# ATSC Standard: A/331:2022-09 Amendment No. 1, "Signaling Server"

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30 November 2022

**Advanced Television Systems Committee**
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**Revision History**

| Version | Date |
|---|---|
| Amendment approved | 30 November 2022 |

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## 1. OVERVIEW

### 1.1 Definition

An Amendment is generated to document an enhancement, an addition or a deletion of functionality to previously agreed technical provisions in an existing ATSC document. Amendments shall be published as attachments to the original ATSC document. Distribution by ATSC of existing documents shall include any approved Amendments.

### 1.2 Scope

This document provides corrections and clarifications to the protocol for interaction between an ATSC receiver and a broadband signaling server as specified in Section 6.9 "Signaling Server" of A/331:2022.

### 1.3 Rationale for Changes

The A/331:2022-09 specification includes inconsistencies, ambiguities, duplicative capabilities and errors that would cause conforming implementations to potentially fail to function as claimed and to be incompatible with one another.

### 1.4 Compatibility Considerations

The changes described in this document are not fully backward-compatible with the currently published version of the standard to which this Amendment pertains. However, this portion of the specification has only seen limited commercial deployment and field trial work and the amendment was drafted in consultation with all known implementers. It is the understanding of the contributors to this amendment that backward compatibility with known implementations has been retained.

Changes that are not fully backwards compatible are listed below (with reasons given for each change):

- Support is removed for delivery of arbitrary combinations of metadata objects using a custom URL constructed by the receiver (contradicts the stated goal of permitting the signaling server to deliver a pre-stored file without the need for a server-side application).
- Support is removed for delivery of metadata objects in `diff` and `template` formats (not fully specified in the published specification and unnecessary for broadband delivery).
- The priority of `SvcInetURL` over `SLTInetUrl` is specified for when both are present (resolved an ambiguity that could produce incompatible implementations).
- The format of responses to a `nextURL` request are specified (not previously specified, permitting incompatible implementations).
- The implied validity period for metadata objects with an absent `validFrom` or `validUntil` is specified (not previously specified, permitting incompatible implementations).

## 2. LIST OF CHANGES

Change instructions are given below in *italics*. Unless otherwise noted, inserted text, tables, and drawings are shown in blue; deletions of existing text are shown in ~~red strikeout~~. The text "[ref]" indicates that a cross reference to a cited referenced document should be inserted.

### 2.1 Normative References

No changes.

### 2.2 Informative References

No changes.

### 2.3 Acronyms and Abbreviations

No changes.

### 2.4 Terms

No changes.

### 2.5 Change Instructions

*In Section 6.9, change the wording of the first sentence as follows:*

The Signaling Server provides HTTPS Secure Connection (per the Security Policies of Section 5.9) access to the Service Layer Signaling (SLS) tables defined in Section 7.

*In Section 6.9, change the wording of the second paragraph as follows:*

When an **`SLTInetUrl`** with `urlType` attribute value `"1"` is present in the SLT, it can be used as a base URL to make HTTP requests for current signaling metadata. The desired signaling metadata objects, as defined in Table 6.18, to be returned are indicated by appending path terms to the base URL (rather than using query terms). This makes the retrieval of the signaling metadata objects more efficient from the server standpoint, since no server side application is required to retrieve the desired objects. Each request simply fetches a file. To make such a request, the GET method is used~~, and the path appended to the end of the base URL contains terms indicating the desired signaling object or objects, as indicated in Table 6.17~~.

*In Section 6.9, change the third paragraph as follows:*

When an **`SLTInetUrl`** with `urlType` attribute `"1"` base URL appears (at the SLT level) and no svcInetUrl is present for the Service (at the service layer), the `service_id` term is ~~used~~ appended to indicate the Service to which the requested signaling metadata objects apply. When constructing a URL path, the value of `service_id` shall be represented as a decimal number (with no leading zeros and no decimal point). ~~When the service_id term is not present, then the signaling metadata objects for all Services in the section are requested.~~

*In Section 6.9, change the eighth paragraph as follows:*

When an **SvcInetUrl** with urlType attribute "1" appears (at the service layer), then the same paths can be appended to the end of it, with the same semantics, except that no **Service** term shall appear, since ~~it is not needed to designate~~ the URL is explicitly associated with the desired Service.

*In Section 6.9, change the ninth paragraph as follows:*

The response body for those HTTP requests shall include an MBMS metadata envelope per Section 7.1.6.1. ~~11.1.3 of MBMS [14] containing an item element for each signaling object included in the response. The "Referenced" method of use of metadataEnvelope shall be used: signaling objects shall be referenced in their item elements, and they shall be packaged together with the metadata envelope in a multi-part MIME message, in the order in which they are referenced.~~ The validFrom and validUntil attributes of the item elements should be present, to indicate the interval of validity of each signaling object. The absence of an expressed boundary of the validity period means that the validity period is unbounded in the corresponding direction in time. Responses should include the latest currently valid version of signaling objects.

*In Section 6.9, change the eleventh paragraph as follows:*

Thus, at the @availAt time for a signaling object that was acquired via broadband, the next scheduled update of the signaling object shall be available to an HTTP GET request with the URL given by the nextURL attribute in the item element that was used to represent the signaling object in the metadata envelope. It is expected that each receiver will initiate its request at a randomly-selected time between @availAt and shortly before @validUntil to request the @nextURL in order to smooth the transaction load on the Signaling Server. It is expected that receivers do not leave this until the very end of the validity period but allow for network and processing latencies so as to ensure that the scheduled update is received prior to @validUntil. The response to a request using a nextURL shall conform to the requirements of a response to a SvcInetUrl or SLTInetUrl request, however signaling objects in the response are not required to include currently valid signaling objects; i.e. the @validFrom element associated with all signaling objects in the response may indicate a time in the future.

*In Section 6.9, delete the fourth through seventh paragraphs ("The normal/diff/template…" through "…Table 6.18, with their descriptions.").*

*In Section 6.9, delete Table 6.17 ("Path Terms, in Order of Appearance in Path") and Table 6.18 ("Metadata Object Types").*

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