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OF TELEVISION, SOUND PROGRAMME AND OTHER
MULTIMEDIA SIGNALS

Digital transmission of television signals

Digital Program Insertion – Advertising Systems Interfaces: Part 3 – Ad Management Service Interface

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Recommendation ITU-T J.380.3 (ex J.dpi-asi-3)

Digital Program Insertion – Advertising Systems Interfaces: Part 3 – Ad Management Service Interface

Summary

This document in conjunction with the ITU-T J.380.3 Extensible Markup Language (XML) schema document (i.e., the accompanying XSD document) defines the XML messages expressing placement opportunities, placement decisions, and placement related event data typically exchanged between an Ad Management Service (ADM) and an Ad Decision Service (ADS)

Keywords

None

...

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Digital Program Insertion – Advertising Systems Interfaces: Part 3 – Ad Management Service Interface

Introduction

The Ad Management Service (ADM) and the Ad Decision Service (ADS) are core elements in a standardized ITU-T J.380 advanced advertising system. Both the ADM and the ADS shall be ITU-T J.380 compliant logical services implementing all messages and message semantics as defined in ITU-T J.380.2 and this document. See [ITU-T J.380.2] for additional Part 2 information.

The ADM originates messages articulating ad insertion opportunities (i.e., placement opportunities) with the primary communication consumer being the ADS. The ADS determines how advertising content is combined with non-advertising (entertainment) content assets (i.e., placement decisions). The ADM completes the opportunity/decision lifecycle via reporting activity events (i.e., placement status). The ADM/ADS communication interface is defined herein and it is referred to as the ADM interface throughout the remainder of this specification. The ADM interface facilitates both preconfigured ad decisions as well as real-time placement selection.

Figure 1 illustrates a very basic example advertising system utilizing only an ADM and an ADS. Figure 1 represents one possible configuration and many other combinations beyond the illustration are possible.

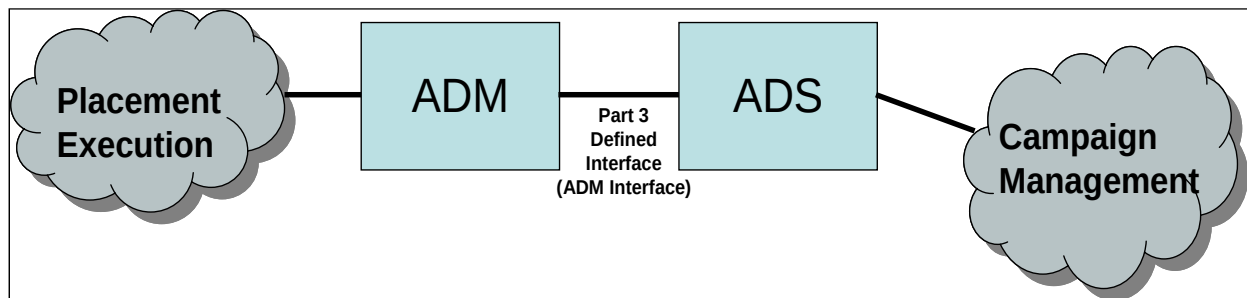


Figure 1 - A Very Basic ITU-T J.380 Advertising System

In Figure 1, the placement system, represented by the Placement Execution cloud, is responsible for opportunity determination and placement execution (e.g., content insertion/splicing). Communication between the ADM and the Placement Execution cloud is outside the scope of this specification. The ADM, via the ADM interface, communicates placement opportunities and placement status to the ADS and the ADS returns placement decisions as a response to placement opportunities. The Campaign Management cloud symbolizes the system providing the information necessary for the ADS to render ad decisions. Communication between the ADS and the Campaign Management cloud is outside the scope of this specification. The internal implementation and operation of both the ADM and the ADS are outside the scope of this specification.

The ADM and the ADS may be clients of any ITU-T J.380 defined logical service as illustrated in Figure 2.

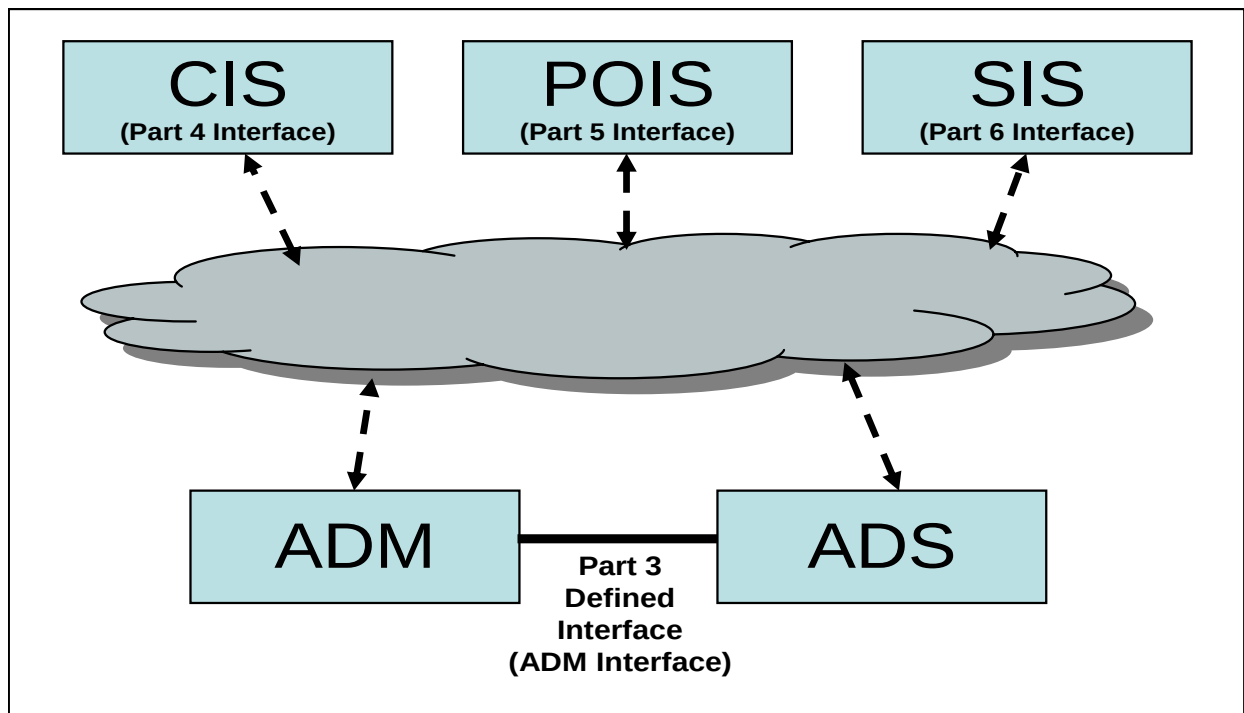


Figure 2 - ITU-T J.380 Logical Service Relationships

The Content Information Service (CIS) provides content asset metadata and availability information for both advertising and non-advertising content. See [ITU-T J.380.4] for additional information. The Placement Opportunity Information Service (POIS) may supply placement opportunity descriptions. See [ITU-T J.380.5] for additional information. The Subscriber Information Service (SIS) may provide relevant subscriber information such as advertising focus refinement parameters. See [ITU-T J.380.6] for additional information. With the exception of the ADM interface (i.e., the ADM/ADS communication path), all Figure 2 elements are outside the scope of this specification.

An ADM may support multiple, simultaneously active ADS as each ADS may provide different placement decision services. An ADS may provide the same decision services or different services to multiple ADM simultaneously. Figure 3 illustrates these possible high level interconnects.

Figure 4 illustrates a more sophisticated example ITU-T J.380.x advertising system leveraging multiple ITU-T J.380.x logical services. Figure 4 represents one possible configuration and many other combinations beyond the illustration are possible.

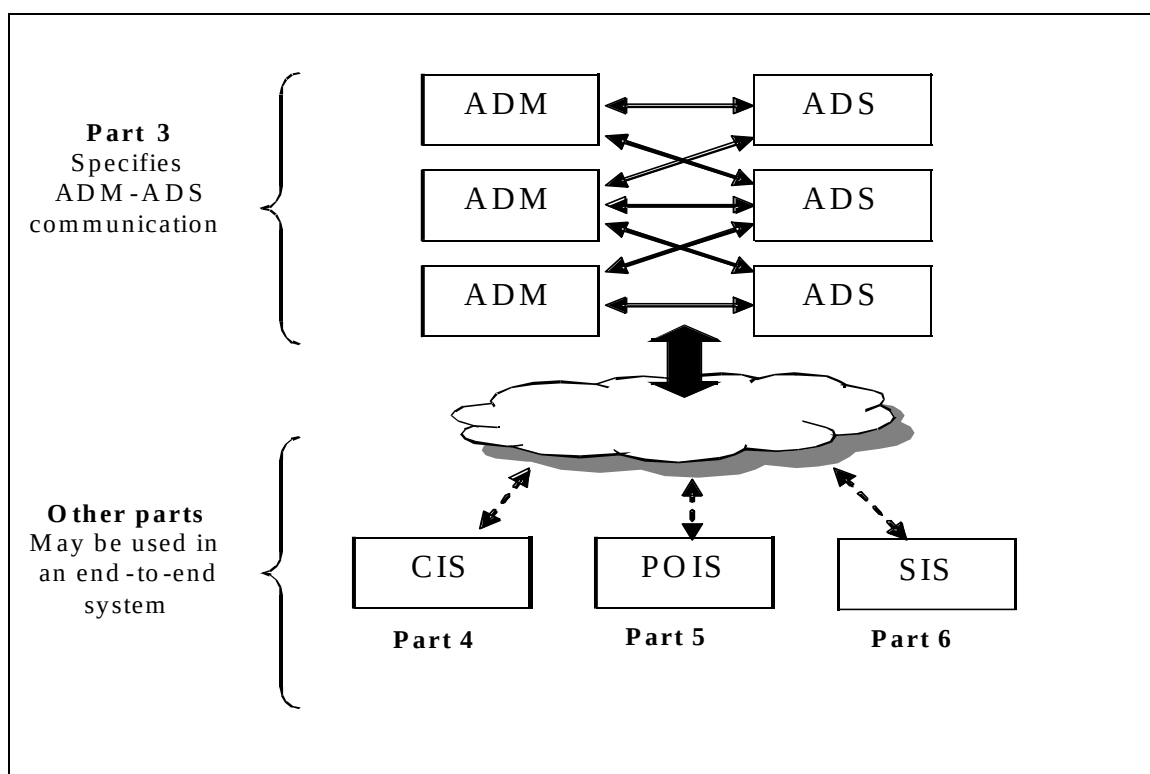


Figure 3 - ADM/ADS Interconnects

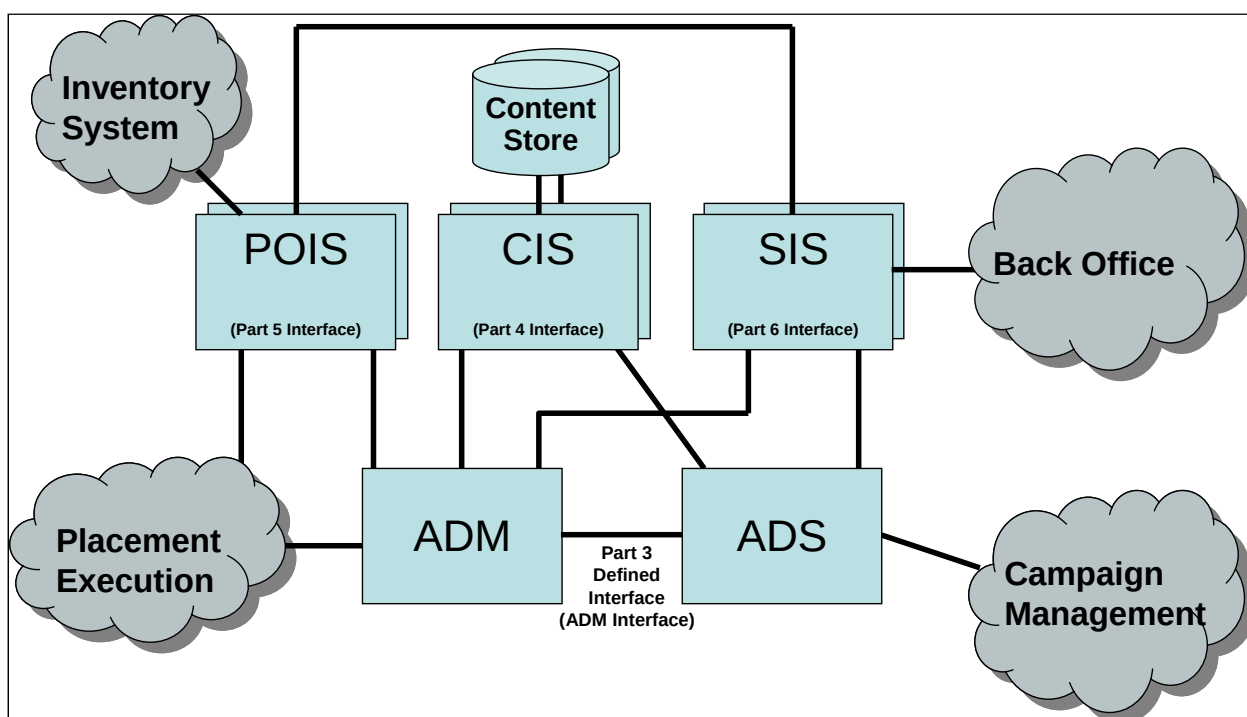


Figure 4 - ITU-T J.380 Advertising System Example

In this example, the Placement Execution cloud and/or the ADM block may consult the POIS for placement opportunity information with the POIS fronting the Inventory System cloud. Additionally, the ADS may communicate with the POIS to acquire the same placement opportunity information for its usage. The Inventory System cloud symbolizes the advertising opportunity scheduling systems. Either or both the ADM and ADS may communicate with the CIS to obtain content asset metadata and ad asset availability information. The ADM, ADS, and/or the POIS may communicate with the SIS in order to obtain relevant subscriber information such as advertising

focus refinement parameters and placement opportunity enablement. This SIS fronts the Back Office cloud which represents the Operation Support Systems (OSS) and Business Support Systems (BSS). With the exception of the ADM interface, all Figure 4 elements are outside the scope of this specification.

Document Organization

This document provides a structured, logical approach to the ADM interface for the ITU-T J.380 sub-series. Each subsequent clause focuses on a particular specification aspect and this document's presentation order provides a top-down, conceptual introductory understanding necessary to implement the ADM interface.

Clause 5 explains this document's notational conventions and identifies the processing conventions. Clause 5 also defines the XML namespace usage and the applicable XML semantics. Clause 6 introduces the ADM interface messaging concepts.

Clause 7 defines the ADM interface logical service management messages and clause 8 defines the placement operations messages. Clause 7 and subsequent clauses often may reference XML attributes and elements defined later in this document. The reader may occasionally need to reference other document clauses or [ITU-T J.380.2] in order to find the complete explanation of a syntactic component.

Clause 9 presents the ADM interface's XML attributes and complex types followed by clause 10 which defines the specification's individual XML elements. Attributes, complex types, and elements in clauses 9 and 10 are presented in alphabetical order. Annex A provides the normative status code values, their meanings, and their message usage applicability followed by Appendix I which is an informative example.

Placement Service

The term placement service refers to the distinctive information identifying an entertainment content flow where advanced advertising techniques may apply. Typically, the ADM is provisioned to be aware of the entertainment content for which it shall offer placement opportunities and this configuration generally occurs via some external mechanism which is outside the scope of this specification. Example entertainment content includes a traditional linear broadcast network feed, a zoned form of the broadcast network, or a specific provider's collection of on-demand video assets to name just a few types.

The actual placement service definition is a compound information grouping utilizing two XML elements—the SystemContext element and the Service element. See clause 10.45 and clause 10.37 respectively for additional information. A placement service is identifiable via the Service element's @id attribute. Placement service organization is facilitated via the ServiceDescription element. See clause 10.38 for additional information. The combination of elements and their sub-elements provide for a rich placement service expression capability.

The ADM may be queried for its list of provisioned placement services via the list ADM services message exchange. See clause 9.2 for additional information. Based upon the list of offered placement services, the ADS registers for the placement services for which it desires to provide placement decisions. See clause 10.29 for additional information regarding registration. The ADS registration may be more or less general than the details provided by the list ADM services message exchange.

The remainder of this document defines the ADM interface.

1 Scope

This document in conjunction with the ITU-T J.380.3 Extensible Markup Language (XML) schema document defines the XML messages expressing placement opportunities, placement decisions, and

placement related event data typically exchanged between an Ad Management Service (ADM) and an Ad Decision Service (ADS). Additionally, this document and the accompanying schema document describe the auxiliary XML messages, elements, and attributes supporting the primary message exchanges.

2 References

The following ITU-T Recommendations and other references contain provisions, which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T J.380.2] ITU-T J.380.2 (2011), *Digital Program Insertion-Advertising Systems Interfaces Part 2 – Core Data Elements*.
- [ITU-T J.380.7] ITU-T J.380.7 (2011), *Digital Program Insertion – Advertising Systems Interfaces Part 7 – Message Transport*.
- [ITU-T J.380.8] ITU-T J.380.8 (2011), *Digital Program Insertion -Advertising Systems Interfaces Part - General Information Service*.
- [SCTE 130-3 Schema] SCTE 130-3 XML Schema
- [SCTE 130-3 ADM wsdl] SCTE 130-3 Ad Management Service WSDL file
- [SCTE 130-3 ADS wsdl] SCTE 130-3 Ad Decision Service WSDL file
- [SCTE 130-3 PODM] SCTE 130-3 Placement Opportunity Data Model file
- [SCTE 130-3 PODM Query] SCTE 130-3 Placement Opportunity Data Model file query file

3 Definitions

3.1 Terms defined elsewhere

All ITU-T J.380.2, ITU-T J.380.7 and ITU-T J.380.8 definitions are normatively included herein. See [ITU-T J.380.2], [ITU-T J.380.7] and [ITU-T J.380.8] for additional information.

3.2 Terms defined in this Recommendation

3.2.1 ADM interface: The ADM to ADS message communication link defined by ITU-T J.380.3 (i.e., this document and its companion XML schema document).

3.2.2 interstitial: A placement opportunity occurring during the play out of an entertainment asset (also commonly referred to as a mid-roll).

3.2.3 placement: The decision resulting from a placement opportunity which may include a content binding and a set of constraints.

3.2.4 placement management: The aggregated operational sequence of placement messaging and placement update messaging.

3.2.5 placement operations: Placement management aggregated with placement status messaging.

3.2.6 placement messaging: The PlacementRequest/PlacementResponse message exchange sequence.

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3.2.7 placement status messaging: The PlacementStatusNotification/PlacementStatusAcknowledgement message exchange sequence.

3.2.8 placement update messaging: The PlacementUpdateNotification/PlacementUpdateAcknowledgement message exchange sequence.

3.2.9 placement opportunity: A potentially constrained location relative to digital content where ad insertion or content alterations may occur. The alterations may include insertions, replacements, or deletions of content in whole or in part. These locations, which contain the opportunity for content insertion, have traditionally been referred to as avails [SCTE35] for linear video content; however, placement opportunity refers to address and time locations where content may be placed, regardless of platform.

3.2.10 placement service: The distinctive information (i.e., characteristic set) identifying an entertainment content flow where advanced advertising techniques may apply.

3.2.11 post-roll: A placement opportunity following the play out of an entertainment asset.

3.2.12 pre-roll: A placement opportunity preceding an entertainment asset.

NOTE 1 - Definition differs from SCTE 35. See [SCTE35].

3.2.13 registration-established service channel: A service channel duration commencing with a successful placement service registration and continuing until either participating logical service completes terminating an active service channel.

NOTE 2 - This document refines the ITU-T J.380.2 definition by qualifying the registration as a placement service registration. See [ITU-T J.380.2] for the base definitions.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms.

All ITU-T J.380.2, ITU-T J.380.7 and ITU-T J.380.8 abbreviations are normatively included herein. See [ITU-T J.380.2], [ITU-T J.380.7] and [ITU-T J.380.8] for additional information.

This document additionally uses the following abbreviations:

PODM Placement Opportunity Data Model

VOD Video on Demand

5 Conventions

5.1 Notational Conventions

5.1.1 Normative XML Schema

See [ITU-T J.380.2] for information.

5.2 Document Conventions

This specification utilizes the same document conventions as ITU-T J.380.2. See [ITU-T J.380.2] for conventions and XML schema illustration nomenclature explanations.

This specification utilizes XML substitution groups for additional extensibility. XML substitution groups designate elements as substitutes for other element declarations without changing the original schema documents. Within this document, substitutable elements are graphically identified using the following illustrative technique.

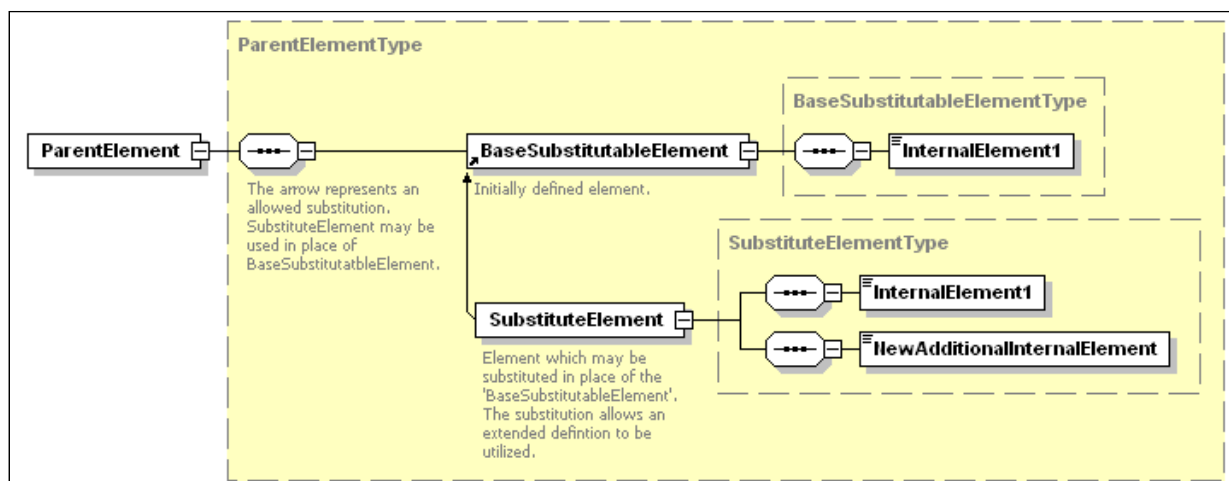


Figure 5 – Substitution Group Schema Convention

In Figure 5, the element referred to as "SubstituteElement" may be used in place of the element named "BaseSubstitutableElement" provided the XML namespace declarations are included in the document as per [W3C-XSD]. The diagram's illustrative arrow signals the reader of the possible element substitution.

5.3 Processing Conventions

Unknown/Unrecognized/Unsupported XML Elements and Attributes. See [ITU-T J.380.2] for information.

5.4 XML Namespaces

This document uses the 'adm' prefix for the interface associated with this specification's XML namespace URI. This URI shall be used by all implementations applying this specification. Table 1 lists the prefix, the corresponding namespace, and a description of the defining specification.

Table 1 - XML Namespace Declarations

Prefix	Namespace	Description
core	http://www.scte.org/schemas/130.2/2008a/core	ITU-T J.380.2.
adm	http://www.scte.org/schemas/130-3/2008a/adm	ITU-T J.380.3 (this Recommendation).
admwsdl	http://www.scte.org/wsdl/130-3/2010/adm	Annex II.
adswsdl	http://www.scte.org/wsdl/130-3/2010/ads	Annex II.
podm	http://www.scte.org/schemas/130-3/2008a/adm/podm	Annex III.
xsd	http://www.w3.org/2001/XMLSchema	XML foundation. See [XMLSchemaP1 from ITU-T J.380.2 normative references].

5.4.1 @version Attribute

For this specification's defined messages, the message's @version attribute shall be set to the value "1.1" corresponding to this document's revision. For those messages defined by ITU-T J.380.2, the @version value shall be set to the value defined and specified in ITU-T J.380.2. See [ITU-T J.380.2] for additional information.

The @version attribute in conjunction with the namespace identifier (see Table 1) form the formal specification version identification.

6 ADM Interface Message Introduction

The following topics are covered by ITU-T J.380.2 and this specification, ITU-T J.380.3, considers all aspects defined therein to be normative and applicable herein. See [ITU-T J.380.2] for information specific to this list and for expanded associated topics.

- Message format
- XML message carriage
- Transport mechanisms
- Message error handling
- High availability

The ADM interface defined herein shall include all messages defined in ITU-T J.380.2 and all ADM interface messages shall be compliant with ITU-T J.380.2 [ITU-T J.380.2]. Table 2 enumerates the ADM interface messages defined herein along with the message originators (i.e., the message sources). Both the ADM and the ADS shall be compliant with all messages listed in Table 2 and all Table 2 message's @version attribute shall comply with clause 5.4.1

Table 2 - ITU-T J.380.3 Messages and Message Sources

Message	Source	Registration Required
ITU-T J.380.3-defined Messages		
ListADMServicesRequest	ADS	
ListADMServicesResponse	ADM	
ADSRegistrationRequest	ADS	
ADSRegistrationResponse	ADM	
ListADSRegistrationRequest	ADS	
ListADSRegistrationResponse	ADM	
ADSDeregisterRequest	ADS	X
ADSDeregisterResponse	ADM	X
ADSDeregistrationNotification	ADM	X
ADSDeregistrationAcknowledgement	ADS	X
PlacementRequest	ADM	X
PlacementResponse	ADS	X
PlacementUpdateNotification	ADS	X
PlacementUpdateAcknowledgement	ADM	X
PlacementStatusNotification	ADM	X
PlacementStatusAcknowledgement	ADS	X
ITU-T J.380.2-defined Messages		
core:ServiceStatusNotification	ADM or ADS	
core:ServiceStatusAcknowledgement	ADM or ADS	
core:ServiceCheckRequest	ADM or ADS	
core:ServiceCheckResponse	ADM or ADS	

Typically, a communication channel, referred to as service channel (see [ITU-T J.380.2] for additional information) is established between two logical services in order to enable one service to

deliver messages to another logical service. The service channel comprises both the logical and physical characteristics and the service channel lifecycle is dependent on the message type.

There are two common service channel lifecycles for this specification's messages. The first service channel lifecycle is limited to the duration of the single message pair exchange (i.e., a send and receive). The second service channel lifecycle duration commences with a successful placement service registration and continues until either participating logical service completes terminating the active service channel. This second service channel lifecycle is referred to herein as a registration-established service channel.

In Table 2, the column "Registration Required" indicates whether the specific message requires a registration-established service channel in order to be sent or received. A successful and active registration message exchange creating a registration-established service channel shall occur before any of these messages shall be sent and these messages shall only be exchanged for the active service channel duration. Registration-established service channel termination shall prohibit these messages from being exchanged on the concluded service channel.

Once successfully constructed, the registration-established service channel shall remain active until terminated via deregistration. Normal service channel termination shall occur via a deregistration message exchange. Abnormal termination (e.g., a system failure, etc.) should attempt to use the normal deregistration sequences. However, these situations may require alternative deregistration mechanisms outside the scope this specification.

Deregistration may be initiated by either the ADS or the ADM using an ADSDeregisterRequest or an ADSDeregistrationNotification message respectively. Physical and/or transport layer connections may transition without impacting the service channel active state. That is, the registration-established service channel maintains its operational state independent of the transport persistence. For example, if TCP/IP is used as the transport protocol, the TCP/IP connection may be terminated and re-established multiple times during which time the registration-established service channel is considered to remain persistent.

The ADM interface message exchanges are grouped into the following general activity categories:

Logical service management which covers:

- Communication management including placement service offering descriptions, registration, and deregistration
- Status management including logical service health checks, logical service status notifications, and active registration listing

Placement operations which includes:

- Placement management including placement opportunity descriptions, placement decisions which may include placements and placement updates
- Placement status consisting of placement event reporting which "close the loop" on placement decisions

Figure 6 illustrates a high-level overview of the typical message exchange sequences between an ADS and an ADM.

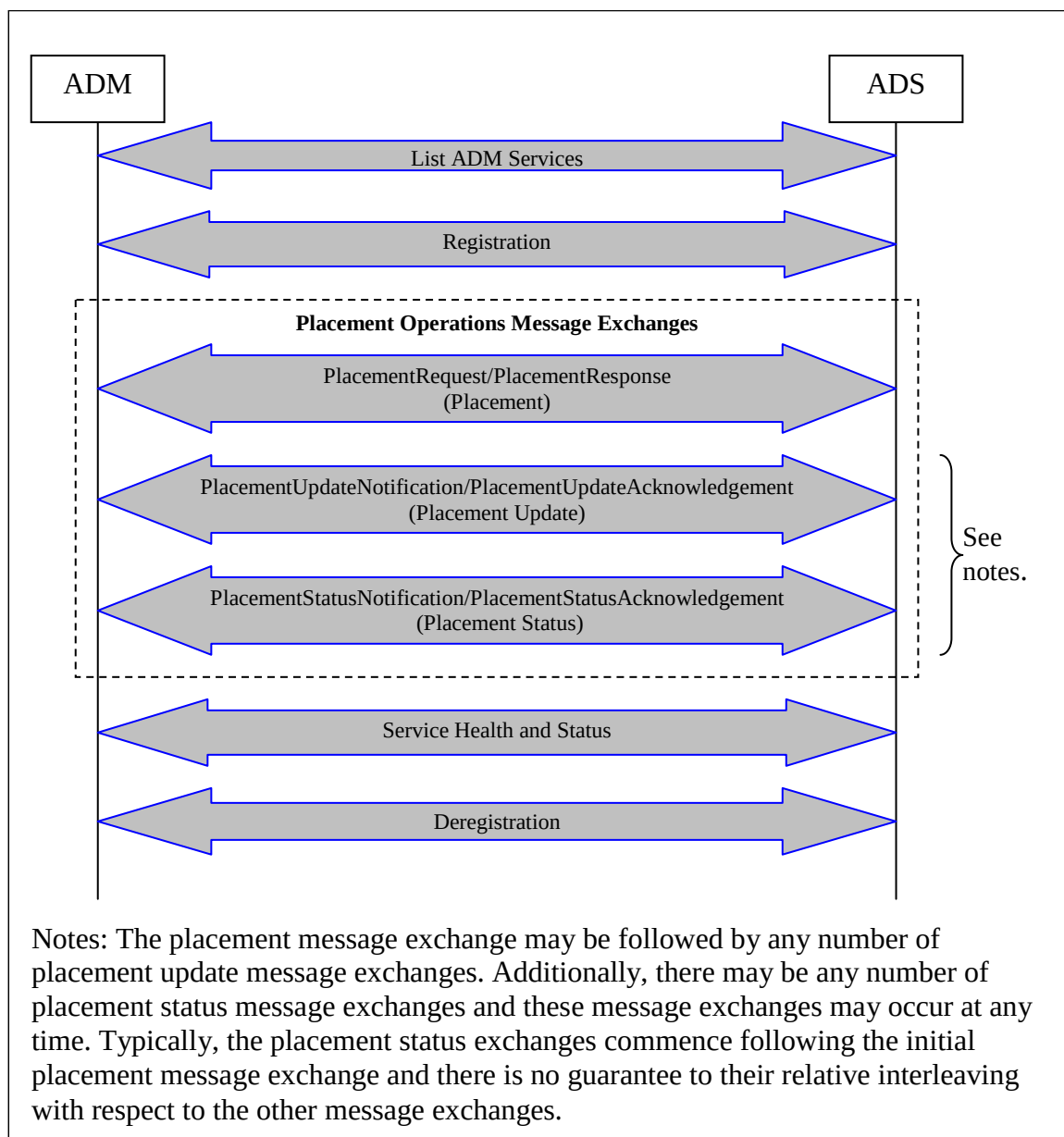


Figure 6 - Message Exchange Overview

The ADS may obtain the list of offered ADM placement services, capabilities and message exchange endpoints using the ListADMServices message exchange. The ADS registers its placement decision intentions using the registration message exchange and terminates its placement service relationship using the deregistration message exchange. At any time, either logical service may notify or check the service health and status of the peer.

The placement operations message exchanges encompass placement messaging (i.e., PlacementRequest/PlacementResponse messages), placement update messaging (i.e., PlacementUpdateNotification/PlacementUpdateAcknowledgement messages), and placement status messaging (i.e., PlacementStatusNotification/PlacementStatusAcknowledgement messages). These messages exchanges describe placement opportunities, placement decisions, placement decision updates, and placement reporting for the placement decisions.

7 ADM Interface-Logical Service Managment Messages

Excluding placement operations messages, this specification defines the following message exchanges for the purpose of logical service provisioning and status management:

- List offered placement services-a detailed list of ADM provided placement services, ADM capabilities, and ADM message exchange endpoints.
- Registration-ADS placement service identification and establishment of the service channel(s).
- Registration status-a report of the established placement services and their service channels.
- Deregistration-the termination of placement services and their established service channels.
- Logical service health-the abilities to verify that a service channel, logical service and transport connection are alive and operational and to provide logical service status notifications. The capabilities leverage the ITU-T J.380.2 core:ServiceStatus and core:ServiceCheck message exchanges as defined therein. See [ITU-T J.380.2] for additional information.

The following clauses detail this specification's logical service management messages.

7.1 ADM Logical Service Discovery

Initial ADM logical service discovery is outside the scope of this specification. ITU-T J.380.7 may provide details. See [ITU-T J.380.7] for additional information.

With the exception of the ADM and its ListADMServicesRequest message exchange endpoint discovery, the remaining endpoints may be directly provided by both the ADM and ADS (i.e., they do not require separate discovery mechanisms and may be bootstrapped using the messages defined herein). See clauses 9.2 and 10.1 for additional information.

7.2 List ADM Placement Services

Any logical service may query an ADM at any time for its offered placement services, capabilities, and message exchange endpoint addresses. The querying entity is not required to be registered prior to making this query and the query may occur at anytime. This message exchange duration defines this service channel lifecycle. Typically, the message exchange occurs before registration and its associated registration-established service channel establishment. Figure 7 illustrates the list ADM placement services message exchange.

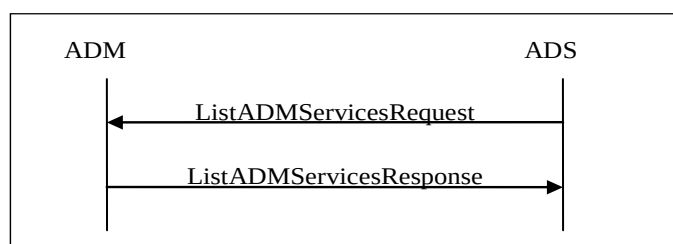


Figure 7 - List ADM Placement Services Message Exchange

An ADS initiates the message exchange using the ListADMServicesRequest message and the ADM shall respond with a ListADMServicesResponse message. The ADM response includes the following:

- The ADM offered placement service list
- The ADM capabilities
- The ADM message exchange endpoint list

How an ADM determines its offered placement service list and capabilities is outside the scope of this specification.

The ADM message exchange endpoint list may supply the ADS with ADM endpoints for individual message processing entry. Typically, the list is populated with the endpoint set necessary for bootstrapping ADS to ADM communications. With the exception of the discovery of the ListADMServicesRequest endpoint, the remaining ADM/ADS message exchange endpoints may be provided using a combination of the ListADMServicesResponse message and the registration message exchange (i.e., ADSRegistrationRequest/ADSRegistrationResponse messages).

The list ADM offered placement services message schemas are described in the following clauses.

7.2.1 ListADMServicesRequest Message Schema

Figure 8 illustrates the list ADM placement services request message schema.

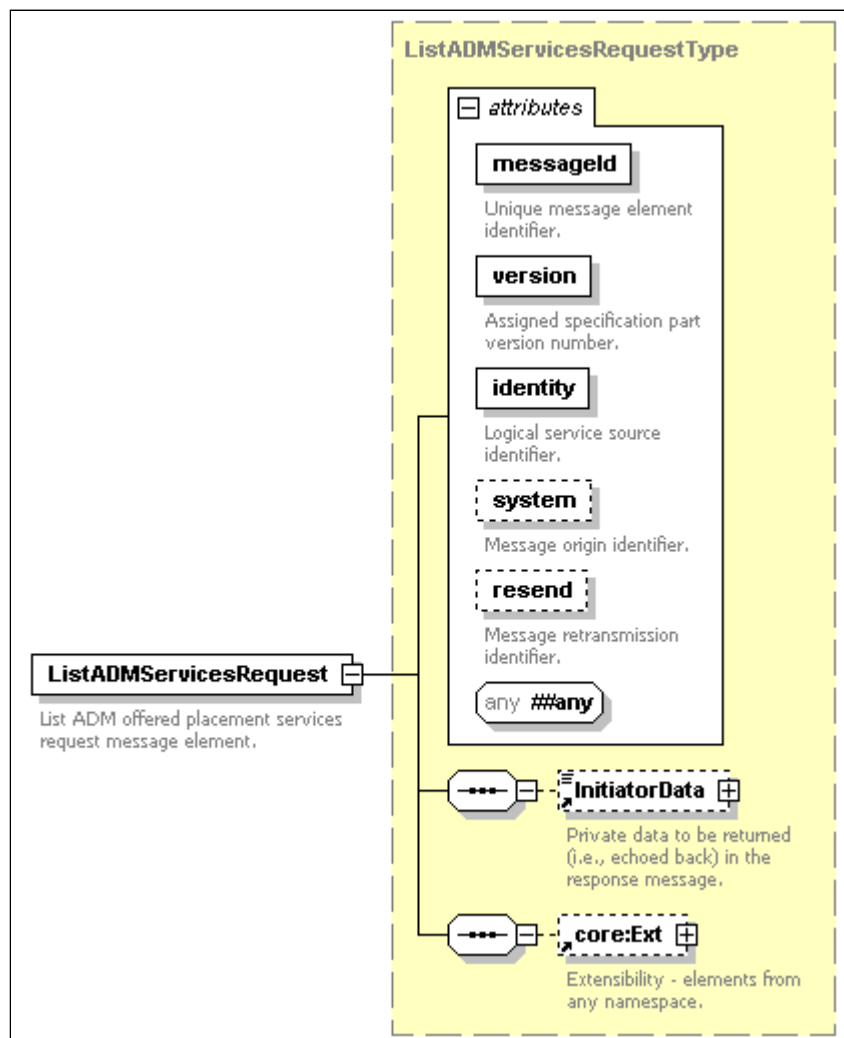


Figure 8 - ListADMServicesRequest Message Schema

7.2.1.1 Semantic Definitions for the ListADMServicesRequest Message

@messageId [Required, core:messageIdAttrType]-The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType]-The ADM message interface version. See clause 9.1 for additional information.

@identity [Required, core:identityAttrType]-The origin logical service identifier. See [ITU-T J.380.2] for additional information.

@system [Optional, core:systemAttrType]-The message origin identifier. See [ITU-T J.380.2] for additional information.

@resend [Optional, core:resendAttrType]-The message is a retransmit of a previous ListADMServiceRequest message. The attribute's value is the original message's @messageId value. See [ITU-T J.380.2] for additional information.

@##any [Optional]-Additional attributes from any namespace.

core:InitiatorData [Optional]-The core:InitiatorData element contains implementation specific private data which shall be returned in the ListADMServiceResponse message. See [ITU-T J.380.2] for additional information.

core:Ext [Optional]-A container holding additional attributes and elements from any namespace. See [ITU-T J.380.2] for additional information.

The ListADMServiceRequest element's value may be empty.

7.2.2 ListADMServiceResponse Message Schema

Figure 9 illustrates the list ADM placement services response message schema describing the placement services offered by the ADM.

Figure 9

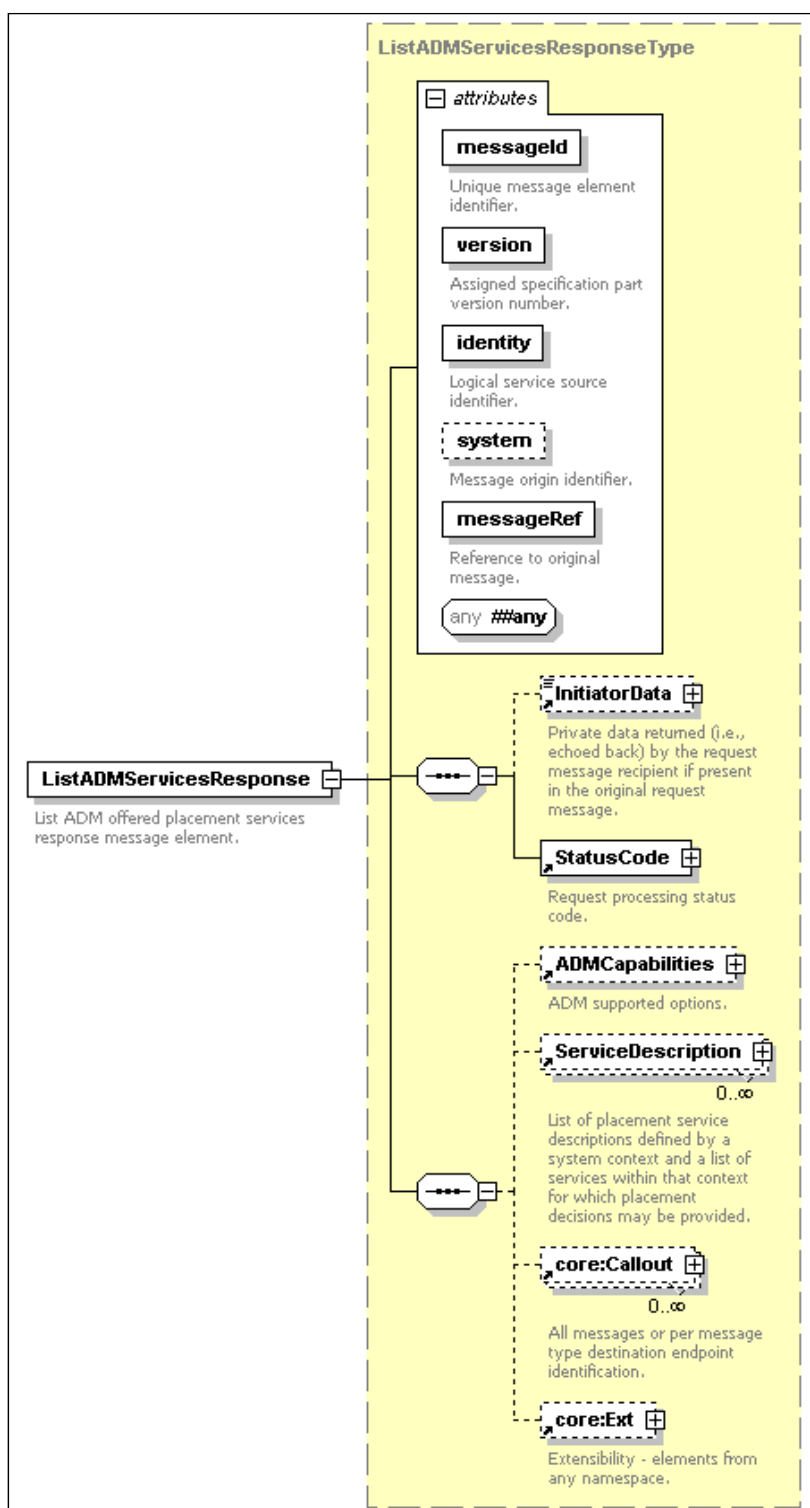


Figure 9 - ListADMServicesResponse Message Schema

7.2.2.1 Semantic Definitions for the ListADMServicesResponse Message

@messageId [Required, core:messageIdAttrType]-The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType]-The ADM message interface version. See clause 6 for additional information.

@identity [Required, core:identityAttrType]-The origin logical service identifier. See [ITU-T J.380.2] for additional information.

@system [Optional, core:systemAttrType]-The message origin identifier. See [ITU-T J.380.2] for additional information.

@messageRef [Required, core:messageRefAttrType]-A reference to the paired ListADMServicesRequest message element initiating this message exchange. The value shall be the ListADMServicesRequest message's @messageId attribute value. See [ITU-T J.380.2] for additional information.

@##any [Optional]-Additional attributes from any namespace.

core:InitiatorData [Optional]-The core:InitiatorData element shall be an exact copy of the ListADMServicesRequest message's core:InitiatorData element and shall only be present if found in the paired request message. See [ITU-T J.380.2] for additional information.

core:StatusCode [Required]-An applicable status code specific to the ListADMServicesRequest message processing. See [ITU-T J.380.2] and Appendix A for additional information.

ADMCapabilities [Optional]-ADM supported options and limitations. Element omission shall indicate the ADM is using the element's defined default values. See clause 10.1 for additional information.

ServiceDescription [Optional]-Zero or more ServiceDescription elements where each ServiceDescription element uniquely describes a collection of ADM offered placement services. See clause 10.38 for additional information. If the core:StatusCode element does not contain a success value, the ServiceDescription elements may be omitted. If an ADM is offline, then no elements may be present. The element sequence order shall not convey information.

core:Callout [Optional]-Zero or more core:Callout elements specifying the ADM message exchange endpoint(s). See [ITU-T J.380.2] for additional information. Zero core:Callout elements may be returned for either an error condition or if the ADM endpoint discovery is occurring via a different mechanism.

A single message exchange endpoint may be defined to handle all ADM destined messaging identified in Table 3. If a single endpoint is handling all messaging, there should be only one core:Callout element present in the ListADMServicesResponse message and the core:Callout element's @message attribute shall not be used. This core:Callout element is referred to as the default endpoint.

If independent endpoints are desired, the core:Callout element's @message attribute shall be used and each core:Callout element shall contain a value from Table 3. The core:Callout element's @message attribute's value shall appear exactly as shown in Table 3.

Table 3 - ListADMServicesResponse/core:Callout/@Message Attribute Values

Value	Description
ServiceStatusNotification	Destination for ServiceStatusNotification messages.
ADSRegistrationRequest	Destination for ADSRegistrationRequest messages.
ADSDeregisterRequest	Destination for ADSDeregisterRequest messages.
ListADSRegistrationRequest	Destination for ListADSRegistrationRequest messages.
...	User defined message endpoints which are outside of this specification's scope. The string shall be prefixed with the text "private:".

If independent message exchange endpoints are desired for only a subset of endpoints, the default endpoint may be used in conjunction with one or more additional core:Callout elements containing

values from Table 3. All message endpoints listed in Table 3 that are not specifically referenced by an @message attribute shall be available through the default endpoint (assuming one is supplied). This behavior allows an ADM to provide message exchange endpoints for one or more core:Callout endpoints while utilizing a single, general purpose endpoint for all other messaging.

If no default endpoint is supplied and only a subset of the Table 3 endpoints are provided in the ListADMServicesResponse message, the unlisted endpoints shall be discovered by a different, unspecified mechanism which is outside the scope of this specification.

Within the core:Callout element, the ADM may provide one or more core:Address elements. The processing rules for these elements are not specified here and are outside the scope of this specification.

Each core:Address element contained within the core:Callout element shall support the core:ServiceCheck message exchange as per [ITU-T J.380.2]. When a Callout element contains more than one Address element, at least one Address element specified reception endpoint shall successfully respond to the ServiceCheckRequest message as required by [ITU-T J.380.2].

core:Ext [Optional]-A container holding additional attributes and elements from any namespace. See [ITU-T J.380.2] for additional information.

7.2.3 List ADM Placement Services Examples

Example 1 illustrates a successful list ADM placement services request and response (Example 2) message exchange for an ADM offering a single entry representing "all" services (thus, a generic service description element).

NOTE - The string "All ADM Offered Services" is an implementation choice specific to this example. This specification's usage of this string in conjunction with the concept of all placement services is purely coincidental and it shall not be considered normative when representing said concept.

```
<ListADMServicesRequest messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A0" version="1.1"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5" system="ads"/>
```

Example 1

Example 2 declares the ADM capabilities and indicates the ADM is using a default endpoint for all message processing. This behavior is indicated by the presence of a single core:Callout element and the core:Callout element omitting the @message attribute.

```
<ListADMServicesResponse messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A1" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="29D61093-
6E81-4A5B-A1F6-8544AA7F29A0">
  <core:StatusCode class="0"/>
  <ADMCapabilities placementStatusOnlyRegistration="false"/>
  <ServiceDescription>
    <SystemContext/>
    <Service id="All ADM Offered Services"/>
  </ServiceDescription>
  <core:Callout>
    <core:Address type="HTTP">http://173.35.23.33:80/J.380MessageProcessor/default</core:Address>
  </core:Callout>
</ListADMServicesResponse>
```

Example 2

Example 3 illustrates a successful response message, assuming the Example 1 request message, for an ADM offering placement services for a service group identified as "Den". The ADM supplies a

default endpoint used for all message exchanges except the ADSRegistrationRequest and the ADSDeregisterRequest message exchanges for which it is supplying unique endpoints.

```
<ListADMServicesResponse messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A1" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="29D61093-
6E81-4A5B-A1F6-8544AA7F29A0">
  <core:StatusCode class="0"/>
  <ADMCapabilities placementStatusOnlyRegistration="false"/>
  <ServiceDescription>
    <SystemContext>
      <ServiceGroup>Den</ServiceGroup>
    </SystemContext>
    <Service id="ServiceDen"/>
  </ServiceDescription>
  <core:Callout>
    <core:Address type="HTTP">http://173.35.23.33:80/J.380MessageProcessor/default</core:Address>
  </core:Callout>
  <core:Callout message="ADSRegistrationRequest">
    <core:Address
type="HTTP">http://173.35.23.33:80/J.380MessageProcessor/ADSRegistrationRequest</core:Address>
  </core:Callout>
  <core:Callout message="ADSDeregisterRequest">
    <core:Address
type="HTTP">http://173.35.23.33:80/J.380MessageProcessor/ADSDeregisterRequest</core:Address>
  </core:Callout>
</ListADMServicesResponse>
```

Example 3

Example 4 is a success response message, assuming the Example 1 request message, for an ADM offering on-demand placement services for the provider's moviego.com and movies_r_us.com. For moviego.com, the ADM is handling pre-roll and post-roll placement opportunities using an "interactive" placement decision policy. For movies_r_us.com, the ADM is only handling local pre-roll placement opportunities for the specific product type using a "default" placement decision policy. The ADM is using a single, default endpoint for all message processing.

```
<ListADMServicesResponse messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A1" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="29D61093-
6E81-4A5B-A1F6-8544AA7F29A0">
  <core:StatusCode class="0"/>
  <ADMCapabilities placementStatusOnlyRegistration="false"/>
  <ServiceDescription>
    <SystemContext/>
    <Service id="Service1" opportunityType="preRoll" decisionPolicy="interactive">
      <ContentProvider providerID="moviego.com">
        <core:ContentDataModel type="CLADI_2.0">URI</core:ContentDataModel>
      </ContentProvider>
    </Service>
    <Service id="Service2" opportunityType="postRoll" decisionPolicy="interactive">
      <ContentProvider providerID="moviego.com">
        <core:ContentDataModel type="CLADI_2.0">URI</core:ContentDataModel>
      </ContentProvider>
    </Service>
    <Service id="Service3" opportunityType="preRoll" decisionPolicy="default">
      <ContentProvider providerID="movies_r_us.com">
        <core:ContentDataModel type="CLADI_2.0">URI</core:ContentDataModel>
      </ContentProvider>
      <ProductType>FOD</ProductType>
      <Scope>Local</Scope>
    </Service>
  </ServiceDescription>
  <core:Callout>
    <core:Address>www.adshark.com/allMessages</core:Address>
  </core:Callout>
</ListADMServicesResponse>
```

Example 4

Example 5 is a successful response message, assuming the Example 1 request message, for an ADM offering traditional linear replacement services for two different zones of a specific network feed. The decision policy is "preload" for both listed services and the ADM is using unique entry points for every service channel message endpoint.

```
<ListADMServicesResponse messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A1" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="29D61093-
6E81-4A5B-A1F6-8544AA7F29A0">
  <core:StatusCode class="0"/>
  <ADMCapabilities placementStatusOnlyRegistration="true"/>
  <ServiceDescription>
    <SystemContext>
      <Network>ABC</Network>
      <Zone>Z3</Zone>
    </SystemContext>
    <Service id="ABC Network Zone3" decisionPolicy="preload"/>
  </ServiceDescription>
  <ServiceDescription>
    <SystemContext>
      <Network>ABC</Network>
      <Zone>Z4</Zone>
    </SystemContext>
    <Service id="ABC Network Zone4" decisionPolicy="preload"/>
  </ServiceDescription>
  <core:Callout message="ServiceStatusNotification">
    <core:Address type="HTTP">http://175.33.53.33:7381/J.380/ssn</core:Address>
  </core:Callout>
  <core:Callout message="ADSRegistrationRequest">
    <core:Address type="HTTP">http://175.33.53.33:7382/J.380/arr</core:Address>
  </core:Callout>
  <core:Callout message="ADSDeregisterRequest">
    <core:Address type="HTTP">http://175.33.53.33:7383/J.380/adr</core:Address>
  </core:Callout>
  <core:Callout message="ListADSRegistrationRequest">
    <core:Address type="HTTP">http://175.33.53.33:7384/J.380/larr</core:Address>
  </core:Callout>
</ListADMServicesResponse>
```

Example 5

Example 6 illustrates a failure response message, assuming the Example 1 request message, for an ADM not currently offering any services.

```
<ListADMServicesResponse messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A1" version="1.1"
identity="ADMLogicalService" system="adm" messageRef="29D61093-6E81-4A5B-A1F6-8544AA7F29A0">
  <core:StatusCode class="1" detail="11">
    <core:Note>ResourceNotFound. No provisioned ADM services.</core:Note>
  </core:StatusCode>
</ListADMServicesResponse>
```

Example 6

7.3 Registration

A registration-established service channel, as defined in clause 3 created between two logical services using the registration message exchange. Typically, this service channel is used for placement operations messaging. An ADS service contacts an ADM by sending an ADSRegistrationRequest message and the ADM shall respond with an ADSRegistrationResponse message. Figure 10 illustrates this message exchange.

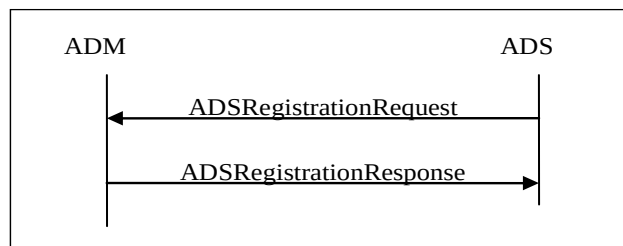


Figure 10 - Registration Message Exchange

During the registration request message processing, the ADM may optionally verify each ADS supplied endpoint via a ITU-T J.380.2 core:ServiceCheck message exchange before returning an ADSRegistrationResponse message. (See [ITU-T J.380.2] for additional information regarding the core:ServiceCheck message exchange.) The ADS shall be prepared to receive the core:ServiceCheckRequest message on the registration supplied endpoints before receiving a response else the ADM may fail the registration request (i.e., the ADM may test each core:Address element supplied in each core:Callout element). When a core:Callout element contains more than one core:Address element, at least one core:Address element specified reception endpoint shall successfully respond to the core:ServiceCheckRequest message. The ADM may reject the registration request message if all core:Address elements of a core:Callout element fail to successfully respond. An ADM shall not reject the registration message if only a subset of each core:Callout element's core:Address elements successfully respond to the core:ServiceCheckRequest message.

The ADS may provide unique service channel endpoint identifiers for the placement operation message exchanges including specific destinations for PlacementRequest messages and PlacementStatusNotification messages. In the ADM response message, the ADM may provide the PlacementUpdateNotification message callout.

ADM implementations may choose to limit the number of supported service channel connections. An ADM shall not be required to support independently registered callbacks for each offered placement service identified by the ListADMServicesResponse message's ServiceDescription elements. ADM implementations are encouraged to support at least as many service channel connections as the count of offered placement services itemized in the ListADMServicesResponse message. An ADM implementation shall not be required to accept an ADS registration solely for status reporting. An ADM may optionally offer this feature by indicating support within the ADMCapabilities element and allowing an ADSRegistrationRequest message containing a core:Callout element which specifies only a PlacementStatusNotification endpoint.

ADM registration conflict determination and resolution are outside the scope of this specification.

During registration, the ADS specifies the placement services for which it is providing placement decisions and it declares the endpoint information for where associated PlacementRequest and PlacementStatusNotification messages are to be sent. These endpoints may be the same value or they may be unique. The endpoints may be different addresses on the same system or they may be endpoints on physically separated systems as illustrated in Figure 11. This figure is one possible example implementation with many other abstractions possible and not represented by this single illustration.

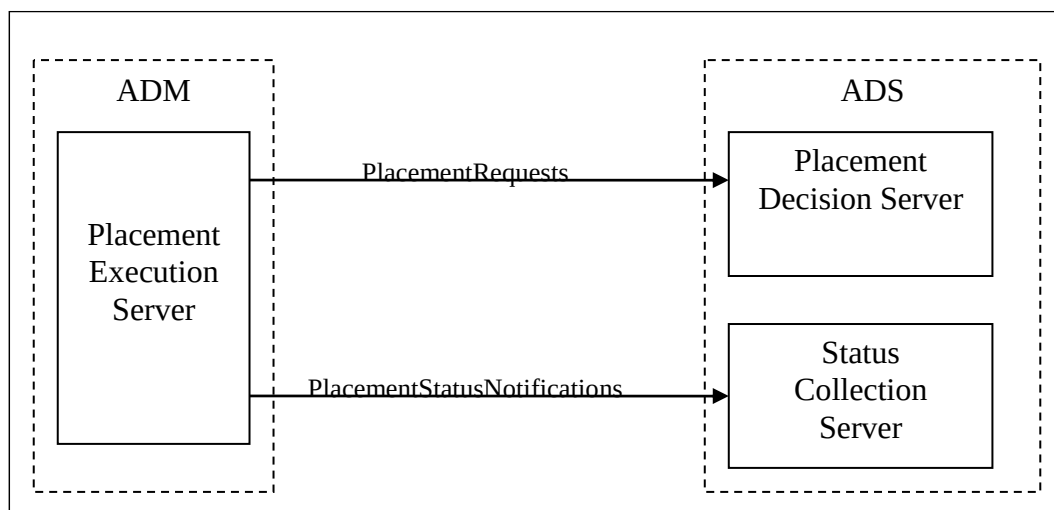


Figure 11 - ADS Registering Independent Endpoints

The ADSRegistrationRequest message shall always be identified using the original ADSRegistrationRequest message's @messageId attribute value which in a retransmitted registration message shall be the @resend attribute's value. This original message's @messageId attribute value is subsequently used for registration listing and deregistration message exchange per ITU-T J.380.2. See [ITU-T J.380.2] for additional information.

The ADM registration message schemas are described in the following clauses.

7.3.1 ADSRegistrationRequest Message Schema

Figure 12 illustrates the ADSRegistrationRequest message schema.

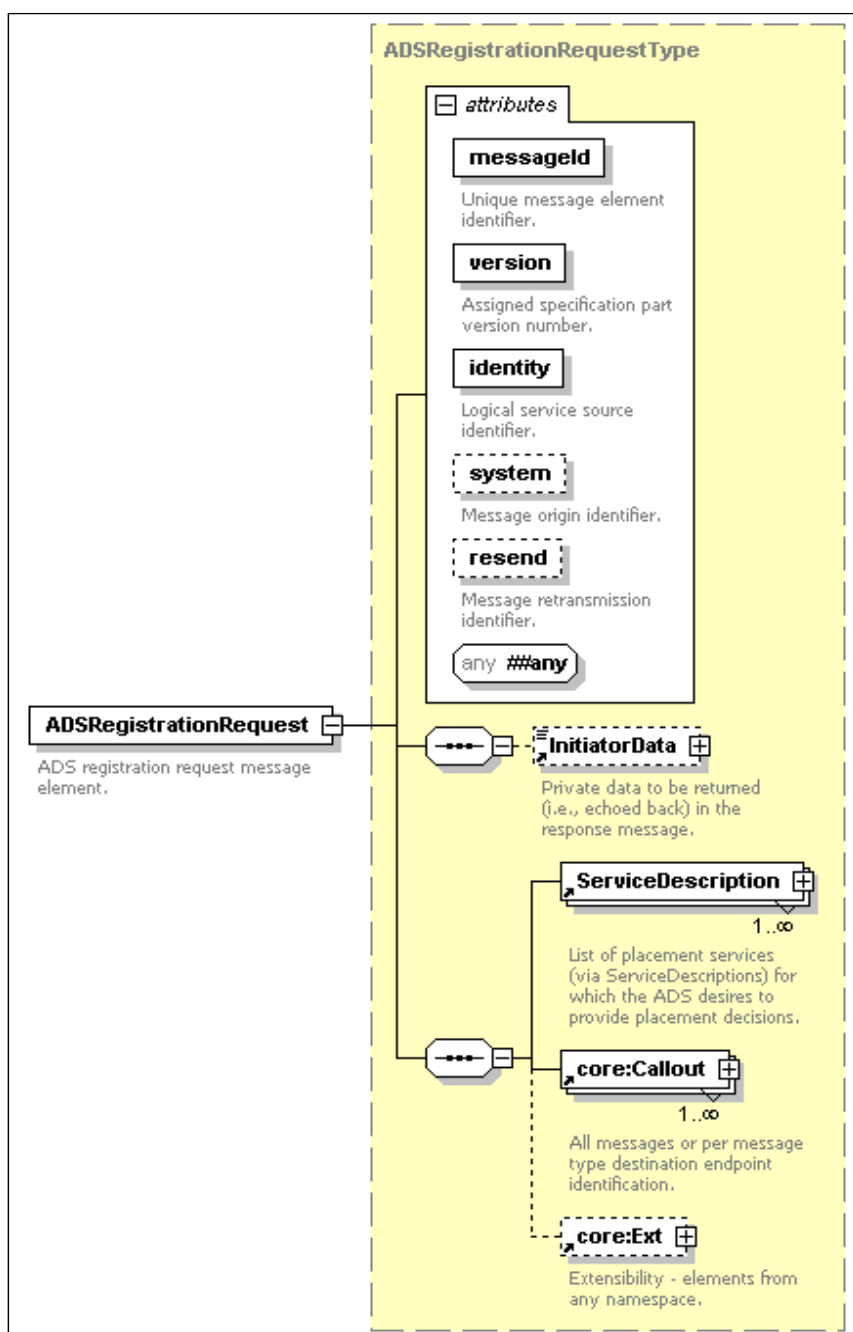


Figure 12 - ADSRegistrationRequest Message Schema

7.3.1.1 Semantic Definitions for the ADSRegistrationRequest Message

@messageId [Required, core:messageIdAttrType]-The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType]-The ADM message interface version. See clause 7 for additional information.

@identity [Required, core:identityAttrType]-The origin logical service identifier. See [ITU-T J.380.2] for additional information. An ADS shall use this attribute to identify all their placement services and their registration-established service channels for registration listing and deregistration purposes.

@system [Optional, core:systemAttrType]-The message origin identifier. See [ITU-T J.380.2] for additional information.

@resend [Optional, core:resendAttrType]-The message is a retransmit of a previous ADSRegistrationRequest message. The attribute's value is the original message's @messageId value. See [ITU-T J.380.2] for additional information.

@##any [Optional]-Additional attributes from any namespace.

core:InitiatorData [Optional]-The core:InitiatorData element contains implementation specific private data which shall be returned in the ADSRegistrationResponse message. See [ITU-T J.380.2] for additional information.

ServiceDescription [Required]-One or more placement service descriptions for which the registering entity desires interaction. Generally, the expected registration-established placement service interaction is to supply placement decisions and placement status message exchanges. As an alternative, a placement status only registered service may optionally be supported by an ADM. Typically, each ServiceDescription element should exactly match a ServiceDescription element as provided in the ListADMServicesResponse message described in clause 7.2.2.

An ADS may restrict a placement service's scope by adding elements to a ListADMServicesResponse message's ServiceDescription element's children. For example, if an ADM returns a ServiceDescription element contain the Network element with the value "ESPN," the ADS may register a ServiceDescription element containing a Network element with the value "ESPN" and a Scope element with the value "Local".

An ADS may also expand a placement service's scope by removing elements from a ListADMServicesResponse message's ServiceDescription element's children. For example, if an ADM returns a ServiceDescription element containing a Network element with the value "ESPN and a Service/@opportunityBinding value of "preRoll," the ADS may register a ServiceDescription element containing only a Network element having the value "ESPN."

An ADM may optionally accept ADSRegistrationRequest messages which are not exact matches to the ServiceDescription elements returned in the ListADMServicesResponse message. The ServiceDescription element sequence shall be processed in document order.

core:Callout [Required]-One or more core:Callout elements specifying the ADS message exchange endpoint(s). See [ITU-T J.380.2] for additional information. A single message exchange endpoint may be defined to handle all ADS destined messaging. If a single message exchange endpoint is handling all messaging (i.e., a default endpoint), there should be only one core:Callout element present and the core:Callout element's @message attribute shall not be used.

If independent endpoints are desired, the core:Callout element's @message attribute shall be used and each core:Callout element shall contain a value from Table 4. The core:Callout element's @message attribute's value shall appear exactly as shown in Table 4.

Table 4 - ADSRegistrationRequest/core:Callout/@Message Attribute Values

Value	Description
ServiceStatusNotification	Destination for ServiceStatusNotification messages.
PlacementRequest	Destination for PlacementRequest messages.
PlacementStatusNotification	Destination for PlacementStatusNotification messages.
ADSDeregistrationNotification	Destination for ADSDeregistrationNotification messages.
...	User defined message endpoints which are outside of this specification's scope. The string shall be prefixed with the text "private:".

If independent endpoints are desired for a subset of message exchange endpoints, the default endpoint may be used with one or more additional core:Callout elements containing values from

Table 4. All messages that are not specifically referenced by an @message attribute shall be available through the default endpoint.

If no default endpoint is supplied and only a subset of the Table 4 endpoints are provided in the ADSRegistrationRequest message, the unlisted endpoints shall be discovered by a different, unspecified mechanism which is outside the scope of this specification.

Within the core:Callout element, the ADS may provide one or more core:Address elements. The processing rules for these elements are not specified here and are outside the scope of this specification.

Each core:Address element contained within the core:Callout element shall support the core:ServiceCheck message exchange as per [ITU-T J.380.2]. When a Callout element contains more than one Address element, at least one Address element specified reception endpoint shall successfully respond to the ServiceCheckRequest message as required by [ITU-T J.380.2] and an ADM shall not reject the registration message if only a subset of the Address elements successfully respond to the ServiceCheckRequest message.

core:Ext [Optional]-A container holding additional attributes and elements from any namespace. See [ITU-T J.380.2] for additional information.

7.3.2 ADSRegistrationResponse Message Schema

Figure 13 illustrates the ADSRegistrationResponse message schema.

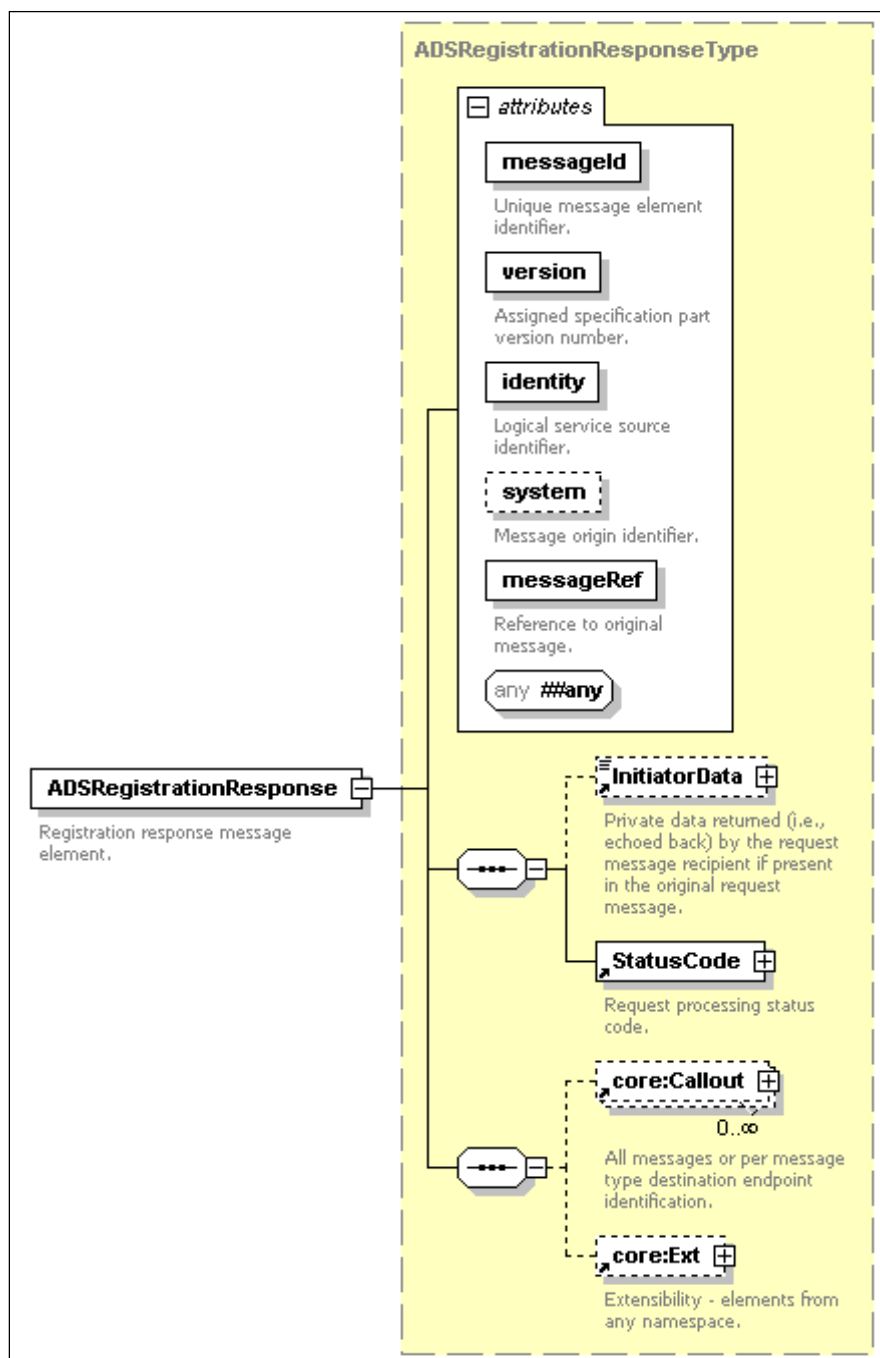


Figure 13 - ADSRegistrationResponse Message Schema

7.3.2.1 Semantic Definitions for the ADSRegistrationResponse Message

@messageId [Required, core:messageIdAttrType]-The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType]-The ADM message interface version. See clause 9.1 for additional information.

@identity [Required, core:identityAttrType]-The origin logical service identifier. See [ITU-T J.380.2] for additional information.

@system [Optional, core:systemAttrType]-The message origin identifier. See [ITU-T J.380.2] for additional information.

@messageRef [Required, core:messageRefAttrType]-A reference to the paired ADSRegistrationRequest message element initiating this message exchange. The value shall be the

ADSRegistrationRequest message's @messageId attribute value. See [ITU-T J.380.2] for additional information.

@##any [Optional]-Additional attributes from any namespace.

core:InitiatorData [Optional]-The core:InitiatorData element shall be an exact copy of the ADSRegistrationRequest message's core:InitiatorData element and shall only be present if found in the paired request message. See [ITU-T J.380.2] for additional information.

core:StatusCode [Required]-An applicable status code specific to the ADSRegistrationRequest message processing. See [ITU-T J.380.2] and Appendix A for additional information.

If the core:StatusCode element indicates an error, no registration for any placement service (i.e., for any ServiceDescription element) shall be deemed to have occurred (i.e., no transaction).

core:Callout [Optional]-Zero or more core:Callout elements specifying the ADM message exchange endpoint(s). See [ITU-T J.380.2] for additional information. Zero core:Callout elements may be returned for either an error condition or if the ADM message exchange endpoint discovery is occurring via a different mechanism.

A single message exchange endpoint may be defined to handle all ADM destined messaging identified in Table 5. If a single endpoint is handling all messaging, there should be only one core:Callout element present in the ADSRegistrationResponse message and the core:Callout element's @message attribute shall not be used. If an ADM desires to use the same default endpoint as the ListADMServicesResponse message, then the default endpoint shall be identically repeated in this message and consequently, it applies additionally to all endpoint destination listed in Table 5. The ADM may optionally use a different default endpoint for the message exchange endpoints identified in Table 5. In this case, the default endpoints are mutually exclusive as the message exchange endpoint list is disjoint between the ListADMServicesResponse and ADSRegistrationResponse messages.

If independent endpoints are desired, the core:Callout element's @message attribute shall be used in each Callout element and it shall contain a value from Table 5. The core:Callout element's @message attribute's value shall appear exactly as shown in Table 5.

Table 5 - ADSRegistrationResponse/core:Callout/@Message Attribute Values

Value	Description
PlacementUpdateNotification	Destination for PlacementUpdateNotification messages.
...	User defined message endpoint outside of the scope of this specification. The string shall be prefixed with the text "private:".

If independent message exchange endpoints are desired for only a subset of Table 5 endpoints, the default message exchange endpoint may be used in conjunction with one or more additional core:Callout elements containing values from Table 5. All message endpoints listed in Table 5 that are not specifically referenced by an @message attribute shall be available through the default endpoint (assuming one is supplied).

If no default endpoint is supplied and only a subset of the Table 5 endpoints are provided in the ADSRegistrationResponse message, the unlisted endpoints shall be discovered by a different, unspecified mechanism which is outside the scope of this specification.

Within the core:Callout element, the ADM may provide one or more core:Address elements. The processing rules for these elements are not specified here and are outside the scope of this specification.

core:Ext [Optional]-A container holding additional attributes and elements from any namespace. See [ITU-T J.380.2] for additional information.

7.3.3 Registration Examples

Example 7 illustrates an ADSRegistrationRequest message and Example 8 illustrates a successful ADSRegistrationResponse message. Example 7 indicates the ADS is handling all placement decisions. The ADSRegistrationRequest message's single core:Callout element omits the @message attribute indicating all messages are to utilize the same endpoint (i.e., the default endpoint). The ADS provides two Address elements where the first address may be interpreted as the primary message exchange endpoint and the second endpoint may be utilized as a backup or secondary destination. This endpoint interpretation is outside the scope of this specification.

In Example 7, the ADS decided to identify this registration-established placement service as "All Services." This value is ADS determined and was developed specifically for this example only. This specification's usage of this string in conjunction with the concept of all placement services shall not be considered normative when representing said concept.

```
<ADSRegistrationRequest messageId="35EC24A4-9D72-11DB-96CA-005056C00000" 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/J.380Msgs</core:Address>
    <core:Address type="HTTP">http://192.168.208.9:80/J.380Msgs</core:Address>
  </core:Callout>
</ADSRegistrationRequest>
```

Example 7

In Example 8, the ADM accepts the registration and responds with a duplicate default endpoint as Example 2. Consequently, all message exchanges are routed through this message exchange endpoint.

```
<ADSRegistrationResponse messageId="35EC24A4-9D72-11DB-96CA-005056C00002" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="35EC24A4-
9D72-11DB-96CA-005056C00000">
  <core:StatusCode class="0"/>
  <core:Callout>
    <core:Address type="HTTP">http://173.35.23.33:80/J.380MessageProcessor/default</core:Address>
  </core:Callout>
</ADSRegistrationResponse>
```

Example 8

Example 9 illustrates a registration request message where the ADS registers as a decision provider for nationally scoped, interstitial placement opportunities for two product types. The registration also handles all pre-roll and post-roll placement opportunities with local scope. The ADS registers independent PlacementRequest and PlacementStatusNotification endpoints via the two core:Callout elements. All other message exchanges use the supplied default endpoint.

```

<ADSRegistrationRequest messageId="35EC24A4-9D72-11DB-96CA-005056C00006" 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="Service3" opportunityType="preRoll">
      <Scope>Local</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>

```

Example 9

Example 10 illustrates the ADM response where the ADM specifies a message exchange endpoint specific for PlacementUpdateNotification messages.

```

<ADSRegistrationResponse messageId="35EC24A4-9D72-11DB-96CA-005056C00112" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="5EC24A4-
9D72-11DB-96CA-005056C00006">
  <core:StatusCode class="0"/>
  <core:Callout message="PlacementUpdateNotification">
    <core:Address type="HTTP">http://192.168.3.33:80/J.380api/PUN</core:Address>
  </core:Callout>
</ADSRegistrationResponse>

```

Example 10

Example 11 illustrates a registration request which has errantly attempted to register for the same placement services as in Example 9. The response message (Example 12) indicates the registration failure. This is an example of a duplicate registration request where an ADM has decided to reject duplicates. An ADM may decide to accept duplicates. This implementation specific behavior is outside the scope of this specification.

```

<ADSRegistrationRequest messageId="35EC24A4-9D72-11DB-96CA-005056C00006" version="1.1"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5" system="ads">
  <ServiceDescription>
    <SystemContext/>
    <Service id="Service3" opportunityType="preRoll">
      <Scope>Local</Scope>
    </Service>
    <Service id="Service4" opportunityType="postRoll">
      <Scope>Local</Scope>
    </Service>
  </ServiceDescription>
  <core:Callout>
    <core:Address>adselector1.ads.com</core:Address>
    <core:Address>adselector2.ads.com</core:Address>
  </core:Callout>
</ADSRegistrationRequest>

```

Example 11

```

<ADSRegistrationResponse messageId="35EC24A4-9D72-11DB-96CA-005056C00008" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="35EC24A4-
9D72-11DB-96CA-005056C00006">
  <core:StatusCode class="1" detail="3">
    <core:Note>Registration overlap.</core:Note>
    <core:Note>The resource is already in use.</core:Note>
  </core:StatusCode>
</ADSRegistrationResponse>

```

Example 12

7.4 List ADS Registrations

The active registrations may be viewed using the ListADSRegistrationRequest message. The ADM shall respond with a ListADSRegistrationResponse message. This message exchange duration defines this service channel lifecycle. Figure 14 illustrates the list ADS registration request and response message exchange and the individual message schema descriptions follow in subsequent clauses.



Figure 14 - ADM Registration Status Message Exchange

There are two list registration granularity levels:

- Per logical service (i.e., via the @identity attribute)
- Per registration message

An ADM may restrict access to registration information by returning a status code equating to "not authorized" for the list registration request on a per logical service basis. The per registration message granularity level shall be supported by all compliant ADMs.

The message exchange shall be conformant with ITU-T J.380.2 list registration requirements. See [ITU-T J.380.2] for additional information

7.4.1 ListADSRegistrationRequest Message Schema

Figure 15 illustrates the ListADSRegistrationRequest Message Schema.

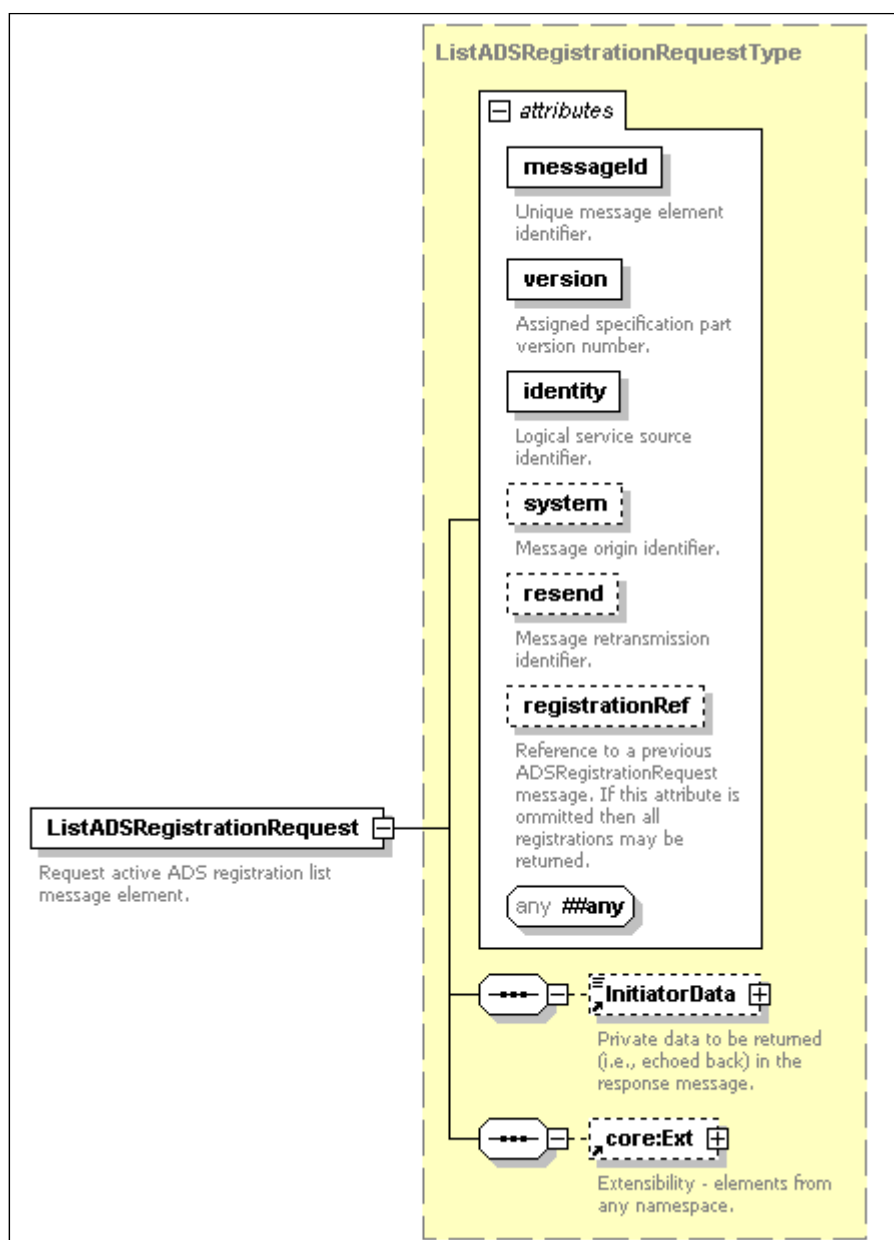


Figure 15 - ListADSRegistrationRequest Message Schema

The ListADSRegistrationRequest message returns all active registrations associated with a specific logical service source as identified by the @identity attribute when the @registrationRef attribute is omitted. If only a specific registration is to be returned, both the @identity and the @registrationRef attributes shall be included. The following table defines the inclusion relationships.

Table 6 - List ADS Registration Inquiry Granularity Control

@identity	@registrationRef	Description	Access Restrictions Permitted
Included	Omitted	All registrations for matching the supplied @identity value.	Yes
Included	Included	A specific registration matching the @identity and @registrationRef values.	No

The access restrictions permitted column indicates whether the status code equivalent to not authorized may optionally be returned.

7.4.1.1 Semantic Definitions for the ListADSRegistrationRequest Message

@messageId [Required, core:messageIdAttrType]-The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType]-The ADM message interface version. See clause 9.1 for additional information.

@identity [Required, core:identityAttrType]-The origin logical service identifier. A logical service may use this attribute to identify all related registration-established placement services and their service channels for registration listing. See [ITU-T J.380.2] along with Table 6 for supplementary usage details

@system [Optional, core:systemAttrType]-The message origin identifier. See [ITU-T J.380.2] for additional information.

@resend [Optional, core:resendAttrType]-The message is a retransmit of a previous ListADSRegistrationRequest message. The attribute's value is the original message's @messageId value. See [ITU-T J.380.2] for additional information.

@registrationRef [Optional, core:registrationRefAttrType]-A reference to an original ADSRegistrationRequest message element for which the registration information is to be returned. The value shall always be the original ADSRegistrationRequest message's @messageId attribute value which in a retransmitted registration message shall be the @resend attribute's value. See [ITU-T J.380.2] for additional information and refer to Table 6 for supplementary usage details.

@##any [Optional]-Additional attributes from any namespace.

core:InitiatorData [Optional]-The core:InitiatorData element contains implementation specific private data which shall be returned in the ListADSRegistrationResponse message. See [ITU-T J.380.2] for additional information.

core:Ext [Optional]-A container holding additional attributes and elements from any namespace. See [ITU-T J.380.2] for additional information.

The ListADSRegistrationRequest element's value may be empty.

7.4.2 ListADSRegistrationResponse Message Schema

Figure 16 illustrates the ListADSRegistrationResponse element schema describing the active ADS service channel registrations.

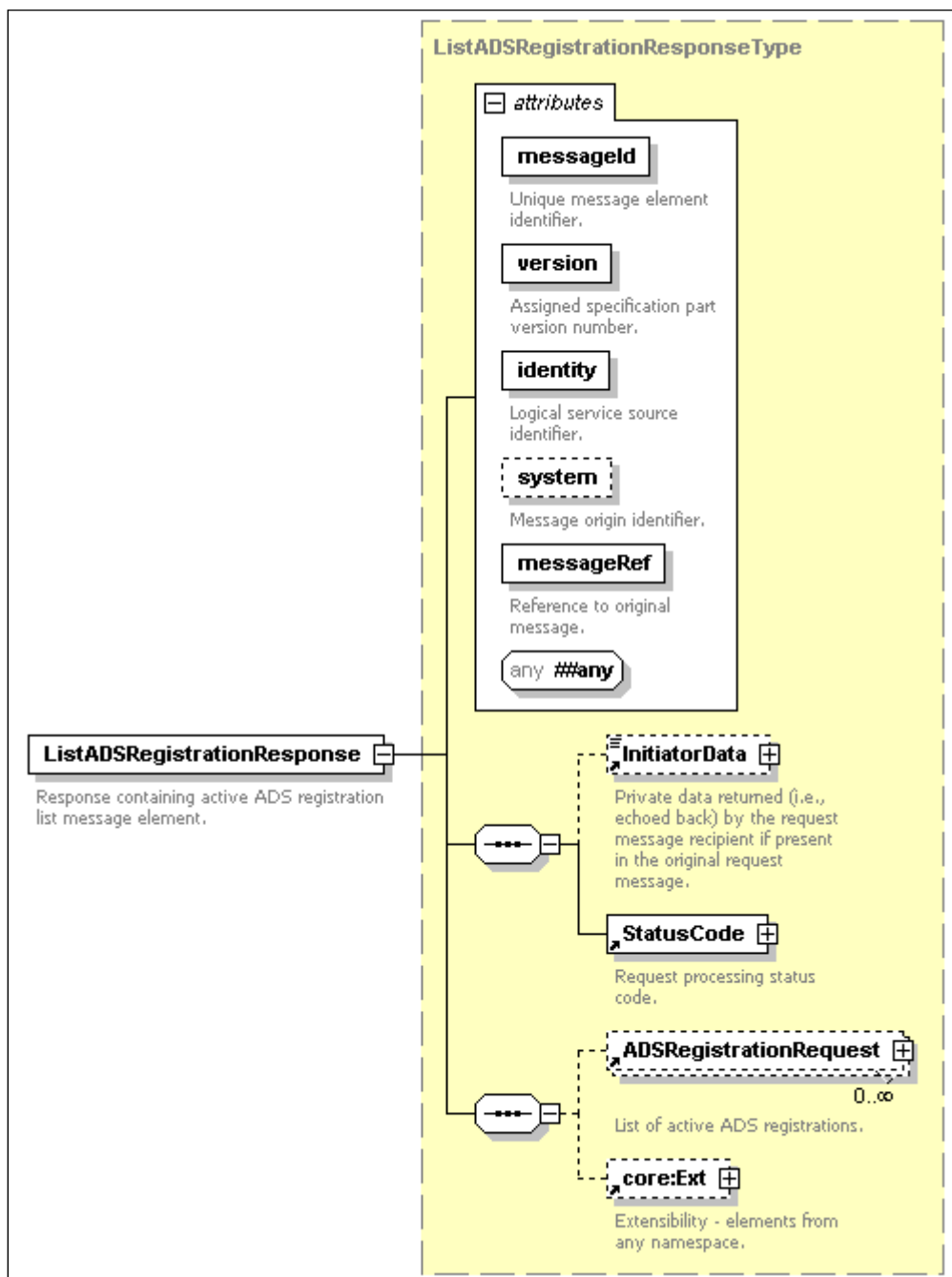


Figure 16 - ListADSRegistrationResponse Message Schema

7.4.2.1 Semantic Definitions for the ListADSRegistrationResponse Message

@messageId [Required, core:messageIdAttrType]-The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType]-The ADM message interface version. See clause 9.1 for additional information.

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@identity [Required, core:identityAttrType]-The origin logical service identifier. See [ITU-T J.380.2] for additional information.

@system [Optional, core:systemAttrType]-The message origin identifier. See [ITU-T J.380.2] for additional information.

@messageRef [Required, messageRefAttrType]-A reference to the paired ListADSRegistrationRequest message element initiating this message exchange. The value shall be the ListADSRegistrationRequest message's @messageId attribute value. See [ITU-T J.380.2] for additional information.

@##any [Optional]-Additional attributes from any namespace.

core:InitiatorData [Optional]-The core:InitiatorData element shall be an exact copy of the ListADSRegistrationRequest message's core:InitiatorData element and shall only be present if found in the paired request message. See [ITU-T J.380.2] for additional information.

core:StatusCode [Required]-An applicable status code specific to the ListADSRegistrationRequest message processing. See [ITU-T J.380.2] and Appendix A for additional information.

ADSRegistrationRequest [Optional]-Zero or more ADSRegistrationRequest message elements. The ADSRegistrationRequest element shall be a recoded copy of the accepted registration message. The message element order does not convey any information (e.g., element order does not reflect registration order). See [ITU-T J.380.2] for compliance requirements and clause 7.3.1 for additional details regarding the ADSRegistrationRequest message schema.

core:Ext [Optional]-A container holding additional attributes and elements from any namespace. See [ITU-T J.380.2] for additional information.

7.4.3 ADS Registration Status Examples

Example 13 and Example 14 illustrates the list all ADS registrations request and response messages respectively when there are no active ADS registrations.

```
<ListADSRegistrationRequest messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A0" version="1.1"
identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5" system="ads"/>
```

Example 13

```
<ListADSRegistrationResponse messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A5" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="29D61093-
6E81-4A5B-A1F6-8544AA7F29A0">
  <core:StatusCode class="0">
    <core:Note>There are currently no ADS registrations.</core:Note>
  </core:StatusCode>
</ListADSRegistrationResponse>
```

Example 14

Example 15 assumes Example 13's list all request message was issued. The returned data includes the ADS Registration clause's Example 9 and Example 7 messages assuming the two messages are the only active registrations. The included element order carries no meaning.

```

<ListADSRegistrationResponse messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A5" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="29D61093-
6E81-4A5B-A1F6-8544AA7F29A0">
  <core:StatusCode class="0"/>
  <ADSRegistrationRequest messageId="35EC24A4-9D72-11DB-96CA-005056C00006" 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="Service3" opportunityType="preRoll">
        <Scope>Local</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="35EC24A4-9D72-11DB-96CA-005056C00000" 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/J.380Msgs</core:Address>
      <core:Address type="HTTP">http://192.168.208.9:80/J.380Msgs</core:Address>
    </core:Callout>
  </ADSRegistrationRequest>
</ListADSRegistrationResponse>

```

Example 15

Example 16 illustrates a list request message for a single registration message. The example requests the ADS Registration clause's Example 7 registration. The response message provided in Example 17 contains the ADS Registration clause's Example 7 ADSRegistrationRequest message.

```

<ListADSRegistrationRequest messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A1" version="1.1"
system="ads" identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5"
registrationRef="35EC24A4-9D72-11DB-96CA-005056C00000"/>

```

Example 16

```
<ListADSRegistrationResponse messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A5" version="1.1"
identity="ADMLogicalService_1170FEF4-C19B-450E-B624-421B23F525F4" system="adm" messageRef="29D61093-
6E81-4A5B-A1F6-8544AA7F29A1">
  <core:StatusCode class="0"/>
  <ADSRegistrationRequest messageId="35EC24A4-9D72-11DB-96CA-005056C00000" 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/J.380Msgs</core:Address>
      <core:Address type="HTTP">http://192.168.208.9:80/J.380Msgs</core:Address>
    </core:Callout>
  </ADSRegistrationRequest>
</ListADSRegistrationResponse>
```

Example 17

Example 18 illustrates a list request message for a specific logical service source using the @identity attribute. This ADM implementation has chosen to return a not authorized response as demonstrated in Example 19. An ADM implementation may accept this request and then return the appropriate data. This implementation specific behavior is outside the scope of this specification.

```
<ListADSRegistrationRequest messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A3" version="1.1"
system="ads" identity="ADSLogicalService_1170FEF4-C19B-450E-B624-421B23F525F5"/>
```

Example 18

```
<ListADSRegistrationResponse messageId="29D61093-6E81-4A5B-A1F6-8544AA7F29A4" version="1.1"
identity="ADMLogicalService" system="adm" messageRef="29D61093-6E81-4A5B-A1F6-8544AA7F29A3">
  <core:StatusCode class="1" detail="13">
    <core:Note>Not authorized.</core:Note>
    <core:Note>The ADM does not allow list functionality using the identity attribute
only.</core:Note>
  </core:StatusCode>
</ListADSRegistrationResponse>
```

Example 19

7.5 Deregistration

An ADS may cancel an active registration (i.e., terminate an active registration-established service channel) using the ADSDeregisterRequest message. The ADM shall acknowledge the request by sending an ADSDeregisterResponse message.

If an ADM terminates a registration for any reason other than an ADSDeregisterRequest message, it should send an ADSDeregistrationNotification message indicating the end of the registration-established service channel. The ADS shall confirm receipt of this notification message by issuing an ADSDeregistrationAcknowledgement message.

A peer logical service shall not initiate a deregistration sequence for the same registration-established service channel after receiving a deregistration (i.e., for the same registration-established service channel, the ADM shall not send an ADSDeregistrationNotification message after the receipt of an ADSDeregisterRequest nor shall the ADS send a ADSDeregisterRequest message after receiving a ADSDeregistrationNotification message).

NOTE - This restriction does not prevent a possible simultaneous deregistration for the same registration-established service channel.

Figure 17 illustrates this message exchange followed by the schema descriptions.