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WCS 2.0 Extension -- XML/POST Protocol

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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v. Revision history

Date	Release	Author	Paragraph modified	Description
2009-11-02	0.0.1	PB	All	Created

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

Some of the elements of this document may be the subject of patent rights. Open GeoSpatial Consortium Inc. shall not be held responsible for identifying any such patent rights.

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 Inc. shall not be held responsible for identifying any or all such patent rights.

Recipients of this document are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of the standard set forth in this document, and to provide supporting documentation.

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.

IETF RFC 2387, *The MIME Multipart/Related Content-type*. IETF, 1998

IETF RFC 2396, *Uniform Resource Identifiers (URI): Generic Syntax*. IETF, 1998

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 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 . 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:
   `urn:ogc:def:extension:OGC-WCS:2.0:protocol:post`

Req 2 For those `WCSServiceMetadata` elements inherited from `OWSService-Metadata`, 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 `Operations-Metadata` 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 version="1.0" encoding="UTF-8"?>
<GetCapabilities
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```

```
  xmlns:ows="http://www.opengis.net/ows/1.1"
  xmlns:wcs="http://www.opengis.net/wcs/2.0"
  xsi:schemaLocation=
    "http://schemas.opengis.net/wcs/2.0 ../wcsAll.xsd"
  service="WCS" version="2.0.0">
</GetCapabilities>
```

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 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 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 1   — Exception codes for XML/POST operations

exceptionCode value	Meaning of code	"locator" value
InvalidEncodingSyntax	Document received does not conform with protocol syntax.	Name of violating element

<div align="center">

Annex A
(normative)

Abstract test suite

</div>

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 *Get-Capabilities* 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

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

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 --