WCS 2.0 Extension -- XML/POST Protocol

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Editorial note: revision numbers for the references to documents of the WCS 2.0 set are not yet adjusted; this will be done in the final editing step.

Warning

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i. Preface

This document specifies an extension to the OGC Web Coverage Service (WCS) 2.0 core to allow for client/server communication using HTTP POST with XML encoding.

ii. Terms and definitions

This document uses the specification terms defined in Subclause 5.3 of [OGC 06-121r8], 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.

iii. Submitting organizations

The following organizations have submitted this Implementation Specification to the Open GeoSpatial Consortium, Inc.:

- Jacobs University Bremen
- rasdaman GmbH
- National Center for Atmospheric Research (NCAR)
- Oracle USA
- PCI Geomatics Inc.
- ERDAS, Inc.
- EOX IT Services GmbH
- Spot Image
- BAE Systems - C3I Systems
- Natural Environment Research Council (NERC)
- George Mason University
iv. Document Contributor Contact Points

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<thead>
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v. Revision history

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<th>Release</th>
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<th>Paragraph modified</th>
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<td>PB</td>
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vi. Changes to the OpenGIS® Abstract Specification

The OpenGIS® Abstract Specification does not require any changes to accommodate the technical contents of this (part of this) document.

vii. Future Work

Nothing foreseen currently.
Foreword

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Introduction

The OGC Web Coverage Service (WCS) supports electronic retrieval of geospatial data as "coverages" – that is, digital geospatial information representing space/time-varying phenomena.

This document specifies an extension to the OGC Web Coverage Service (WCS) 2.0 core to allow for client/server communication using HTTP POST with XML encoding.
WCS 2.0 Extension -- XML/POST Protocol

1 Scope

This document specifies how Web Coverage Service (WCS) clients and servers can communicate over the Internet using HTTP POST with XML encoding.

2 Compliance

Annex A (normative) specifies compliance tests which shall be tested by any service claiming to implement an OGC Web Coverage Service using this extension.

3 Normative references

The following normative documents contain provisions that, through reference in this text, constitute provisions of this specification. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the normative document referred to applies.


W3C Note 11, *SOAP Messages with Attachments*. W3C Note 11, 2000

OGC 06-121r8, *OGC Web Services Common Specification*, version 1.2

OGC 07-036, *Geography Markup Language (GML) Encoding Standard*, version 3.2.1

OGC 09-110r1, *WCS 2.0 Core*, version 2.0

In addition to this document, the WCS specification includes normative XML Schema files. These are posted online at [http://schemas.opengis.net/wcs/2.0](http://schemas.opengis.net/wcs/2.0) as part of the OGC schema repository. These XML Schema files are also available bundled with the present document for download from [http://www.opengeospatial.net/standards/wcs](http://www.opengeospatial.net/standards/wcs). In the event of a discrepancy between bundled and schema repository versions of the XML Schema files, the schema repository shall be considered authoritative.

4 Terms and definitions

For the purposes of this document, the terms and definitions given in the above references apply. In addition, the following terms and definitions apply.

4.1 coverage

feature which is a subclass (specialization) of AbstractCoverage as specified by GML 3.2 [07-036], based on the abstract definition of [OGC 07-111] and [ISO 19123].
4.2 offered coverage

→coverage stored on a server and accessible by clients via WCS operations. An offered coverage carries service relevant information in addition to the →coverage data.

5 Conventions

5.1 UML notation

All the diagrams that appear in this specification are presented using the Unified Modeling Language (UML) static structure diagram, as described in Subclause 5.2 of OGC Web Services Common [OGC 06-121r8].

5.2 Data dictionary tables

The UML model data dictionary is specified herein in a series of tables. The contents of the columns in these tables are described in Subclause 5.5 of [OGC 06-121r8]. The contents of these data dictionary tables are normative, including any table footnotes.

6 HTTP/POST with XML

6.1.1.1 General

Req 1 A WCS service implementing this extension shall include the following URN in the Profile element of the ServiceDescription in a GetCapabilities response:


Req 2 For those WCSServiceMetadata elements inherited from OWSServiceMetadata, all rules laid down in [OGC 06-121r8] shall apply, plus the following ones:

- WCS servers shall specify the HTTP POST request encodings accepted by including an ows:Constraint element, with “PostEncoding” as the value of the name attribute and a value “XML” to indicate that XML encoding is allowed, but without SOAP message encapsulation.

- If the HTTP POST connect point URL is different for different encodings of the operation requests, this ows:Constraint element shall be included in each POST element. When the connect point URL is the same for all encodings of all operation requests, this ows:Constraint element shall be included in the OperationsMetadata element.

6.1.1.2 GetCapabilities

Req 3 A GetCapabilities request using POST/XML shall consist of an XML document of type wcs:GetCapabilities.

Example The following is a minimum GetCapabilities request encoded in XML:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<GetCapabilities
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```
6.1.1.3 DescribeCoverage

Req 4 A DescribeCoverage request using POST/XML shall consist of an XML document of type wcs:DescribeCoverage.

Example The following XML document requests information about the coverages with identifiers cov1, cov2, and cov3, resp.:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<DescribeCoverage
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:wcs="http://www.opengis.net/wcs/2.0"
    xmlns:gml="http://www.opengis.net/gml/3.2"
    xsi:schemaLocation="http://schemas.opengis.net/wcs/2.0 ../wcsAll.xsd"
    service="WCS" version="2.0.0">
    <wcs:id gml:id="cov1"/>
    <wcs:id gml:id="cov2"/>
    <wcs:id gml:id="cov3"/>
</DescribeCoverage>
```

6.1.1.4 GetCoverage

Req 5 A GetCoverage request using POST/XML shall consist of an XML document of type wcs:GetCoverage.

Example The following XML document requests a subset of coverage “rgb”, applying trim operations in x and y dimension.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<wcs:GetCoverage
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:wcs="http://www.opengis.net/wcs/2.0"
    xmlns:gml="http://www.opengis.net/gml/3.2"
    xsi:schemaLocation="http://schemas.opengis.net/wcs/2.0 ../wcsAll.xsd"
    service="WCS" version="2.0.0">
    <wcs:id gml:id="rgb"/>
    <wcs:trimDimension>
        <wcs:dimension>x</wcs:dimension>
        <wcs:trimLow>200</wcs:trimLow>
        <wcs:trimHigh>299</wcs:trimHigh>
    </wcs:trimDimension>
    <wcs:trimDimension>
        <wcs:dimension>y</wcs:dimension>
        <wcs:trimLow>200</wcs:trimLow>
        <wcs:trimHigh>300</wcs:trimHigh>
    </wcs:trimDimension>
</wcs:GetCoverage>
```
7 Exceptions

Req 6 In addition to the exception codes defined in the WCS core [09-110], the code(s) in Table 1 shall be supported.

<table>
<thead>
<tr>
<th>exceptionCode value</th>
<th>Meaning of code</th>
<th>“locator” value</th>
</tr>
</thead>
<tbody>
<tr>
<td>InvalidEncodingSyntax</td>
<td>Document received does not conform with protocol syntax.</td>
<td>Name of violating element</td>
</tr>
</tbody>
</table>
Annex A
(normative)

Abstract test suite

A WCS implementing this extension shall pass all of the following tests, plus those of the WCS core [09-110], to be conformant with this specification.

A.1 Conformance Test Class: WCS XML/POST protocol

A.1.1 Extension identification

Test Purpose: A WCS service implementing this extension shall include the following URN in the Profile element of the ServiceDescription in a GetCapabilities response:

\[ urn:ogc:def:extension:OGC-WCS:2.0:protocol:post \]

Reference: Req 1

Test method: Send a GetCapabilities request to the server under test, verify that the response contains a Profile element with said URN.

A.1.2 Correct service metadata

Test Purpose: For those WCSServiceMetadata elements inherited from OWSServiceMetadata, all rules laid down in [OGC 06-121r8] shall apply, plus the following ones:

- WCS servers shall specify the HTTP POST request encodings accepted by including an ows:Constraint element, with “PostEncoding” as the value of the name attribute and a value “XML” to indicate that XML encoding is allowed, but without SOAP message encapsulation.

- If the HTTP POST connect point URL is different for different encodings of the operation requests, this ows:Constraint element shall be included in each POST element. When the connect point URL is the same for all encodings of all operation requests, this ows:Constraint element shall be included in the OperationsMetadata element.

Reference: Req 2

Test method: Send a GetCapabilities request to the server under test, verify that the response satisfies the constraints.
A.1.3  Correct GetCapabilities request structure

Test Purpose:  A GetCapabilities request using POST/XML shall consist of an XML document of type wcs:GetCapabilities.

Reference:  Req 3

Test method:  NOTE This property describes client behavior, something currently not addressed in this Abstract Test Suite.

A.1.4  Correct DescribeCoverage request structure

Test Purpose:  A DescribeCoverage request using POST/XML shall consist of an XML document of type wcs:DescribeCoverage.

Reference:  Req 4

Test method:  NOTE This property describes client behavior, something currently not addressed in this Abstract Test Suite.

A.1.5  Correct GetCoverage request structure


Reference:  Req 5

Test method:  NOTE This property describes client behavior, something currently not addressed in this Abstract Test Suite.

A.1.6  Exceptions

Test Purpose:  In addition to the exception codes defined in the WCS core [09-110], the code(s) in Table 1 shall be supported.

Reference:  Req 6

Test method:  For each exception referenced in the requirement: Send request provoking this exception, check for proper exception response.

-- end of ATS --