



OGC API - ENVIRONMENTAL DATA RETRIEVAL STANDARD - PROFILES

STANDARD
Implementation

DRAFT

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Editor: Mark Burgoyne, Charles Heazel

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ABSTRACT

<Insert Abstract Text here>



KEYWORDS

The following are keywords to be used by search engines and document catalogues.

ogcdoc, OGC document, API, openapi, html



PREFACE

The aim of an OGC API EDR profile is to ensure interoperability between API implementations. To achieve this, it is essential that providers use a consistent approach when defining collections and instances of collections. An OGC EDR profile will specify a set of requirements that an API implementation must support to be a compliant implementation.

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SECURITY CONSIDERATIONS

No security considerations have been made for this Standard.



SUBMITTING ORGANIZATIONS

The following organizations submitted this Document to the Open Geospatial Consortium (OGC):

- UK Met Office
- Heazeltech



SUBMITTERS

All questions regarding this submission should be directed to the editor or the submitters:

Name	Affiliation



CONTRIBUTORS

Additional contributors to this Standard include the following:

Individual name(s), Organization



PREFACE





PREFACE

NOTE: Insert Preface Text here. Give OGC specific commentary: describe the technical content, reason for document, history of the document and precursors, and plans for future work. > Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The Open Geospatial Consortium shall not be held responsible for identifying any or all such patent rights.

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1

SCOPE

NOTE: Insert Scope text here. Give the subject of the document and the aspects of that scope covered by the document.



2

CONFORMANCE

This standard defines XXXX.

Requirements for N standardization target types are considered:

- AAAA
- BBBB

Conformance with this standard shall be checked using all the relevant tests specified in Annex A (normative) of this document. The framework, concepts, and methodology for testing, and the criteria to be achieved to claim conformance are specified in the OGC Compliance Testing Policies and Procedures and the OGC Compliance Testing web site.

In order to conform to this OGC® interface standard, a software implementation shall choose to implement:

- Any one of the conformance levels specified in Annex A (normative).
- Any one of the Distributed Computing Platform profiles specified in Annexes TBD through TBD (normative).

All requirements-classes and conformance-classes described in this document are owned by the standard(s) identified.



3

NORMATIVE REFERENCES

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

OGC API — Environmental Data Retrieval Standard

The ModSpec Model — Part 1: Core — A Standard for Designing and Writing Modular Standards

OpenAPI Initiative (OAI). **OpenAPI Specification 3.0** [online]. 2020 [viewed 2025-01-03]. The latest patch version at the time of publication of this standard was 3.0.4, available at <https://spec.openapis.org/oas/v3.0.4>

OpenAPI Initiative (OAI). **OpenAPI Specification 3.1** [online]. 2021 [viewed 2025-01-03]. The latest patch version at the time of publication of this standard was 3.1.1, available at <https://spec.openapis.org/oas/v3.1.1>



4

TERMS AND DEFINITIONS

TERMS AND DEFINITIONS

This document uses the terms defined in OGC Policy Directive 49, which is based on the ISO/IEC Directives, Part 2, Rules for the structure and drafting of International Standards. In particular, the word “shall” (not “must”) is the verb form used to indicate a requirement to be strictly followed to conform to this document and OGC documents do not use the equivalent phrases in the ISO/IEC Directives, Part 2.

This document also uses terms defined in the OGC Standard for Modular specifications (OGC 08-131r3), also known as the ‘ModSpec’. The definitions of terms such as standard, specification, requirement, and conformance test are provided in the ModSpec.

For the purposes of this document, the following additional terms and definitions apply.

This document uses the terms defined in OGC Policy Directive 49, which is based on the ISO/IEC Directives, Part 2, Rules for the structure and drafting of International Standards. In particular, the word “shall” (not “must”) is the verb form used to indicate a requirement to be strictly followed to conform to this standard.

For the purposes of this document, the following additional terms and definitions apply.

4.1. Collection

Body of resources that belong or are used together. An aggregate, set, or group of related resources.

4.2. Conformance Module; Conformance Test Module

A set of related conformance classes and their associated components.

Note 1 to entry: When no ambiguity is possible, the word test may be omitted. i.e. conformance test module is the same as conformance module. Conformance modules may be nested in a hierarchical way.

4.3. Conformance Class; Conformance Test Class

A set of conformance tests that must be passed to receive a single certificate of conformance.

Note 1 to entry: When no ambiguity is possible, the word *test* may be left out, so conformance test class maybe called a conformance class.

4.4. Conformance Test

A test, abstract or real, of one or more requirements contained within a standard, or set of standards.

4.5. Requirement

Expression in the content of a standard conveying criteria to be fulfilled if compliance with the standard is to be claimed and from which no deviation is permitted.

4.6. Requirements Class

An aggregate of requirements with a single standardization target type that must all be satisfied to pass a conformance test Class.

4.7. Requirements Module

A set of related requirement classes and their associated components.

4.8. Standardization Target

Entity to which some requirements of a standard apply.

Note 1 to entry: The standardization target is the entity which may receive a certificate of conformance for a requirements class.

4.9. Standardization Target Type

Type of entity or set of entities to which the requirement of a standard apply

Note 1 to entry: For example, the standardization target type for The OGC API – Features Standard are Web APIs. The standardization target type for the CDB Standard is “datastore”. It is important to understand that a standard’s root standardization target type can have sub-types, and that there can be a hierarchy of target types. For example, a Web API can have sub types of client, server, security, and so forth. As such, each requirements class can have a standardization target type that is a sub-type of the root.



5

CONVENTIONS

This section provides details and examples for any conventions used in the document. Examples of conventions are symbols, abbreviations, use of XML schema, or special notes regarding how to read the document.

5.1. Identifiers

The normative provisions in this standard are denoted by the URI

<http://www.opengis.net/spec/{standard}/{m.n}>

All requirements and conformance tests that appear in this document are denoted by partial URIs which are relative to this base.



6

CONTEXT

6.1. Standardization Goal

6.2. Modular Specification

This Standard is a profile of the “OGC ModSpec Model — Part 1: Core — A Standard for Designing and Writing Modular Standards” (ModSpec).

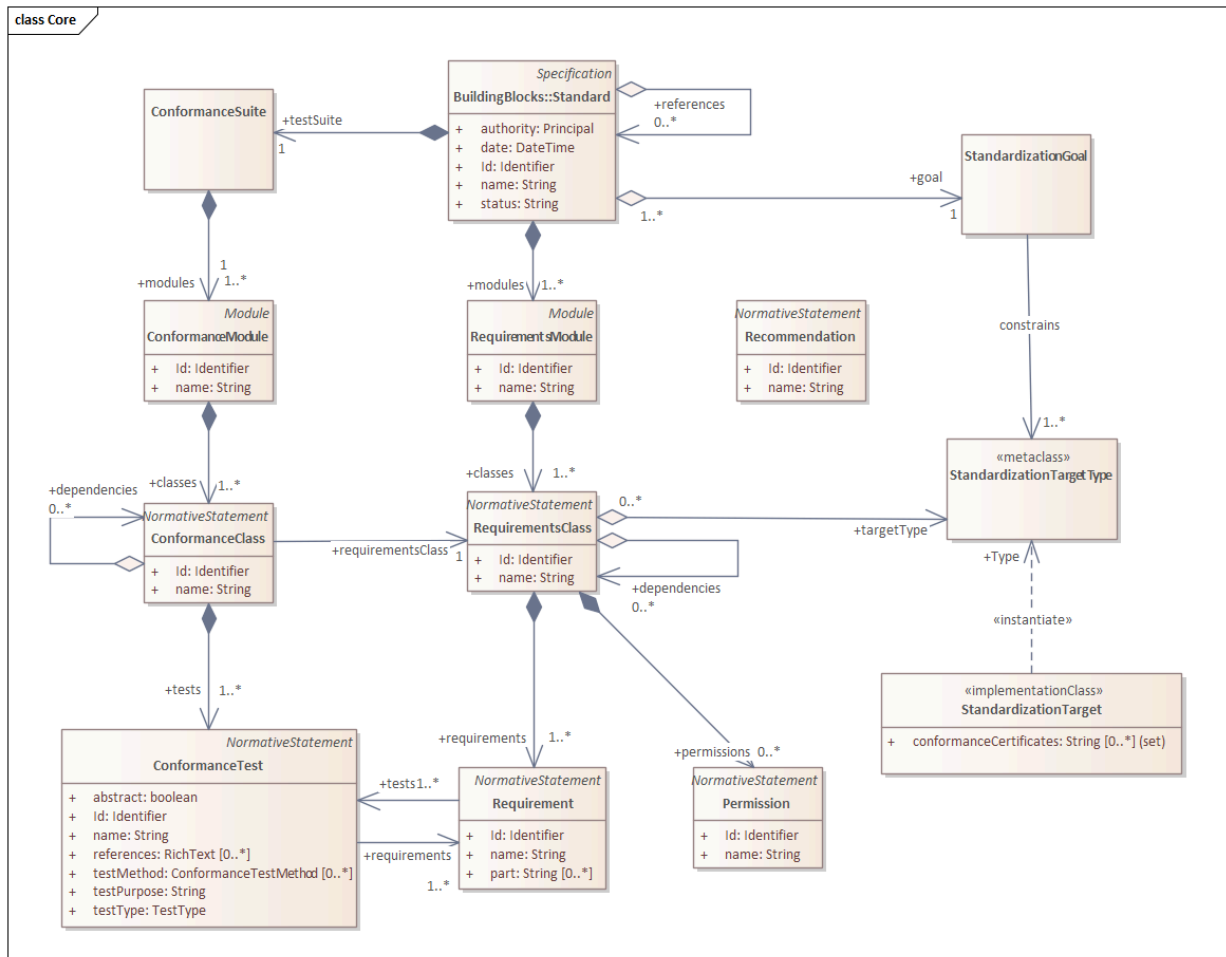


Figure 1

Figure 1 represents the UML model for modular Standards described in the ModSpec Standard.

6.3. EDR API Standard

The Standardization Target Type of this Standard is profiles of the OGC Web APIs for EDR Standard.



7

REQUIREMENT CLASS CORE

Paragraph

REQUIREMENTS CLASS 1: REQUIREMENTS CLASS 'CORE'

IDENTIFIER	<code>http://www.opengis.net/spec/ABCD/m.n/req/req-class-a</code>
TARGET TYPE	Web API
CONFORMANCE CLASS	Conformance class A.1: <code>http://www.opengis.net/spec/name-of-standard/1.0/conf/example1</code>
NORMATIVE STATEMENTS	Requirement 12: <code>/req/req-class-a/req-name-1</code> Requirement 11: <code>/req/req-class-a/req-name-2</code>

7.1. Requirement 1

REQUIREMENT 1

IDENTIFIER `/req/req-class-a/req-name-14`

A A requirement SHALL be defined for each query type that is asynchronous.

STATEMENT Each asynchronous query type requirement SHALL define the HTTP Status Code and provide a message schema and text used to inform the user that the response is asynchronous.
The requirement will also document (this can be a link to another document) the mechanism for delivering the result of the asynchronous query.

7.2. Requirement 2

REQUIREMENT 2

IDENTIFIER `/req/req-class-a/req-name-19`

REQUIREMENT 2

- A For each of the requirements defined in the profile the SHALL be a conformance test which defines how to validate compliance with the requirement.

7.3. Requirement 3

REQUIREMENT 3

IDENTIFIER /req/req-class-a/req-name-3

- A A data_queries requirement definition SHALL specify which data queries a service supports. This can be defined as follows:
- Enumerated list of query types

STATEMENT Each data_query type listed SHALL also have a requirement definition.

7.4. Requirement 4

REQUIREMENT 4

IDENTIFIER /req/req-class-a/req-name-6

- A An area query requirement SHALL specify the following:
- Enumerated list of output_format types
 - The default_output_format
 - Enumerated list of crs_details values
 - Enumerated list of the operations that the query supports (i.e. GET, POST)

7.5. Requirement 5

REQUIREMENT 5

IDENTIFIER /req/req-class-a/req-name-7

A

A corridor requirement SHALL specify the following:

- Enumerated list of output_format types
- The default_output_format
- Enumerated list of crs_details values
- Enumerated list of width-units values
- Enumerated list of height-units values
- Enumerated list of the operations that the query supports (i.e. GET, POST)

7.6. Requirement 6

REQUIREMENT 6

IDENTIFIER /req/req-class-a/req-name-9

A

A cube requirement SHALL specify the following:

- Enumerated list of output_format types
- The default_output_format
- Enumerated list of crs_details values
- Enumerated list of the operations that the query supports (i.e. GET, POST)

7.7. Requirement 7

REQUIREMENT 7

IDENTIFIER /req/req-class-a/req-name-10

A

Instances SHALL be defined in the data_queries enumerated list if the collection has child instances that can be queried.

7.8. Requirement 8

REQUIREMENT 8

IDENTIFIER /req/req-class-a/req-name-4

A

A position query requirement SHALL specify the following:

- Enumerated list of output_format types
- The default_output_format
- Enumerated list of crs_details values
- Enumerated list of the operations that the query supports (i.e. GET, POST)

STATEMENT

A position query requirement SHALL also specify the logic used in selecting the data returned by the response, i.e. exact, nearest neighbour, most representative or interpolated.

7.9. Requirement 9

REQUIREMENT 9

IDENTIFIER /req/req-class-a/req-name-5

A

A radius query requirement SHALL specify the following:

- Enumerated list of output_format types
- The default_output_format
- Enumerated list of crs_details values
- Enumerated list of within_units values
- Enumerated list of the operations that the query supports (i.e. GET, POST)

7.10. Requirement 10

REQUIREMENT 10

IDENTIFIER /req/req-class-core/req-name-9

- A**
- A trajectory requirement SHALL specify the following:
- Enumerated list of output_format types
 - The default_output_format
 - Enumerated list of crs_details values
 - Enumerated list of the operations that the query supports (i.e. GET, POST)

7.11. Requirement 11

REQUIREMENT 11

IDENTIFIER /req/req-class-a/req-name-2

INCLUDED IN Requirements class 1: <http://www.opengis.net/spec/ABCD/m.n/req/req-class-a>

A

An extent requirements definition SHALL specify the rules for the spatial CRS, and where supported temporal TRS, vertical VRS and any custom dimension attributes. The attributes are constrained by one of:

- Enumerated list of valid crs values
- Regular expression defining valid crs string patterns.

If the collection has a temporal dimension one of:

- Enumerated list of valid trs values
- Regular expression defining valid trs string patterns.

If the collection has a vertical dimension one of:

- Enumerated list of valid vrs values
- Regular expression defining valid vrs string patterns.

STATEMENT

If the collection requires a custom dimension as requirements definition SHALL specify:

- custom dimension name
- custom dimension reference value
- Where applicable enumerated list of valid custom dimension values

(Regular expressions could be used to restrict reference system definitions to WKT2 or EPSG values)

7.12. Requirement 12

REQUIREMENT 12

IDENTIFIER /req/req-class-a/req-name-1

INCLUDED IN Requirements class 1: <http://www.opengis.net/spec/ABCD/m.n/req/req-class-a>

A A Requirement definition *SHALL* specify the rules that the Collection id string must follow. This can be one of the following:

- identifier string
- Regular expression defining valid string patterns.

7.13. Requirement 13

REQUIREMENT 13

IDENTIFIER /req/req-class-a/req-name-12

A For every output_format specified in any of the data_query enumerated lists there *SHOULD* be a requirement which defines the schema or structure of the data (depending on the format). Suggested definition approaches are as follows:

- JSON – Link to a JSON Schema definition
- XML – Link to a XML Schema definition
- CSV, TSV, PSV, SSV – Link to a definition based on the CSV on the web recommendations
- Other types (e.g. binary file types) – Link to a description of the format

7.14. Requirement 14

REQUIREMENT 14

IDENTIFIER /req/req-class-a/req-name-13

REQUIREMENT 14

A	Paging support depends on query pattern and output format. A requirement SHALL be created for each combination of query pattern and output format that must support paging.
STATEMENT	Each paging requirement SHOULD also include a recommendation for the default number of items to return per page request.

7.15. Requirement 15

REQUIREMENT 15

IDENTIFIER /req/req-class-a/req-name-11

A	The parameter_names requirement definition would specify the required parameter_names objects in full. The parameter_names object defines the name, units, data type and measurement duration of the data value so it is essential that all implementations are consistent for interoperability.
---	--

7.16. Requirement 16

REQUIREMENT 16

IDENTIFIER /req/req-class-a/req-name-20

A	An EDR profile SHALL be published as an OpenAPI JSON document. The rules described in the requirements SHALL be encoded using the OpenAPI 3.1 specification, The requirement rules are encoded in either the OpenAPI Path Item or in the Response object schema sections of the document.
STATEMENT	<p>The profile OpenAPI document should describe the profile EDR API as follows:</p> <p>The servers attributes of the OpenAPI root object SHALL be blank (the profile is not linked to specific implementations)</p> <p>The Extent requirement rules SHALL be encoded in the JSON schema defined in the 200 responses for the /collections and /collections/{collection} id Paths object</p> <p>The data_query type requirement rules SHALL be encoded in the JSON schema defined in the 200 responses for the /collections and /collections/{collection} id Paths object</p> <p>The data_query types SHALL be encoded as Paths objects in the OpenAPI document, where appropriate the output_format, default_output_format, crs, within_units, width-units, height-units and limit (paging) requirements SHALL be encoded in the child Parameter objects of the Paths object.</p>

REQUIREMENT 16

The output_format requirement rules SHALL be encoded in the 200 responses of the data_query type Paths objects

The Parameter_names requirements SHALL be encoded in the JSON schema defined in the 200 responses for the /collections and /collections/{collection} id Paths object.

An EDR API SHALL advertise the location of the profile OpenAPI document it complies

An EDR API SHALL advertise the location of the profile OpenAPI document it complies with in the links section of the API root with a link relation value of 'profile'

7.17. Requirement 17

REQUIREMENT 17

IDENTIFIER /req/req-class-a/req-name-18

A

The profile SHALL consist of a set of requirements for a collection and (if the collection supports instances) the instances of the collection. For each of the attributes listed, if it is in the collection (or instance), there SHALL be a requirement to define it.

7.18. Requirement 18

REQUIREMENT 18

IDENTIFIER /req/req-class-a/req-name-17

A

For every http status code supported by the profile. A requirement SHALL be created. The requirement SHALL provide the following:

- A description of the cause of the error.
- A JSON schema for the message body structure



8

MEDIA TYPES FOR ANY DATA ENCODING(S)

A section describing the MIME-types to be used is mandatory for any standard involving data encodings. If no suitable MIME type exists in <http://www.iana.org/assignments/media-types/index.html> then this section may be used to define a new MIME type for registration with IANA.



A

ANNEX A (INFORMATIVE) CONFORMANCE CLASS ABSTRACT TEST SUITE (NORMATIVE)





ANNEX A

(INFORMATIVE)

CONFORMANCE CLASS ABSTRACT TEST SUITE (NORMATIVE)

NOTE: Ensure that there is a conformance class for each requirements class and a test for each requirement (identified by requirement name and number)

A.1. Conformance Class A

CONFORMANCE CLASS A.1	
IDENTIFIER	<code>http://www.opengis.net/spec/name-of-standard/1.0/conf/example1</code>
REQUIREMENTS CLASS	Requirements class 1: <code>http://www.opengis.net/spec/ABCD/m.n/req/req-class-a</code>
TARGET TYPE	Web API
CONFORMANCE TESTS	Abstract test A.1: <code>/conf/core/map-response</code> Abstract test A.2: <code>/conf/core/http</code>

A.1.1. Example 1

ABSTRACT TEST A.1	
IDENTIFIER	<code>/conf/core/map-response</code>
REQUIREMENT	Requirement 12: <code>/req/req-class-a/req-name-1</code>
TEST PURPOSE	Verify that the implementation's response for the map retrieval operation is correct
TEST METHOD	A single step test method can be documented as a single line.

A.1.2. Example 2

ABSTRACT TEST A.2

IDENTIFIER /conf/core/http

REQUIREMENT Requirement 11: /req/req-class-a/req-name-2

TEST PURPOSE Validate that the resource paths advertised through the API conform with HTTP 1.1 and, where appropriate, TLS.

DESCRIPTION **Example:**
A sequential multi-step test method can be documented as shown here. This is the first step.
This is the second step.



B

ANNEX B (INFORMATIVE)

TITLE



ANNEX B (INFORMATIVE) TITLE

NOTE: Place other Annex material in sequential annexes beginning with “B” and leave final two annexes for the Revision History and Bibliography



ANNEX C (INFORMATIVE) REVISION HISTORY



ANNEX C

(INFORMATIVE)

REVISION HISTORY

Table C.1

DATE	RELEASE	EDITOR	PRIMARY CLAUSES MODIFIED	DESCRIPTION
2016-04-28	0.1	G. Editor	all	initial version



BIBLIOGRAPHY





BIBLIOGRAPHY

NOTE: The TC has approved Springer LNCS as the official document citation type.

Springer LNCS is widely used in technical and computer science journals and other publications

– Actual References:

[n] Journal: Author Surname, A.: Title. Publication Title. Volume number, Issue number, Pages Used (Year Published)

[1] OGC: *OGC Testbed 12 Annex B: Architecture* (2015).