

CableLabs®
Subscription and Fulfillment Interfaces

**Interactive Application Fulfillment Summary Interface
Specification**

CL-SP-SaFI-IAFv1.1-100702

ISSUED

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Key to Document Status Codes:

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

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1 SCOPE

1.1 Introduction and Purpose

This document defines requirements for an Interactive Application Fulfillment Summary Interface (IAF). The IAF interface provides a means for messaging generated by an interactive application to be exposed to an external entity. While individual messages may flow over this interface, more typically a summary of messages is transmitted, such as the aggregated results of a voting application.

1.2 Requirements

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

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

2 REFERENCES

2.1 Normative References

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

- [IAF WSDL] CL-SaFI-IAFv1.1.0.wsdl, July 2, 2010 Cable Television Laboratories, Inc.,
<http://www.cablelabs.com/namespaces/safi/wsdl/iaf/v1.1/CL-SaFI-IAF-1.1.0.wsdl>
- [IAF XSD] CL-SaFI-IAFv1.1.0.xsd, July 2, 2010, Cable Television Laboratories, Inc.,
<http://www.cablelabs.com/namespaces/safi/xsd/iaf/v1.1/CL-SaFI-IAF-1.1.0.xsd>
- [SaFI COM XSD] CL-SaFI-COMv1.1.0.xsd, July 2, 2010, Cable Television Laboratories, Inc.,
<http://www.cablelabs.com/namespaces/safi/xsd/com/v1.1/CL-SaFI-COM-1.1.0.xsd>

2.2 Informative References

This document uses the following informative references.

- [CIP] Campaign Information Package Specification, CL-SP-SaFI-CIPv1.1-100702, July 2, 2010, Cable Television Laboratories, Inc.
- [IAF EXMPL] CL-SaFI-IAFv1.1.0-example1.xml, July 2, 2010, Cable Television Laboratories, Inc.
- [IAF HTML] CL-SaFI-IAFv1.1.0.html, July 2, 2010, Cable Television Laboratories, Inc.
- [IAM] Interactive Application Messaging Specification, CL-SP-SaFI-IAMv1.1-100702, July 2, 2010, Cable Television Laboratories, Inc.
- [SMS] Service Measurement Summary Interface Specification, CL-SP-SaFI-SMSv1.1-100702, July 2, 2010, Cable Television Laboratories, Inc.

2.3 Reference Acquisition

- Cable Television Laboratories, Inc., 858 Coal Creek Circle, Louisville, CO 80027; Phone +1-303-661-9100; Fax +1-303-661-9199; <http://www.cablelabs.com/>
- Internet Engineering Task Force (IETF) Secretariat, 48377 Fremont Blvd., Suite 117, Fremont, California 94538, USA, Phone: +1-510-492-4080, Fax: +1-510-492-4001.
- W3C, <http://www.w3.org/>

3 TERMS AND DEFINITIONS

This specification uses the following terms:

| | |
|---|--|
| Affiliate | An operational entity that performs SaFI operations with one or more MSOs. |
| Campaign | Provides a set of delivery plans and/or placement directions for one or more MSOs, specific systems within an MSO's footprint, as well as a set of Programmed Events within a system. A Campaign is negotiated, purchased, and managed as a single entity via campaign planning and management tools that are not in scope for the MSO interfaces. Within a Programmed Event, one or more products from predefined product families can be defined for placement by MSO delivery and/or processing. |
| Enhanced Program Sequence ID (EPSID) | Identifies a unique Enhanced Package or Enhanced Package Element within a specific Programmed Event. |
| GeoCode | Geographic Code: the geographic region which this service measurement message represents. The value in this element may indicate a ZIP Code, MSO syscode, or other encoded regional identifier. |
| MSO Order | The part of a Campaign Information Package (CIP) that falls within a specific MSO's advertising footprint. |
| Package | Provides identifiers and parameters for signaling and messaging of placement directives associated directly with the package, and also a container for one or more Package Elements. The Package creates an implicit relationship between the elements regardless of the specific content they are delivered in or when they are actually delivered to the subscriber. For example, a Package might be the complete set of enhanced elements a subscriber would encounter in a single RFI product, or a single Vote/Poll product. This is typically, but not necessarily, expressed in a single ETV or OCAP application. A Package does not necessarily need to include any interactive elements or on-display presentations at all. |
| Package Element | Represents a single element of an enhanced experience that can be delivered to a subscriber. It provides identifiers and parameters for any signaling and messaging of placement directives associated directly with the element. |
| Package Type | An identifier that selects a message set used by an application in some specific enhancement context. The EpType, qualified by the application (orgId, appID, version), identifies an external set of messages, which is generally further divided by EventID. The external form of the message-set definition is not within the scope of this document. |
| Programmed Event | A Programmed Event (such as a program, network spot, VOD asset, time-shifted asset, guide page, or an advertisement) represents a constrained subscriber experience that includes an enhanced experience. Each Programmed Event has a Programmed Event Identifier (PEID), which uniquely specifies the context of application lifecycle events as well as qualifies any underlying measurement or fulfillment messages generated by the enhancements delivered during the lifetime of the Programmed Event. A Programmed Event may include one or more Packages. |
| Schematron | A rule-based validation language for making assertions about the presence or absence of specific patterns in XML trees. |
| Service Measurement | Information about the reach and usage of a campaign. |
| Syscode | A four-character, predefined code that represents a specific zone-level cable plant. |

System Order

The part of an MSO Order that falls within a single zone-specific syscode. In simple cases, all the Programmed Events, Packages, and Package Elements of the Campaign will appear within each System Order; however, this may not be true due to site capabilities, or when targeting is applied.

4 ABBREVIATIONS AND ACRONYMS

This specification uses the following abbreviations:

| | |
|---------------|--|
| AMB | Application Message Block |
| ARB | Application Report Block |
| CAAS | Common Advanced Advertising Systems |
| CIP | Campaign Information Package |
| EPSID | Enhanced Program Sequence ID: an integer identifying a unique Package or Package Element within a specific Programmed Event |
| EpType | Enhancement Package Type |
| ETV | Enhanced Television |
| HTTP | Hypertext Transfer Protocol |
| HTTPS | Hypertext Transfer Protocol over Secure Sockets Layer (SSL) |
| PEID | Programmed Event ID: a globally-unique identifier for a Programmed Event |
| RFI | Request For Information |
| SaFI | Stewardship and Fulfillment Interfaces: a collection of interfaces defined by CableLabs to support advanced services on multiple cable systems |
| SOAP | Simple Object Access Protocol; as of SOAP 1.2, this no longer represents an acronym |
| STB | Set-Top Box |
| WSDL | Web Services Description Protocol |

5 OVERVIEW

5.1 General Context

The Interactive Application Fulfillment (IAF) platform provides an interface between MSO systems and partners. Its purpose is to transmit the results of viewer interactions with specific application functions, such as the results of vote, poll, and RFI functions.

While the interface supports transmission of individual responses, the expected usage is that aggregated responses will be transmitted. For instance, the results of a particular vote may be aggregated across some portions of an MSO's footprint, or the entire footprint, and transmitted as one payload over the interface. Therefore, this specification is called a *summary* interface.

5.1.1 Reference Architecture

The following diagram illustrates a systems view of the IAF platform. This diagram represents an advertising-centric view of the platform; however, the Interactive Application Fulfillment platform is generalized such that applications unrelated to advertising can use the same platform.

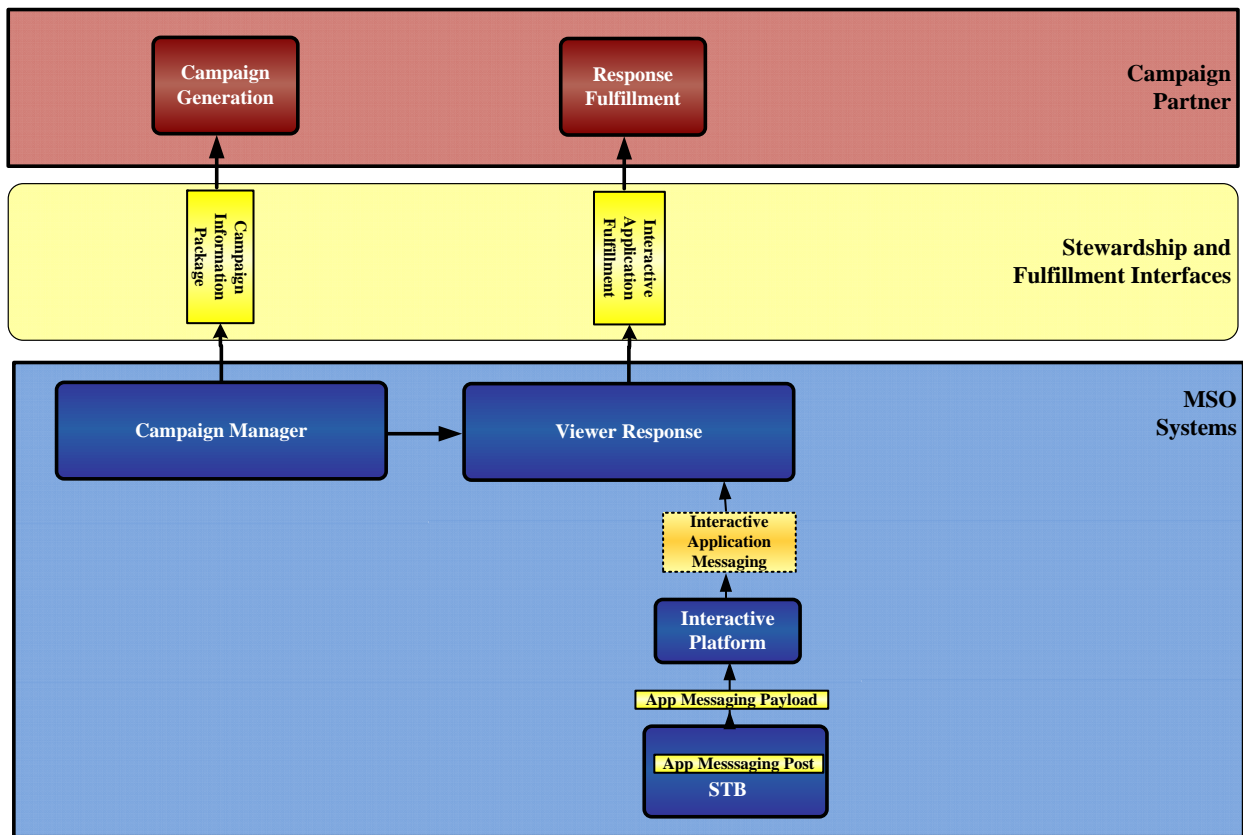


Figure 5-1 - IAF Platform Context

5.1.2 Interface Description

The Interactive Application Messaging interface defines how an application instantiates a message that includes a vote/poll or RFI response and application instrumentation messages that support Service Metrics. This interface is defined in [IAM]. The application messaging post and application messaging payload are also illustrated here.

The Campaign Information Package Interface [CIP] provides information to MSOs for resolution and routing of Interactive Application Fulfillment data.

6 INTERACTIVE APPLICATION FULFILLMENT INTERFACE REQUIREMENTS

This section defines requirements for the Interactive Application Fulfillment interface.

6.1 Data Model

An XML schema is defined in Section 7 to fully describe the data that is transmitted by an MSO and delivered to the CAAS.

XML files conformant to this data model SHALL be generated by MSO systems and properly received by the CAAS.

6.1.1 Address

The Address element contains the subscriber's billing or mailing address, which consists of the following data units:

- Street1 is the primary street address, including the building number and street name.
- Street2 is the unit number, if applicable.
- City is the city name.
- State is the two-letter state code.
- Zip is the subscriber's 5- or 9-digit ZIP Code.

6.1.2 AppFulfillment

The AppFulfillment element is the root element of an Interactive Application Fulfillment Summary Message, and contains the following data units:

- ApplicationFulfillmentHeaderGroup contains message header information common to all contained message payloads. See 6.1.3.
- Event contains one or more Events in the form of VoteType (see 6.1.9) or RFIType (see 6.1.8).
- ReportData contains one or more ReportData elements (see [SaFI COM XSD]) composed of name-value attributes. ReportData may be used to report such things as aggregate counts of entries included in the Events under the Event element, aggregate counts of events that could not be successfully processed, or other name-value attributes to communicate information relevant to the application.
- Events is a container for reporting one or more Event elements for a given geographic area.

6.1.3 ApplicationFulfillmentHeaderGroup

Contains header information for an IAF message, and contains the following data units:

- MinSchemaVersion is the lowest compatible schema version that will validate this message.
- Timestamp provides a reference time for the message. The Timestamp element provides time and optionally an offset and interval.
- DerivativeID is a unique identifier that MAY be included to uniquely identify an interactive application fulfillment document.

6.1.4 Event

An abstract type that is extended in order to represent specific event types being reported. It currently has implementations for RFIType and VoteType, and contains the following data unit:

- Package ID Group is used as a container for the PEID, EPSID and EventID identifiers.

- ReportData contains one or more ReportData elements (see [SaFI COM XSD]) composed of name-value attributes. ReportData may be used to report such things as counts of entries included in this Event elements, counts of events that could not be successfully processed, or other name-value attributes to communicate information relevant to the application.

6.1.5 Events

The container element for one or more Event elements being passed in the Interactive Application Fulfillment message.

Events contains the following data units:

- GeoCode specifies the geographic location the Event elements are associated with.
- ReportData contains one or more ReportData elements (see [SaFI COM XSD]) composed of name-value attributes. ReportData may be used to report such things as counts of entries included in the Event elements, counts of events that could not be successfully processed, or other name-value attributes to communicate information relevant to the application.
- Event contains one or more Event elements in the form of VoteType (see 6.1.9) or RFIType (see 6.1.8).

6.1.6 GeographicCode

The GeographicCode element provides a wrapper around the specific type of geographic partitioning of the data being reported. It can take one of two forms, ZIP Code or syscode. Every message requires one of the GeographicCode forms.

GeographicCode contains the following data units:

- Zipcode is the ZIP Code for all Events being reported in an IAM message.
- Syscode is the syscode for all Events being reported in the IAM message.

6.1.7 PackageIDGroup

Contains the three identifiers used to map messages back to Programs and Programmed Events:

- PEID is the Programmed Event ID.
- EPSID is the Enhanced Program Sequence ID, a unique value within the scope of an associated PEID.
- EventID is a unique value within the scope of an associated EPSID. An EventID is allocated by an application to discrete entities within the application. For instance, this may indicate a User Interface overlay, or may indicate a lifecycle change within an application, such as a pause as the result of a channel change.

6.1.8 RFIType

The Request For Information type is an implementation of the abstract Event type. It carries information about subscribers who have requested additional information through an Event, and contains the following data units:

- SubscriberInfo contains information about a specific subscriber, including name and contact information.
- Parameters may be used by applications to provide application-specific data. Examples could include model or pricing information for the related RFI.
- PackageIDGroup inherits PackageIDGroup from the Event type. See 6.1.5.

6.1.9 VoteType

An extension of the abstract Event type. It carries aggregated vote counts through one or more Result elements. The first Result element maps to the first response, the second Result element maps to the second response, and so on through the last response.

VoteType contains the following data unit:

- Result is used to report aggregate responses to an Event. Result repeats any number of times to represent each potential response for an Event.

6.1.10 SubscriberContactGroup

Contains the preferred contact information for each subscriber who has responded positively to an RFI, consisting of the following data units:

- Address is the subscriber's full address including street, city and ZIP Code.
- PhoneNumber is the subscriber's numeric seven-digit telephone number.
- EmailAddress is the subscriber's email address.

6.1.11 SubscriberInfo

A wrapper containing the following informational elements about a specific subscriber and/or household:

- FirstName is the subscriber's first name.
- Last Name is the subscriber's last name.
- SubscriberContactGroup contains subscriber contact information containing at least one of address, phone number, or email address.
- Parameters provides subscriber-specific data. This data can be incremental to Parameter data provided at a higher level or standalone data specific to the subscriber.

7 INTERACTIVE APPLICATION FULFILLMENT DATA MODEL SCHEMA (NORMATIVE)

The formal data definition is found in [IAF XSD].

8 INTERACTIVE APPLICATION FULFILLMENT WEB SERVICES DESCRIPTION LANGUAGE (NORMATIVE)

The formal data definition is found in [IAF WSDL].

Appendix I XML Example (Informative)

Examples of SMSI data expressions can be found in [IAF EXMPL].

Appendix II HTML Representation (Informative)

A browse-able, graphical representation of the IAF data model can be found in [IAF HTML].

Appendix III Revision History

The following ECNs are incorporated into CL-SP-SaFI-IAFv1.1-100702:

| EC Identifier | Date Accepted | Title of EC |
|----------------------|----------------------|---|
| SaFI-IAF-N-10.0063-1 | 7/2/10 | Add ReportData to ApplicationFulfillmentHeaderGroup |
| SaFI-IAF-N-10.0064-1 | 7/2/10 | App Fulfillment header Grp - remove GeoCode |
| SaFI-IAF-N-10.0065-1 | 7/2/10 | Add parameters to SubscriberInfoType |
| SaFI-IAF-N-10.0066-1 | 7/2/10 | Add a DerivativeId type to ApplicationFulfillmentHeaderGroup |
| SaFI-IAF-N-10.0076-1 | 7/2/10 | Mandatory updates to IAF for version change |
| SaFI-IAF-N-10.0080-1 | 7/2/10 | Editorial and technical updates for consistency across SaFI specs |
