

Metadata Specifications

ADI 2.0 Specification Asset Inventory Messages

MD-SP-ADI2.0-AIM-I02-060505

ISSUED

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1 SCOPE

1.1 Introduction and Overview

The Asset Distribution Interface documents are the means by which assets (content as well as metadata describing the content or offer) are transported from a provider to an Asset Management System, a logical entity. In addition, it provides a basic degree of management through ADI mechanisms of the assets and previously distributed assets.

- The Asset Distribution Interface (ADI) Asset Inventory Messages document defines the following:
 - Messages that provide notification of intent to distribute content.
 - Messages that provide notification messages of assets beyond immediate validation at time of ingest.
- The term "ADI 2.0" is used to include the common asset structure, asset inventory messages, and all the application fields in the assets.
- The relationship between the ADI 2.0 Asset structure and the ADI 2.0 Asset Inventory Messages is that the common asset structure acts as a medium to manage the delivery of the assets of each application and asset inventory messages that could provide request/response or status reporting on those delivered or intended-to-deliver assets or groups of assets.

1.2 Purpose of document

This document specifies the XML Document format for status/inventory messaging in a polled or triggered method pertaining to assets or group of assets delivered or intending to be delivered through an ADI 2.0 interface.

This document does not describe XML Document format of asset delivery, application specific information, content characteristics, or business rules surrounding delivery.

1.3 Organization of document

This document first describes the NIDC (Notification of Intent to Deliver Content) messaging document. The document then describes the PNM (Provider Notification Message) messaging document.

1.4 Requirements

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

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

2 REFERENCES

2.1 Normative References

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

- [ADI2.0-AS] CableLabs Asset Distribution Interface Version 2.0 Specification Asset Structure, MD-SP-ADI2.0-AS-I02-060505, May 5, 2006, Cable Television Laboratories, Inc.
- [XML] W3C REC: eXtensible Markup Language (XML) 1.1, February 4, 2004

2.2 Informative References

This specification uses the following informative references.

- [VOD 1.1] CableLabs Video-on-Demand Content Specification Version 1.1, MD-SP-VOD-CONTENT1.1-I04-060505, May 5, 2006, Cable Television Laboratories, Inc.
- [VOD-CEP] CableLabs Video-on-Demand Content Encoding Profiles Specification, MD-SP-VOD-CEP-I01-040107, January 7, 2004, Cable Television Laboratories, Inc.
- [MSG Schema] CableLabs ADI2.0 Example MSG Schema Definition;
<http://www.cablelabs.com/projects/metadata/specifications/specifications20.html>
- [Core Schema] CableLabs ADI2.0 Example ADI Core Schema Definition;
<http://www.cablelabs.com/projects/metadata/specifications/specifications20.html>

2.3 Reference Acquisition

CableLabs Specifications:

- Cable Television Laboratories, Inc. (CableLabs), 858 Coal Creek Circle, Louisville, CO 80027, Phone 303-661-9100; Internet: <http://www.cablelabs.com/projects/metadata>

3 TERMS AND DEFINITIONS

This specification uses the following terms:

AMS	Asset Management System. A role played by any logical entity functioning as the receiving point of a delivery.
Delivery	The transmission of data or content to a recipient.
Hexadecimal (32)	32 Hexadecimal characters.
Message Document	An XML document containing one or more ADI messages.
Numeric (64 bits)	Extended numeric format to allow for very large numbers whose value range can be represented by 64 bits.
Provider	A Party responsible for allocating asset identifiers.
Sender	A Party transmitting content and metadata, which may or may not be the same as a Provider.
UNICODE	The international character set for languages requiring characters beyond the scope of US-ASCII (U+000-U+007F) encoded in UTF-8, 16, or 32. For this document Unicode is encoded in UTF-8 only.
UTF-8	(Unicode Transformation Format-8) is an octet (8-bit) lossless encoding of Unicode characters. UTF-8 is interpreted as a sequence of bytes (up to 4), where the number of octets depends on the integer value assigned to the Unicode character. The UTF-8 encoding is defined in ISO 10646-1:2000 Annex D or RFC 3629.
XML Date Time	The date and time representation specified in ISO 8601

4 ABBREVIATIONS AND ACRONYMS

This specification uses the following abbreviations:

Ack	Acknowledgement
ADI	Asset Distribution Interface
ADS	Asset Distribution System
AMS	Asset Management System
CA	Content Asset
FTP	File Transfer Protocol
HTTP	HyperText Transfer Protocol
NIDC	Notification of Intent to Delivery Content
PNM	Provider Notification Message
URL	Uniform Resource Locator
UTF	Unicode Transformational Protocol
XML	eXtensible Markup Language

5 ADI 2.0 ASSET INVENTORY MESSAGES

There are several kinds of XML documents defined in this specification which follow the common ADI 2.0 Message Document structure unless otherwise noted. These respective messages are named according to the respective top-level document root elements as described in each section. XML documents **MUST** be encoded in UTF-8 as per the W3C XML 1.1 specification [XML]. If a document encoding is not specified, all XML documents are assumed to be UTF-8.

5.1 Means of Transmission

XML documents and content files **MAY** be transmitted by any means mutually agreed upon. These could include FTP and email as well as satellite transmission

5.2 Notification of Intent to Deliver Content (NIDC)

The intent is to provide the recipient with some context within which operators can alert themselves that an expected delivery has not happened or that an expected delivery may have issues before it can become available for use (e.g., not enough space on video server). The expectation **MUST NOT** preclude the delivery of assets that were not announced. Once an expectation has been set it can either be removed via CancelAssetNotification, or reset by sending an AssetNotification with new expectations. Only Content Assets are subject to advance notification.

5.2.1 Notification Mechanism

It will be up to the sending system to determine the time of each NIDC message as well as the frequency of each message.

5.2.2 NIDC Message Elements

The NIDC Document will be in an ADI 2.0 Message Document format with the following additional notes:

NIDC is the **REQUIRED** document root element.

The payload of the NIDC Document **MUST** include, at a minimum, the following Required fields as defined in Table 1:

Table 1 - NIDC Notification Element Fields

Element	Attribute	Definition	Values	Required
AssetNotification CancelAssetNotification		Notification of intent to deliver assets or negation of intent	ASCII, enumerated as operation Element names	REQUIRED
	startDateTime	Time when the delivery window starts.	XML Date Time	REQUIRED
	endDateTime	Time when the delivery window ends.	XML Date Time	REQUIRED
	providerID	<i>common</i>	<i>common</i>	REQUIRED
	assetID	<i>common</i>	<i>common</i>	REQUIRED

Element	Attribute	Definition	Values	Required
	estSize	Estimated size of physical content in bytes.	Numeric (64 bits)	OPTIONAL
	availDate	This should be the startDateTime of the ContentAsset's AssetLifetime	XML Date Time	OPTIONAL

Since NIDC can possibly be sent before encoding of content has occurred, an estSize can be calculated by provider. The estSize and availDate are used to indicate approximately the size of the indicated content in bytes and the approximate timeframe for content usage respectively. This information may be utilized to anticipate resource management capacity planning at the recipient's system.

5.2.3 NIDC Example

The delivering entity (VOD Distributor) has decided to submit an NIDC document every other day at 6am eastern time. The VOD Distributor has three titles to include:

Title	ProviderID	Element AssetName	Element AssetID	FileName
Dawn of Dead 1st 10	Provider.com	Dawn_of_Dead_1st_10_56559_Movie	TVNX5655900000000002	TVNX5655900000000000_movie.mpg
Dawn of Dead 1st 10	Provider.com	Dawn_of_Dead_1st_10_56559_Poster	TVNX5655900000000004	TVNX5655900000000000_photo.bmp
Van Helsing: Inside	Provider.com	VanHelsing_Inside_56868_Movie	TVNX5686800000000002	TVNX5686800000000000_movie.mpg
Van Helsing: Inside	Provider.com	VanHelsing_Inside_56868_Poster	TVNX5686800000000004	TVNX5686800000000000_photo.bmp
Jay Jay: Opposites	Provider.com	Jay_Jay_Opposites_56755_Movie	TVNX5675500000000002	TVNX5675500000000000_movie.mpg
Jay Jay: Opposites	Provider.com	Jay_Jay_Opposites_56755_Poster	TVNX5675500000000004	TVNX5675500000000000_photo.bmp

All three titles are intended to be delivered between to date/time of 12 pm est, 12/10/04 and 11:59 am est, 12/12/04. Therefore, the NIDC document payload would look like this:

```

...
<AssetNotification>

  <startDateTime>2004-12-10T17:00-05:00</startDateTime>
  <endDateTime>2004-12-12T16:59-05:00</endDateTime>

  <Assets>
    <Asset>
      <ProviderID>provider.com</ProviderID>
      <AssetID>TVNX5655900000000002</AssetID>
      <estSize>276337628</estSize>
      <availDate>2004-12-25</availDate>
    </Asset>
    <Asset>
      <ProviderID>provider.com</ProviderID>
      <AssetID>TVNX5655900000000004</AssetID>
      <estSize>230456</estSize>
      <availDate>2004-12-25</availDate>
    </Asset>
    <Asset>
      <ProviderID>provider.com</ProviderID>

```

```

    <AssetID>TVNX5686800000000002</AssetID>
    <availDate>2004-12-22</availDate>
  </Asset>
  <Asset>
    <ProviderID>provider.com</ProviderID>
    <AssetID>TVNX5686800000000004</AssetID>
    <availDate>2004-12-22</availDate>
  </Asset>
  <Asset>
    <ProviderID>provider.com</ProviderID>
    <AssetID> TVNX5675500000000002</AssetID>
  </Asset>
  <Asset>
    <ProviderID>provider.com</ProviderID>
    <AssetID> TVNX5675500000000004</AssetID>
  </Asset>
</Assets>
</AssetNotification>
...

```

Before the NIDC document is to be issued, the VOD Distributor has realized one thing:

1. Jay Jay: Opposites has been cancelled and will not be delivered at all in the near future.

In addition, the VOD Distributor has one title to include:

Title	ProviderID	Element AssetName	Element AssetID	FileName
Garfield Music Video	Provider.com	Garfield_MusicVideo_56581_Movie	TVNX5658100000000002	TVNX5658100000000000_movie.mpg
Garfield Music Video	Provider.com	Garfield_MusicVideo_56581_Poster	TVNX5658100000000004	TVNX5658100000000000_photo.bmp

This title is intended to be delivered between to date/time of 12 pm est, 12/12/04 and 11:59 am est, 12/14/04. Therefore, the NIDC document payload would look like this:

```

...
<AssetNotification>

  <startDateTime>2004-12-12T17:00-05:00</startDateTime>
  <endDateTime>2004-12-14T16:59-05:00</endDateTime>

  <Assets>
    <Asset>
      <ProviderID>provider.com</ProviderID>
      <AssetID>TVNX5658100000000002</AssetID>
    </Asset>
    <Asset>
      <ProviderID>provider.com</ProviderID>
      <AssetID>TVNX5658100000000004</AssetID>
    </Asset>
  </Assets>
</AssetNotification>

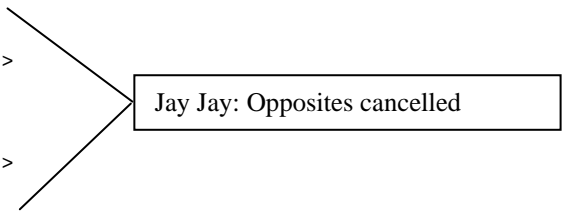
```

```
<CancelAssetNotification>
```

```
  <startDateTime>2004-12-10T17:00-05:00</startDateTime>
  <endDateTime>2004-12-12T16:59-05:00</endDateTime>
```

```
  <Assets>
    <Asset>
      <ProviderID>provider.com</ProviderID>
      <AssetID> TVNX5675500000000002</AssetID>
    </Asset>
    <Asset>
      <ProviderID>provider.com</ProviderID>
      <AssetID> TVNX5675500000000004</AssetID>
    </Asset>
  </Assets>
```

```
</CancelAssetNotification>
```



5.3 Provider Notification (PN)

This part of ADI 2.0 defines notification to a predefined URL address for asset transition events beyond the ADS. An event can either be positive, such as when a CA becomes streamable, or negative, such as when an asset fails validation.

The purpose of Provider Notification messaging in ADI 2.0 is to provide a mechanism for Providers to track the state of an asset in the recipient's asset store. When triggered by a predefined event, the AMS will announce the event by sending a Provider Notification message to a pre-determined URL address. Messages **MUST** be instantaneous, and there **MUST** be one asset per message.

5.3.1 Notification Mechanism

The sending of a Provider Notification message is triggered by an event within the region of the AMS. When triggered by a predefined event, the AMS will respond by sending a Provider Notification message to the URL address listed in the CA metadata. The URL address is defined in the assetAckTo attribute of the respective ContentAsset. Initial implementation is for content assets only and **MUST** include notification of the following events:

- **Validated:** The Content Asset metadata has been validated using the following checks:
 - The XML schema is valid
 - The syntax of the metadata is correct
 - The asset is not a duplicate
 - The referenced file exists
- **Streamable:** The Content Asset is in the system and available to be streamed.
- **Purged:** All instances of the file of the Content Asset referenced file have been removed from all servers within the region.
- **Failed:** The asset has been marked as failed by the system at anytime during the asset lifetime including load processing, playback, or deletion.

5.3.2 Provider Notification Message Elements

The Provider Notification Messages Document will be in an ADI 2.0 Message Document format with the following additional notes:

- **PNM** is the **REQUIRED** document root element

- The “sender” attribute is REQUIRED to be the Domain name of the sender, same in format to a providerID, plus the AMS location name that is unique within the sender. The number of characters should fit within the constraints of the sender format.
- The “ackTo” attribute is OMITTED.
- The “relativePriority” attribute is OMITTED.

The payload of the Provider Notification Message Document MUST include, at a minimum, the Required fields as defined in Table 2:

Table 2 - Provider Notification Message Elements

Element	Attribute	Definition	Values	Required
AssetState				REQUIRED
	providerID	As passed in the Content Asset metadata	<i>common</i>	REQUIRED
	assetID	As passed in the Content Asset metadata	<i>common</i>	REQUIRED
	notificationCode	See Provider Notification Code table	numeric	REQUIRED

5.3.3 Provider Notification Codes

Table 3 - Provider Notification Codes

Code	Definition
100	Received - The Content Asset metadata has been received and is waiting validation
110	Validated - The Content Asset metadata has been validated and all Content references are valid
120	Streamable - The Content Asset is streamable
130	Purged - All physical copies of the asset has been removed from the system
200	Asset with ProviderID=[...] plus AssetID=[...] no longer exists
201	Asset with ProviderID=[...] plus AssetID=[...] is a duplicate
202	The asset has failed the ingestion process
203	The asset has failed the validation process
204	The asset has failed the propagation process
205	The asset has failed the purge process

5.3.4 Provider Notification Response Message

This interface MUST use a standard synchronous transport layer response. Responding messages to a PN message at a minimum SHOULD support HTTP protocols.

5.3.5 Desired Implementation

It is expected that the Provider Notification messages be provided by the AMS and that asset states from the downstream system be rolled-up into the AMS such that each state reported by the AMS represents the “last of” any downstream state.

Appendix I Acknowledgements (Informative)

We wish to heartily thank the content, vendor, and cable participants contributing directly to this document.

Appendix II Revision History

The following ECN was incorporated into MD-SP-ADI2.0-AIM-I02-060505:

ECN	Author	ECN Approval Date	Problem Description
ADI2.0-AIM-N-06.0029-2	Steve Young	4/28/06	Omnibus