRef
providerID="entertainment.com" assetID="ABCD0123456789012345"/>
          </core:Content>
        </adm:Entertainment>
        <adm:OpportunityBinding opportunityType="preRoll"
opportunitiesExpected="1" opportunityNumber="1"/>
        <podm:OpportunityConstraintsV2>
          <core:AdType>30-Second-Spot</core:AdType>
          <core:Duration>PT30S</core:Duration>
          <adm:Scope>Local</adm:Scope>
        </podm:OpportunityConstraintsV2>
      </podm:PlacementOpportunityV2>
    </podm:PODMBasicQueryResult>
  </gis:QueryResult>
</POISQueryResponse>

```

Example 27