# A/344:2022-03 Revision Change Log

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Implementers with feedback, comments, or potential bug reports relating to this document may contact ATSC at https://www.atsc.org/feedback/.

### Revision History

| Version | Date |
|---|---|
| Added active references to ATSC schema repository. | 19 April 2022 |
| Schema Consistency | May 2022 |
| Notification / Query Reconciliation (part 1) | 28 June 2022 |
| Notification / Query Reconciliation (part 2) | 10 July 2022 |

# Table of Contents

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## 1. SCOPE

This document describes one or more changes to the ATSC 3.0 A/344:2022-03 revision candidate standard working draft. These changes have been accepted by the S38 Specialist Group on Interactive Content for ATSC 3 but are pending full TG3 and membership approval. Readers are cautioned that these changes may be amended in the future but are encouraged to provide feedback and comments.

### 1.1 Introduction and Background

This document describes changes or updates to the ATSC 3.0 A/344:2022-03 revision Candidate Standard working draft. Each section identifies a single change including the scope, rationale, and backwards compatibility of the change. The change log also provides the document number of the amendment that described the change since this is used when making the revisions in MS Word.

### 1.2 Organization

This document is organized as follows:

- Section 1 – The scope, introduction, and background of this document
- Section 2 – Active Schema Repository References
- Section 3 – Error Code Definition Consistency
- Section 4 – Schema Consistency
- Section 5 – Notification and Query API Reconciliation

## 2. ACTIVE SCHEMA REPOSITORY REFERENCES

This change updates all schema file references in the A/344 document to point at the new ATSC schema repository at https://www.atsc-schemas.org/. There was no amendment or contribution associated with this change. The work was deemed administrative to allow references to the authoritative schemas to be available directly from the A/344 standard. All changes to the standard for this change are marked as "r1".

### 2.1 Scope

This change impacts every schema referenced by the A/344 document.

### 2.2 Rationale for Changes

Previously, schemas were referred to by file name. The date of the last change to the schema file was included in the file name. For example, `org.atsc.acquire.service-request-20210127.json` indicated that the most recent version of the schema file for the Acquire Service request API was 27 January 2021. This naming paradigm was not conducive to maintaining the large collection of A/344 schemas along with examples referencing those schemas online.

The new paradigm collects all of the schemas for a given release into a single repository hierarchy with the form:

```
https://www.atsc-schemas.org/atsc3.0/a344/<release>/<schema>.json
```

where

`<release>` is the publication date of the standard in the form `YYYYMMDD`, the publication date of the candidate standard in the form `cs-YYYYMMDD`, or the date of the working draft document in a separate folder of the form `working/YYYYMMDD`;

and

`<schema>.json` is the name of the schema file from the A/344 standard, for example, `org.atsc.acquire.service-request.json`. Note that the date has been removed from the schema file name since it is now present in the URL path.

## 2.3   Compatibility Considerations

The new paradigm is not backward compatible with the previous scheme since there was no working online system. Implementors working with the schemas were forced to download the published archive "zip" to their local environment and fix up the examples and schemas to match local access. Updating the local environment was difficult and time consuming.

The new schema repository maintains all versions of the schemas for all published standards as well as the candidate standard and working draft schemas. Each published tree within the repository is self-consistent and available for automated tools.

## 3.   ERROR CODE DEFINITION CONSISTENCY

The error code definition consistency change modified the description of the error codes for each API response return. The actual error codes specific to each response will be added in a subsequent change. In addition, the semantic description of the error block was detailed in Section 8.3.3 which refers to the JSON RPC error response definition contained in Annex D Section 5.1. All of the APIs now reference section 8.3.3 to ease modification of error handling in the future.

Changes were made to the A/344 working draft as author "r2 – Error Structure".

### 3.1   Scope

This change impacts all API error responses.

### 3.2   Rationale for Changes

The API error code returns were defined inconsistently throughout the document and most APIs did not have a corresponding list of error codes that could be returned. In addition,

### 3.3   Compatibility Considerations

This change is completely backwards compatible since the changes only clarified the error return semantics and did not change any APIs. No schemas or examples were changed.

## 4.   SCHEMA CONSISTENCY

### 4.1   Scope

This change reconciles JSON schema files with the A/344 standard ensuring that the normative JSON schema file matches its corresponding semantic description in the standard.

### 4.2   Rationale for Changes

In some cases, the API semantic description does not match the normative schema file. This is sometimes as simple as misspellings or typos or can be as extensive as errors in the schema file itself not matching the semantic intent.

### 4.3    Compatibility Considerations

Every attempt is made with these changes to keep the current normative schema file intact thus maintaining the API definition while clarifying it in the document. However, some of the JSON schemas are syntactically incorrect or misleading so this requires a change to the schema. Note that, in these cases, a compliant implementation was not possible due to errors in the schema.

### 4.4    Change List

The following is a detailed list of the changes made. The changes in the A/344 WD can be found by looking for the author listed.

#### 4.4.1    Display Override Parameter Semantics Mismatch

The schemas org.atsc.query-displayOverride-response.json and org.atsc.notify-displayOverride.json and the table in Section 9.10.2 specify `resourceBlocking` and `displayOverride` as optional while the A/344 WD semantics discussion states they are required. The text was modified to match the schema and semantic table. The WD has been changed to match the schema under author "Issue 239". These changes had no impact on backward compatibility.

#### 4.4.2    Content Advisory Block Change Notification API Content Rating Semantics

In Table 9.31 in Section 9.3.2, the description of `contentRating` states it should be the "user's preference" while the semantic description for the property after the table indicates it should be the rating value found in signaling for the current service. The table description was modified to match the semantic description. Changes were made in the WD under author "S38-355r0". That document can be reviewed for more details of the problem.

These changes had no impact on backward compatibility as long as implementors followed the description in the semantics instead of the description in the table. Otherwise, implementors will need to change the value provided in the notification if they used the user's rating preference as suggested by the table. Note that the inconsistency in the standard meant that it was impossible to be entirely backward compatible.

#### 4.4.3    Device Info API Response Schema

The Device Info API response schema has an "`additionalProperties`" property defined but it was outside of the intended `deviceInput` clause. The `additionalProperties` property has special meaning in JSON schemas allowing additional properties added to the enclosing section to be constrained for validation. In this case, the intent is to constrain the additional properties to be only key codes as defined in the WD which are only integer-value properties. Any other structures or types will have to be added explicitly in the future if necessary. No changes were required in the A/344 WD for this change. No backward compatibility issues are anticipated by this change since any additional keys provided would be treated as unknown properties.

#### 4.4.4    Service Guide Query Response API Schema

The Service Guide Query Response API schema contained incorrect JSON schema syntax (or at best inconsistent) and needed to be clarified. Further, the description of the `content` property in Table 9.20 was not consistent with the semantic description in the `content` section below the table. The table indicated that the `content` property was optional while the semantic text implied it was not. It is now clear that the `content` property is required if the `sgType` is "`Content`". Changes to the A/344 WD are made under author "Issue 232".

## 5.  NOTIFICATION AND QUERY API RECONCILIATION

### 5.1   Scope

This section encompasses multiple changes to support reconciling each notification API with its corresponding query API. These changes impact nine of the twenty-one notification APIs to some level.

### 5.2   Rationale for Changes

The notification APIs are not always consistent with the corresponding query APIs. In the simplest case, the schema for the notification matches the query response but the semantics are nearly duplicated. This could lead to issues in the future if the property semantics changed. In other cases, the notification provides no properties, and the Broadcaster Application is forced to immediately execute the query request. This could lead to timing issues if some values changed between the time of the notification and the time of the resulting query response. Having corresponding notifications and query responses match as much as possible will reduce implementation confusion, improve A/344 API maintainability and, in some cases, avoid timing issues.

### 5.3   Compatibility Considerations

Every attempt is made with these changes to keep the current normative schema file intact thus maintaining the API definition while clarifying it in the document. Schemas have only be extended without changing any of the syntax or semantics of existing schemas.

### 5.4   Change List

The following is a detailed list of the changes made. The changes in the A/344 WD can be found by looking for the author listed.

#### 5.4.1   Service Change Notification API

The `service` property provides the same semantic value either in the notification or the query response API, so the notification semantics were changed to reference the query response semantics. A note was included in the notification semantics that indicated that it was not expected for the Receiver to issue this notification for service types such as DRM, ESG, and NRT.

#### 5.4.2   Language Preference Change Notification API

The notification semantics of the three language preferences were changed to refer to the query response. Both the notification, query and examples were changed to match the schema spelling of `preferredUILang`. Note the capital "I".

#### 5.4.3   Signaling Data Change Notification API

The Query Signaling Data API response `objectList` property was added as an optional parameter to the notification. The property is optional to avoid any backward compatibility issues however a note was added recommending that Receivers include the `objectList` property to avoid timing issues with Broadcaster Application invoking the query in response to the notification. The notification semantics of `objectList` reference the query property. Further, the `objectList` example code was copied from the query response into the notification. These changes were also reflected in the notification schema and example.

### 5.4.4　Dialog Enhancement Preference Change Notification API

The semantics of the single notification property was changed to reference the semantics of the property of the same name defined in the Query Dialog Enhancement Preference API response.

### 5.4.5　Content Advisory Rating Block Change Notification

The Content Advisory Rating Block Change Notification uses the same parameters as the query response of the Query Content Advisory Rating API though in the opposite order. The order of the query response properties was changed in the document and the schema for consistency even though property order in JSON is irrelevant. Further semantics of the properties in the notification API were changed to reference the query response property semantics with the caveat that the `contentRating` property is optional in the notification. [ed – Partially completed]

### 5.4.6　Key API Redundancy

The key value enumerations of the Key APIs in Section 9.12 are redundant. This poses a potential maintenance issue if the enumeration were to change in the future. The relinquish and notification APIs were changed to reference the enumeration in the request API.

### 5.4.7　Service Guide Change

The properties defined in the Query Service Guide URL response API were copied into the Service Guide Change Notification API. The semantics for the properties in the `urlList` reference the semantic definitions provided in the query response.

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