

# **OpenCable Guidelines**

## **Stream Generator Overview**

**OC-GL-SGO-V01-070105**

**RELEASED**

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# 1 INTRODUCTION

## 1.1 Purpose

This document presents an informative overview of the various interfaces that fall under the general category of Stream Generator Interfaces, and are defined in separate specifications. The goal of the specifications that have been developed so far, and of those yet to be developed, is to provide the means by which the details of implementation of a particular Stream Generator are abstracted to the extent that an application provider does not need to know which implementation is being used.

## 1.2 References

This Guidelines document uses the following informative references.

- [OBCIG] Object Carousel Interoperability Format, July 2002, Digital TV Group,  
[http://www.dtg.org.uk/publications/books/obcig\\_format\\_1.pdf](http://www.dtg.org.uk/publications/books/obcig_format_1.pdf)
  
- [ADI] ADI 2.0 Specification Asset Inventory Messages, MD-SP-ADI2.0-AIM-I02-060505, May 5, 2006, Cable Television Laboratories, Inc.
  
- [OHI] OCAP Headend Common Download and Unbound Application Signaling Interface Specification, OC-SP-OHI-I01-061208, December 8, 2006, Cable Television Laboratories, Inc.
  
- [OADS] OCAP Application Description Specification, OC-SP-OADS-D01-060814, August 14, 2006, Cable Television Laboratories, Inc.

### 1.3 Terms and Definitions

This document uses the following terms and definitions.

<b>OCAP Stream Generator</b>	Hardware and software that generates Object Carousels and associated Application Signaling for the delivery of OCAP applications.
<b>Playout System</b>	See Stream Generator.
<b>Application Description Interface</b>	A means of transferring a description of an OCAP application between entities.
<b>Deployment Description Interface</b>	A means of transferring a description of a specific deployment of an OCAP or ETV application between entities.
<b>Stream Description Interface</b>	A means of transferring a description of the structure of an OCAP Transport Stream between entities.
<b>Service Info Query Interface</b>	A means of transferring a description of Headend service information between entities.
<b>Streaming Interface</b>	A means of transferring data through a Transport Stream or other OCAP-defined information flow.
<b>XAIT Transfer Interface</b>	A means of transferring XAIT information between entities.
<b>CVT Transfer Interface</b>	A means of transferring Common Download CVT information between entities.

## 2 OCAP STREAM GENERATOR INTERFACE DESCRIPTION

### 2.1 System Context

The system context of the Stream Generator, showing the entities in their environment and the interfaces between them, is shown in the following figure. The entities and interfaces shown in the context diagram are discussed in the sections following the diagram.

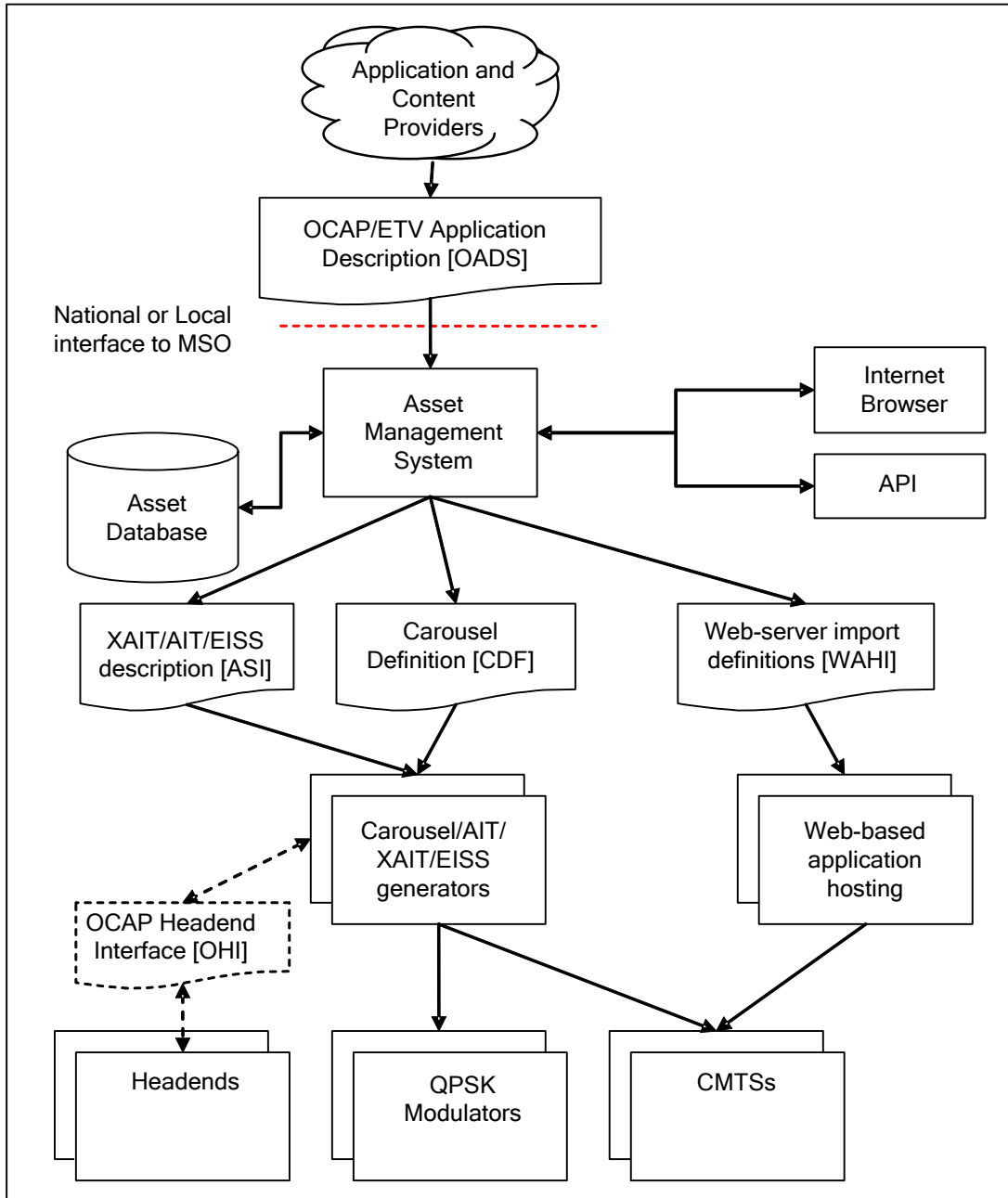


Figure 1 - OCAP Stream Generator System Context

## 2.2 Entities

### 2.2.1 Asset Management system

Asset Management system receives application assets from various application providers; stores these assets in an Asset Database; provides an interface for authorized operators to configure various distribution parameters, such as the set of applications provisioned for a network and how to deliver each application to STBs on that network; interfaces with different stream generators or web hosting servers to distribute the application; and interfaces with various XAIT generators to specify XAIT parameters.

### 2.2.2 OCAP Stream Generator (XAIT/AIT/EISS/Carousel generator)

The OCAP Stream Generator is equipment that generates Object Carousels and associated Application Signaling for the delivery of OCAP applications. It may be a single physical piece of equipment, or multiple pieces, providing varying degrees of redundancy as required.

OCAP Stream Generators from different manufacturers are likely to embody different approaches to stream generation and different modes of operation, with the attendant strengths and weaknesses in each case. The interfaces to the OCAP Stream Generators must be flexible enough to allow operators to derive maximum benefit from the selection and operation of their particular OCAP Stream Generator.

### 2.2.3 Application Providers

Application Providers create the OCAP applications that will be deployed by OCAP Stream Generators.

For bound applications, it is anticipated that Application Providers will work in close collaboration with Content Providers during development.

### 2.2.4 Headend

The headend is equipment that generates a complete cable service for subscribers, taking input from many sources, including OCAP Stream Generators.

## 2.3 Interfaces

### 2.3.1 OCAP/ETV Application Description Specification [OADS]

This specification [OADS] defines a standard format for OCAP 1.0 application distribution between application providers and MSO asset management systems. The OCAP Application Description Specification covers the format for defining the file system content, application signaling, signing and delivery configuration of OCAP applications.

This specification does not mandate the mechanisms used to distribute the application, thus allowing the application to be transferred between organizations and systems by physical media transfer, e-mail attachment, FTP, or real-time transaction as appropriate.

Support for a standard format by application producers and asset management systems will result in simpler, more cost-effective and more reliable distribution of applications between organizations and systems, and will facilitate transfer of OCAP applications between systems from different vendors.

### 2.3.2 Carousel Definition Format [CDF]

This specification provides an interface for an asset management system to specify carousel parameters and carousel resources to a stream generator

### **2.3.3 Application Signaling Interface [ASI]**

This specification provides an interface for an asset management system to specify application signaling parameters to a stream generator.

### **2.3.4 OCAP Headend Controller Interface [OHI]**

This specification [OHI] provides a simple, open interface between a generic Stream Generator (SG) and An OCAP headend controller. Specifically, this specification defines a common interface (OHI) to the headend that enables an SG to deliver and control transmission of OpenCable Common Download and OCAP Application Download tables (CVT and XAIT, respectively) on the headend cable system via the headend controller.

The primary goal of this interface specification is to provide SG and headend controller developers with a detailed description of the OHI in order to build their client and server (respectively) side interfaces. MSOs may then employ any SG and headend controller adhering to this interface and be assured that they will be capable of interfacing with one another using the interface features described herein.

### **3 ADDITIONAL INTERFACE SPECIFICATIONS**

This section lists interface specifications that are planned but not yet developed.

#### **3.1 Deployment Description Interface [DDI]**

The Deployment Description Interface contains a description of how an OCAP application is deployed to support a particular event. An enhanced TV application may require synchronized delivery of data updates and stream events. This interface would be used by Content Provider and for local operation.

#### **3.2 Web-based application hosting interface [WAHI]**

This interface is specific to the web hosting system. Standardization of this interface is beyond the scope of this program.

## 4 INTERFACE IMPLEMENTATION

### 4.1 Transport Mechanisms

Some of the interfaces described here (Streaming interfaces, XAIT and CVT Transfer interfaces) provide closely coupled, real-time information transfer. In these interfaces, the transport mechanisms are explicitly specified (ASI, Ethernet, HTTP) as part of the interface.

The other interfaces (Application Description, Deployment Description, Stream Description, Service Info Query) are not necessarily closely coupled or real time in nature. In these cases, the transport mechanism may be left unspecified, to allow organizations to develop transport mechanisms that meet their own requirements for security, reliability and manageability. Such mechanisms may include delivery by email or removable media and would be tied into the procedures adopted by the organization.

### 4.2 Format

The recommended format for the interfaces is some form of XML. The OCAP Application Description Specification [OADS] uses an XML schema and the Headend Controller Interface [OHI] uses WSDL. Due to the relatively small size of descriptions, the use of binary or compressed XML is not recommended as it compromises readability for relatively little gain.

Ideally the content should be delivered with the XML, rather than via a reference from within the XML to an external data source. This approach protects the contents of interfaces from issues of internet accessibility and change control. One approach to referencing content is to include it alongside the XML in a ZIP archive. Another approach to referencing content is to include it within the XML itself as BASE64 encoded content, but this is not recommended as it compromises the readability of both the XML and the content.

The interface format should also provide for the following:

- extensibility - the interface should allow for future evolution (or intelligent design) whilst remaining compatible with older versions of equipment that support it.
- customizability - the interface should allow for customization to allow additional vendor-specific information to be carried in a manner that does not compromise its general applicability.
- defaults - the interface should allow the OCAP Stream Generators to select defaults for parameters where the values are not known when the data is created or the values are supplied locally.
- local overriding - the interface should allow local operations teams to override the data in the interface by modifying the data.

The [OBCIG] format has been in use for a number of years by a number of vendors and forms a starting point for application description.

The [ADI] format may provide a starting point for top level encapsulation and identification of the descriptions that is consistent with other areas of OCAP specification.