



Web Services Resource Properties 1.2 (WS-ResourceProperties)

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Abstract:

The relationship between Web services and stateful resources is defined in [WS-Resource]. This relationship is described as the WS-Resource Access Pattern [WS-Resource]. In the WS-Resource Access Pattern, messages to a Web service may include a component that identifies a stateful resource to be used in the execution of the message. We refer to the composition of a stateful resource and a Web service as a WS-Resource [WS-Resource].

This document standardizes the means by which the definition of the properties of a WS-Resource may be declared as part of a Web service interface. The declaration of the WS-Resource's properties represents a projection of or a view on the WS-Resource's state. This projection is defined in terms of a resource properties document. This resource properties document serves to define a basis for access to the resource properties through Web service interfaces.

This specification also defines a standard set of message exchanges that allow a requestor to query or update the property values of the WS-Resource. The set of properties defined in the resource properties document associated with the service interface defines the constraints on the valid contents of these message exchanges.

Status:

This document is published by this TC as a "public review draft". It is possible that it may change during this process, but should nonetheless provide a stable reference for discussion and early adopters' implementations. Committee members should send comments on this specification to the wsrf@lists.oasis-open.org list. Others may submit

35 comments to the TC via the web form found on the TC's web page at <http://www.oasis->
36 [open.org/committees/wsrp](http://www.oasis-open.org/committees/wsrp). Click the button for "Send A Comment" at the top of the page.
37 Submitted comments (for this work as well as other works of that TC) are publicly
38 archived and can be viewed at <http://lists.oasis-open.org/archives/wsrp-comment/>.

39 For information on whether any patents have been disclosed that may be essential to
40 implementing this specification, and any offers of patent licensing terms, please refer to
41 the Intellectual Property Rights section of the WSRF TC web page (<http://www.oasis->
42 [open.org/committees/wsrp/](http://www.oasis-open.org/committees/wsrp/)).

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96 1 Introduction

97 The relationship between Web services and stateful resources is defined in [WS-Resource]. This
98 relationship is described as the *WS-Resource Access Pattern*. In the *WS-Resource Access*
99 *Pattern*, messages to a Web service include a component that identifies a stateful resource to be
100 used in the execution of the message exchange. We refer to the composition of a stateful
101 resource and a Web service as a *WS-Resource*.

102 This specification standardizes the means by which the definition of the properties of a *WS-*
103 *Resource* may be declared as part of the Web service interface. The declaration of the *WS-*
104 *Resource's* properties represents a projection of or a *view* on the *WS-Resource's* state. The
105 projection is defined in terms of a resource properties document. This resource properties
106 document serves to define a basis for access to the resource properties through the Web service
107 interface.

108 This specification also defines a standard set of message exchanges that allow a requestor to
109 query or update the resource property values. The set of properties defined in the resource
110 properties document, and associated with the service interface, defines the constraints on the
111 valid contents of these message exchanges.

112 In this document, we outline the goals and requirements for resource properties. We define the
113 means to declare resource properties as part of a Web service description. Following this, we
114 define the message exchanges for querying and updating resource property values. We also
115 define a standard means by which requestors can use *WS-Notification* to receive notification
116 messages related to changes in resource property values. The document concludes with a
117 discussion of security considerations, including a discussion of security considerations associated
118 with resource properties. As an appendix, we provide normative XML and WSDL descriptions of
119 resource properties.

120 *WS-ResourceProperties* is inspired by a portion of the Global Grid Forum's "Open Grid
121 Services Infrastructure (OGSI) Version 1.0" specification [OGSI].

122 1.1 Goals and Requirements

123 The goal of *WS-ResourceProperties* is to standardize the terminology, concepts, operations,
124 WSDL and XML needed to express the resource properties projection, its association with the
125 Web service interface, and the messages defining the query and update capability against the
126 properties of a *WS-Resource*.

127 1.1.1 Requirements

128 In meeting this goal, the specification must address the following specific requirements:

129 **This specification MUST:**

- 130 • Define the term "resource property" and its relationship to Web services and *WS-Resources*.
- 131 • Define the means by which a designer decorates a Web service description with the names
132 and types of properties associated with a *WS-Resource*.
- 133 • Define the means by which a requestor can:
 - 134 • Retrieve the values of one or more properties of a *WS-Resource*
 - 135 • Update the values of one or more properties of a *WS-Resource*
 - 136 • Query across the values of one or more properties of a *WS-Resource*
 - 137 • Subscribe for notification [*WS-BaseNotification*] when the value of a *WS-Resource*
138 property changes.

139 The means by which resource property values are retrieved and updated SHOULD reflect a
140 document-oriented style and MUST provide the means to perform batched query and update
141 operations against the WS-Resource in a single message exchange. This will facilitate improved
142 performance over approaches requiring a separate request message exchange for each
143 individual resource property access.

144 Web services are often described using a collection of message exchange sets (e.g. WSDL 1.1
145 portTypes). These message exchange sets may be aggregated (using manual cut-and-paste in
146 WSDL 1.1) to form the “final” composed interface definition for the Web service. The requestor’s
147 exposure to and interpretation of the Web service interface may be defined by a partial subset of
148 the constituent message exchange sets in the overall interface composition. Therefore, a
149 requestor will form resource property-related message requests based on this potentially partial
150 understanding of the overall composed interface to the Web service. It MUST be possible for a
151 requestor, having partial knowledge of the composed service interface, to form correct and
152 consistent resource property access message requests that execute properly on a Web service
153 that implements an extended message exchange set.

154 1.1.2 Non-Goals

155 The following topics are outside the scope of this specification:

156 General purpose XML document query and update: This specification is not meant to be used for
157 querying and updating generic XML documents, or to be used outside the context of modeling
158 stateful resources with Web services.

159 1.2 Notational Conventions

160 The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD",
161 "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be
162 interpreted as described in [RFC 2119].

163 When describing abstract data models, this specification uses the notational convention used by
164 the [XML Infoset]. Specifically, abstract property names always appear in square brackets (e.g.,
165 [some property]).

166 This specification uses a notational convention, referred to as “Pseudo-schemas” in a fashion
167 similar to the WSDL 2.0 Part 1 specification [WSDL 2.0]. A Pseudo-schema uses a BNF-style
168 convention to describe attributes and elements:

- 169 • '?' denotes optionality (i.e. zero or one occurrences),
- 170 • '*' denotes zero or more occurrences,
- 171 • '+' denotes one or more occurrences,
- 172 • '[' and ']' are used to form groups,
- 173 • '|' represents choice.

174 Attributes are conventionally assigned a value which corresponds to their type, as defined in the
175 normative schema.

```
176 <!-- sample pseudo-schema -->  
177 <element  
178   required_attribute_of_type_QName="xs:QName"  
179   optional_attribute_of_type_string="xs:string"? >  
180 <required_element />  
181 <optional_element />?  
182 <one_or_more_of_these_elements />+  
183 [ <choice_1 /> | <choice_2 /> ]*
```

184

</element>

185 Where there is disagreement between the separate XML schema and WSDL files describing the
186 messages defined by this specification and the normative descriptive text (excluding any pseudo-
187 schema) in this document, the normative descriptive text will take precedence over the separate
188 files. The separate files take precedence over any pseudo-schema and over any schema and
189 WSDL included in the appendices.

190 **1.3 Namespaces**

191 The following namespaces are used in this document:

Prefix	Namespace
s11	http://schemas.xmlsoap.org/soap/envelope/
xsd	http://www.w3.org/2001/XMLSchema
wsa	http://www.w3.org/2005/03/addressing
wsrf-rp	http://docs.oasis-open.org/wsrp/rp-1
wsrf-rpw	http://docs.oasis-open.org/wsrp/rpw-1
wsrf-bf	http://docs.oasis-open.org/wsrp/bf-1
wsrf-rw	http://docs.oasis-open.org/wsrp/rw-1

192 **1.4 Fault Definitions**

193 All faults generated by a WS-Resource SHOULD be compliant with the WS-BaseFaults [WS-
194 BaseFaults] specification.

195 All faults defined by this specification MUST use the following wsa:Action URI:

196 <http://docs.oasis-open.org/wsrp/fault>.

197 **2 Terminology and Concepts**

198 The following definitions outline the terminology and usage in this specification. This section gives
199 only brief description of these terms.

200 Resource Property:

- 201 • A resource property is a piece of information defined as part of the state model of a WS-
202 Resource.
- 203 • A resource property may reflect a part of the resource's state, meta-data, manageability
204 information, etc.

205 Resource Properties Document:

- 206 • The XML document representing a logical composition of resource property elements.
207 The resource properties document defines a particular view or projection of the state data
208 implemented by the WS-Resource.
- 209 • The type (e.g. the XML Schema definition of the root element) of a resource properties
210 document is associated with the WSDL portType defining the Web service interface. This
211 association is the basis of the WS-Resource definition. Each instance of a particular WS-
212 Resource type MUST implement a logical resource properties document of the type
213 declared in the WSDL portType.

214 Resource Property Element:

- 215 • The XML representation of a resource property.
- 216 • A resource property element must appear as the immediate child of the root element of a
217 resource properties document.
- 218 • A resource property element must be an XML global element definition (GED), and is
219 uniquely identified by QName.

220 Resource Property Value:

- 221 • The value(s) associated with a resource property.

222

3 Example

223

The simple example below defines the GenericDiskDrive portType and the resource properties

224

document associated with GenericDiskDrive. The association of the resource properties

225

document with the portType defines the type of the WS-Resource.

226

```
<wsdl:definitions ... xmlns:tns="http://example.com/diskDrive" ...>
227 ...
228 <wsdl:types>
229   <xsd:schema targetNamespace="http://example.com/diskDrive" ... >
230
231     <!-- Resource property element declarations -->
232     <xsd:element name="NumberOfBlocks" type="xsd:integer"/>
233     <xsd:element name="BlockSize" type="xsd:integer" />
234     <xsd:element name="Manufacturer" type="xsd:string" />
235     <xsd:element name="StorageCapability" type="xsd:string" />
236
237     <!-- Resource properties document declaration -->
238     <xsd:element name="GenericDiskDriveProperties">
239       <xsd:complexType>
240         <xsd:sequence>
241           <xsd:element ref="tns:NumberOfBlocks"/>
242           <xsd:element ref="tns:BlockSize" />
243           <xsd:element ref="tns:Manufacturer" />
244           <xsd:any minOccurs="0" maxOccurs="unbounded" />
245           <xsd:element ref="tns:StorageCapability"
246             minOccurs="0" maxOccurs="unbounded" />
247         </xsd:sequence>
248       </xsd:complexType>
249     </xsd:element>
250 ...
251   </xsd:schema>
252 </wsdl:types>
253 ...
254 <!-- Association of resource properties document to a portType -->
255 <wsdl:portType name="GenericDiskDrive"
256   wsrf-rp:ResourceProperties="tns:GenericDiskDriveProperties" >
257
258   <operation name="start" .../>
259   <operation name="stop" .../>
260 ...
261 </wsdl:portType>
262 ...
263 </wsdl:definitions>
```

264

The following represents the request message used to retrieve two resource property elements

265

from the WS-Resource that implements the GenericDiskDrive portType:

266

```
...
267 <wsrf-rp:GetMultipleResourceProperties
268   xmlns:tns="http://example.com/diskdrive" ...>
```

```
269 <wsrf-rp:ResourceProperty>
270   tns:NumberOfBlocks
271 </wsrf-rp:ResourceProperty>
272 <wsrf-rp:ResourceProperty>
273   tns:BlockSize
274 </wsrf-rp:ResourceProperty>
275 <wsrf-rp:ResourceProperty>
276   tns:StorageCapability
277 </wsrf-rp:ResourceProperty>
278 </wsrf-rp:GetMultipleResourceProperties>
279 ...
```

280 The following is a sample response to the simple get request:

```
281 ...
282 <wsrf-rp:GetMultipleResourcePropertiesResponse
283   xmlns:ns1="http://example.com/diskdrive"
284   xmlns:ns2="http://example.com/capabilities" ...>
285   <ns1:NumberOfBlocks>22</ns1:NumberOfBlocks>
286   <ns1:BlockSize>1024</ns1:BlockSize>
287   <ns1:StorageCapability>
288     <ns2:NoSinglePointOfFailure>true</ns2:NoSinglePointOfFailure>
289   </ns1:StorageCapability>
290   <ns1:StorageCapability>
291     <ns2:DataRedundancyMax>42</ns2:DataRedundancyMax>
292   </ns1:StorageCapability>
293
294 </wsrf-rp:GetMultipleResourcePropertiesResponse>
295 ...
```

296

4 Declaring Resource Properties

297

4.1 Resource Properties Document

298

The resource properties document type associated with a Web service's WSDL 1.1 portType definition provides the declaration of the exposed resource properties of the WS-Resource. It represents a particular composed structural view or projection of the resource properties of the WS-Resource, essentially exposing the stateful resource component within the WS-Resource composition. This may be used by a service requestor to form an XML-based query or update expression on the WS-Resource.

304

This specification does not dictate the means by which a service implements a resource properties document. A given service implementation may choose to realize its implementation of the resource properties document as an actual XML instance document, stored in memory, in the file system, in a database or in some XML Repository. Other service implementations may *dynamically* construct the resource property elements and their values, from data held in programming language objects (such as a J2EE EJB Entity Bean) or by executing a command on a private communications channel to a physical resource. Yet another implementation possibility is a mapping layer to a standard management interface (such as CIM or SNMP).

312

There is an explicit relationship between the resource properties document and the message exchanges defined in Section 5. Any Web service that implements an interface that includes a resource properties document type declaration is a WS-Resource. A WS-Resource MUST accept message requests declared by the GetResourceProperty message exchange defined in Section 5. Similarly, such a Web service MAY accept message requests declared by the other message exchanges defined in Section 5.

318

However, there is no relationship, intended or implied by this specification, between the resource properties defined in the resource properties document and any other message exchanges that may be introduced as part of the Web service interface. Any relationships between the resource properties and messages that comprise an interface are entirely under the purview of the designer of that interface. For example, using the resource properties document described above in Section 3, it would be legal for an interface designer to introduce a "getNumberOfBlocks" message exchange. However, with respect to this specification, there is no relationship either required or prohibited between such an operation and the properties declared in the resource properties document.

327

4.2 Resource Properties Document Type

328

A *resource properties document* MUST be defined using the following rules:

329

- 1 The resource properties document MUST be a global element declaration (GED) in some XML namespace. This GED defines the type of the root element of a resource properties document and hence the type of the resource properties document itself.

332

- 2 The resource properties document MUST be uniquely identified by a QName.

333

- 3 The complexType defining the resource properties document MUST define element children only.

335

- 4 The complexType defining the resource properties document MUST define a collection of zero or more child elements, called *resource property elements*. Each child element MUST be a GED.

338

- 5 The complexType defining the resource properties document MAY allow open element content (xsd:any).

339

340 **4.3 Declaring the Resource Properties Document Type in WSDL**

341 The resource properties document definition is associated with a Web service WSDL 1.1
342 portType in the following manner:

```
343 <wsdl:definitions ...>  
344 <wsdl:portType ...  
345   wsrf-rp:ResourceProperties="xsd:QName"? ... >  
346 ...  
347 </wsdl:portType>
```

348 This definition is further constrained as follows:

349 /wsdl:portType/@wsrf-rp:ResourceProperties

350 If this attribute appears on a WSDL 1.1 portType element (using attribute extensibility
351 available in the WSDL 1.1 XML schema definition for the portType element) its value
352 MUST be a QName referring to a resource properties document as defined in Section
353 4.2.

354 Any service that implements a portType annotated with @wsrf-rp:ResourceProperties MUST be a
355 component of a WS-Resource and MUST provide the interface to resource properties via a
356 document whose root element is defined by the XML global element declaration associated with
357 the portType.

5 Operations on Resource Properties

358

359 This section defines a collection of message exchanges that standardize the means by which a
360 requestor can retrieve values of resource properties, update values of resource properties, and
361 issue queries against resource properties.

362 Any interface that includes a resource properties document type declaration
363 (/wsdl:portType/@ResourceProperties) MUST also include the GetResourceProperty message
364 exchange (operation) defined in this section. Any Web service that implements an interface that
365 includes a resource properties document type declaration MAY also support the other message
366 exchanges defined in this section.

5.1 GetResourcePropertyDocument

367 A WS-Resource MAY support the message exchange defined in this section that allows a
368 requestor to retrieve the values of all resource properties associated with the WS-Resource.

369 The format of this request message MUST be:

370

```
<wsrf-rp:GetResourcePropertyDocument />
```

371
372 The GetResourcePropertyDocument request message MUST follow the WS-Resource Access
373 Pattern. The wsa:Action MUST contain the URI

374 `http://docs.oasis-open.org/wsrf/rpw-`
375 `1/GetResourcePropertyDocument/GetResourcePropertyDocumentRequest.`

376 The response of the GetResourcePropertyDocument request message is a message of the
377 following form:

378

```
<wsrf-rp:GetResourcePropertyDocumentResponse>
```

379 `{any}`

380

```
</wsrf-rp:GetResourcePropertyDocumentResponse>
```

381 The wsa:Action MUST contain the URI

382 `http://docs.oasis-open.org/wsrf/rpw-`
383 `1/GetResourcePropertyDocument/GetResourcePropertyDocumentResponse.`

384 The contents of the GetResourcePropertyDocumentResponse message are further described as
385 follows:

386 `/wsrf-rp:GetResourcePropertyDocumentResponse/{any}`

387 An XML element that MUST correspond to the element declared in the value of the
388 ResourceProperties attribute of the portType defining the
389 GetResourcePropertyDocument operation. The contents of the element comprise all the
390 resource property values contained in the WS-Resource's resource properties document.

391 If the WS-Resource does not respond to the GetResourcePropertyDocument request message
392 with the GetResourcePropertyDocumentResponse message, then it MUST send a fault. This
393 specification defines the following faults associated with failure to process the
394 GetResourcePropertyDocument request message:

395 ResourceUnknownFault

- 396 • The resource identified in the message (which follows the WS-Resource Access Pattern)
397 is not known to the Web service. This fault is specified by the WS-Resource [WS-
398 Resource] specification.

399 5.1.1 Example SOAP Encoding of the 400 GetResponsePropertyDocument Message Exchange

401 Consider the following resource properties document defining resource properties for a WS-
402 Resource defined by the GenericDiskDrive portType:

```
403 <GenericDiskDriveProperties  
404   xmlns:tns="http://example.com/diskDrive"  
405   xmlns:cap="http://example.com/capabilities">  
406   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>  
407   <tns:BlockSize>1024</tns:BlockSize>  
408   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>  
409   <tns:StorageCapability>  
410     <cap:NoSinglePointOfFailure>true</cap:NoSinglePointOfFailure>  
411   </tns:StorageCapability>  
412   <tns:StorageCapability>  
413     <cap:DataRedundancyMax>42</cap:DataRedundancyMax>  
414   </tns:StorageCapability>  
415 </GenericDiskDriveProperties>
```

416 The following is a non-normative example of a GetResourcePropertyDocument request message
417 using SOAP 1.1:

```
418 <s11:Envelope ...>  
419   <s11:Header>  
420     <wsa:Action>  
421       http://docs.oasis-open.org/wsrf/rpw-  
422       1/GetResourcePropertyDocument/GetResourcePropertyDocumentRequest  
423     </wsa:Action>  
424     ...  
425   </s11:Header>  
426   <s11:Body>  
427     <wsrf-rp:GetResourcePropertyDocument/>  
428   </s11:Body>  
429 </s11:Envelope>
```

430 The following is an example GetResourcePropertyDocumentResponse message using SOAP
431 1.1:

```
432 <s11:Envelope ...>  
433   <s11:Header>  
434     <wsa:Action>  
435       http://docs.oasis-open.org/wsrf/rpw-  
436       1/GetResourcePropertyDocument/GetResourcePropertyDocumentResponse  
437     </wsa:Action>  
438     ...  
439   </s11:Header>  
440   <s11:Body>  
441     <wsrf-rp:GetResourcePropertyDocumentResponse  
442       xmlns:tns="http://example.com/diskDrive"  
443       xmlns:cap="http://example.com/capabilities">  
444       <tns:GenericDiskDriveProperties>
```

```

445 <tns:NumberOfBlocks>22</tns:NumberOfBlocks>
446 <tns:BlockSize>1024</tns:BlockSize>
447 <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
448 <tns:StorageCapability>
449 <cap:NoSinglePointOfFailure>true</cap:NoSinglePointOfFailure>
450 </tns:StorageCapability>
451 <tns:StorageCapability>
452 <cap:DataRedundancyMax>42</cap:DataRedundancyMax>
453 <tns:StorageCapability>
454 </GenericDiskDriveProperties>
455 </wsrf-rp:GetResourcePropertyDocumentResponse>
456 </s11:Body>
457 </s11:Envelope>

```

5.2 GetResourceProperty

458 A WS-Resource whose portType includes the resource properties document type declaration
459 (/wsdl:portType/@ResourceProperties) MUST support the message exchange defined in this
460 section that allows a requestor to retrieve the value of a single resource property of a WS-
461 Resource.
462 Resource.

463 The format of this request message MUST be:

```

464 <wsrf-rp:GetResourceProperty>
465   QName
466 </wsrf-rp:GetResourceProperty>
467
468

```

469 The GetResourceProperty request message MUST follow the WS-Resource Access Pattern. The
470 wsa:Action MUST contain the URI

```

471   http://docs.oasis-open.org/wsrf/rpw-
472   1/GetResourceProperty/GetResourcePropertyRequest.

```

473 The components of the GetResourceProperty request message are further described as follows:
474 /wsrf-rp:GetResourceProperty/QName

475 This MUST correspond to the QName of a resource property element child of the root of
476 the WS-Resource's resource properties document.

477 The response of the GetResourceProperty request message is a message of the following form:

```

478 <wsrf-rp:GetResourcePropertyResponse>
479   {any}*
480 </wsrf-rp:GetResourcePropertyResponse>
481
482

```

483 The wsa:Action MUST contain the URI

```

484   http://docs.oasis-open.org/wsrf/rpw-
485   1/GetResourceProperty/GetResourcePropertyResponse.

```

486 The contents of the GetResourceProperty response message are further described as follows:
487 /wsrf-rp:GetResourcePropertyResponse/{any}

488 The resource property value, as an XML element, that corresponds to the QName in the
489 GetResourceProperty request. Note: in the case where the resource property element is
490 defined with minOccurs="0" and the resource properties document does not contain any
491 value for that resource property, the response MUST be an empty wsrf-
492 rp:GetResourcePropertyResponse element.

493 If the WS-Resource does not respond to the GetResourceProperty request message with the
494 GetResourcePropertyResponse message, then it MUST send a fault. This specification defines
495 the following faults associated with failure to process the GetResourceProperty request
496 message::

497 ResourceUnknownFault

- 498 • The resource identified in the message (which follows the WS-Resource Access Pattern)
499 is not known to the Web service. This fault is specified by the WS-Resource [WS-
500 Resource] specification.

501 InvalidResourcePropertyQName

- 502 • The QName in the request message did not correspond to a resource property element
503 of the WS-Resource referred to in the request message.

504 **5.2.1 Example SOAP Encoding of the GetResourceProperty Message** 505 **Exchange**

506 Consider the following resource properties document defining resource properties for a WS-
507 Resource defined by the GenericDiskDrive portType:

```
508 <GenericDiskDriveProperties  
509   xmlns:tns="http://example.com/diskDrive"  
510   xmlns:cap="http://example.com/capabilities">  
511   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>  
512   <tns:BlockSize>1024</tns:BlockSize>  
513   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>  
514   <tns:StorageCapability>  
515     <cap:NoSinglePointOfFailure>true</cap:NoSinglePointOfFailure>  
516   </tns:StorageCapability>  
517   <tns:StorageCapability>  
518     <cap:DataRedundancyMax>42</cap:DataRedundancyMax>  
519   </tns:StorageCapability>  
520 </GenericDiskDriveProperties>
```

521 The following is a non-normative example of a GetResourceProperty request message using
522 SOAP 1.1:

```
523 <s11:Envelope ...>  
524   <s11:Header>  
525     <wsa:Action>  
526     http://docs.oasis-open.org/wsrf/rpw-1/GetResourceProperty/GetResourcePropertyRequest  
527     </wsa:Action>  
528   ...  
529   </s11:Header>  
530   <s11:Body>  
531     <wsrf-rp:GetResourceProperty  
532     xmlns:tns="http://example.com/diskDrive">
```



```
533     tns:NumberOfBlocks
534     </wsrf-rp: GetResourceProperty>
535 </s11:Body>
536 </s11:Envelope>
```

537 The following is an example GetResourcePropertyResponse message using SOAP 1.1:

```
538 <s11:Envelope ...>
539   <s11:Header>
540     <wsa:Action>
541     http://docs.oasis-open.org/wsrf/rpw-1/GetResourceProperty/GetResourcePropertyResponse
542     </wsa:Action>
543     ...
544   </s11:Header>
545   <s11:Body>
546     <wsrf-rp:GetResourcePropertyResponse
547       xmlns:ns1="http://example.com/diskDrive">
548       <ns1:NumberOfBlocks>22</ns1:NumberOfBlocks>
549     </wsrf-rp:GetResourcePropertyResponse>
550   </s11:Body>
551 </s11:Envelope>
```

552 **5.3 GetMultipleResourceProperties**

553 A WS-Resource MAY support the message exchange defined in this section that allows a
554 requestor to retrieve the values of multiple resource properties of a WS-Resource.

555 The format of this request message MUST be:

```
556 <wsrf-rp:GetMultipleResourceProperties>
557   <wsrf-rp:ResourceProperty>QName <wsrf-rp:ResourceProperty>+
558 </wsrf-rp:GetMultipleResourceProperties>
```

559 The GetMultipleResourceProperties request message MUST follow the WS-Resource Access
560 Pattern. The wsa:Action MUST contain the URI

```
561     http://docs.oasis-open.org/wsrf/rpw-
562     1/GetMultipleResourceProperties/GetMultipleResourcePropertiesRequest.
```

563 The components of the GetMultipleResourceProperties request message are further described as
564 follows:

565 /wsrf-rp:GetMultipleResourceProperties/wsrf-rp:ResourceProperty+

566 This component MAY appear one or more times. Each ResourceProperty element
567 contains an xsd:QName which MUST correspond to the QName of a resource property
568 element child of the root of the WS-Resource's resource properties document.

569 The response of the GetMultipleResourceProperties request message is a message of the
570 following form:

```
571 <wsrf-rp:GetMultipleResourcePropertiesResponse>
572   {any}*
573 </wsrf-rp:GetMultipleResourcePropertiesResponse>
```

574 The wsa:Action MUST contain the URI

575 <http://docs.oasis-open.org/wsrf/rpw->
576 [1/GetMultipleResourceProperties/GetMultipleResourcePropertiesResponse](http://docs.oasis-open.org/wsrf/rpw-1/GetMultipleResourceProperties/GetMultipleResourcePropertiesResponse).

577 The contents of the GetMultipleResourcePropertiesResponse message are further described as
578 follows:

579 `/wsrf-rp:GetMultipleResourcePropertiesResponse/{any}`

580 A collection of resource property values, as XML elements that correspond to the
581 QNames given in the GetMultipleResourceProperties request message. This collection is
582 formed in the following fashion. For each QName in the request message, the resource
583 must add to the collection all child elements of the root of the resource properties
584 document whose name corresponds to that QName. Note: in the case where the
585 resource property element is defined with minOccurs="0" and the resource properties
586 document does not contain any value for that resource property, no child element is
587 added to the collection for that QName.

588 If the XML schema definition of the resource properties document root element does not
589 permit the root element to contain a child element with that QName the processing of the
590 GetMultipleResourceProperties request message MUST terminate with a fault message.

591 The collection of resource property values SHOULD be formed in the same order as the
592 resource property element QNames were specified in the GetMultipleResourceProperties
593 request message.

594 If the WS-Resource does not respond to the GetMultipleResourceProperties request message
595 with the GetMultipleResourcePropertiesResponse message, then it MUST send a fault. This
596 specification defines the following faults associated with failure to process the
597 GetMultipleResourceProperties request message:

598 ResourceUnknownFault

- 599 • The resource identified in the message (which follows the WS-Resource Access Pattern)
600 is not known to the Web service. This fault is specified by the WS-Resource [WS-
601 Resource] specification.

602 InvalidResourcePropertyQName

- 603 • One or more of the QNames in the request message did not correspond to a resource
604 property element of the WS-Resource referred to in the request message.

605 Note: the functionality provided by the GetResourceProperty message exchange is a strict subset
606 of that provided by GetMultipleResourceProperties. WS-ResourceProperties defines two
607 message exchange sets to provide implementation flexibility. GetResourceProperty is a simple,
608 required message exchange that allows simple Web service implementations to be compliant
609 with WS-ResourceProperties. The optional GetMultipleResourceProperties, while more
610 sophisticated, allows efficient retrieval of multiple resource property values using a single
611 message exchange.

612 An example use of the GetMultipleResourceProperties operation is shown in Section 3. Note: it is
613 the responsibility of the requestor to correlate the elements of the response message that
614 correspond to the QNames contained in the request message.

615 **5.3.1 Example SOAP Encoding of the GetMultipleResourceProperties** 616 **Message Exchange**

617 Consider the following resource properties document defining resource properties for a WS-
618 Resource defined by the GenericDiskDrive portType:

```

619 <GenericDiskDriveProperties
620   xmlns:tns="http://example.com/diskDrive"
621   xmlns:cap="http://example.com/capabilities">
622   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>
623   <tns:BlockSize>1024</tns:BlockSize>
624   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
625   <tns:StorageCapability>
626     <cap:NoSinglePointOfFailure>true</cap:NoSinglePointOfFailure>
627   </tns:StorageCapability>
628   <tns:StorageCapability>
629     <cap:DataRedundancyMax>42</cap:DataRedundancyMax>
630   </tns:StorageCapability>
631 </GenericDiskDriveProperties>

```

632 The following is a non-normative example of a GetMultipleResourceProperties request message
633 using SOAP 1.1:

```

634 <s11:Envelope ...>
635   <s11:Header>
636     <wsa:Action>
637       http://docs.oasis-open.org/wsrf/rpw-
638       1/GetMultipleResourceProperties/GetMultipleResourcePropertiesRequest
639     </wsa:Action>
640     ...
641   </s11:Header>
642   <s11:Body>
643     <wsrf-rp:GetMultipleResourceProperties
644       xmlns:tns="http://example.com/diskdrive">
645       <wsrf-rp:ResourceProperty>
646         tns:NumberOfBlocks
647       </wsrf-rp:ResourceProperty>
648       <wsrf-rp:ResourceProperty>
649         tns:BlockSize
650       </wsrf-rp:ResourceProperty>
651     </wsrf-rp:GetMultipleResourceProperties>
652   </s11:Body>
653 </s11:Envelope>

```

654 The following is an example GetMultipleResourcePropertiesResponse message using SOAP 1.1:

```

655 <s11:Envelope ...>
656   <s11:Header>
657     <wsa:Action>
658       http://docs.oasis-open.org/wsrf/rpw-
659       1/GetMultipleResourceProperties/GetMultipleResourcePropertiesResponse
660     </wsa:Action>
661     ...
662   </s11:Header>
663   <s11:Body>
664     <wsrf-rp:GetMultipleResourcePropertiesResponse
665       xmlns:ns1="http://example.com/diskdrive" ...>

```

```
666 <ns1:NumberOfBlocks>22</ns1:NumberOfBlocks>
667 <ns1:BlockSize>1024</ns1:BlockSize>
668 </wsrf-rp:GetMultipleResourcePropertiesResponse>
669 </s11:Body>
670 </s11:Envelope>
```

671 5.4 QueryResourceProperties

672 A WS-Resource MAY support the message exchange defined in this section that allows a
673 requestor to query the resource properties document of a WS-Resource using a query expression
674 such as XPath [XPath].

675 The format of this request message MUST be:

```
676 <wsrf-rp:QueryResourceProperties>
677 <wsrf-rp:QueryExpression Dialect="URI">
678   xsd:any
679 </wsrf-rp:QueryExpression>
680 </wsrf-rp:QueryResourceProperties>
```

681 The QueryResourceProperties request message MUST follow the WS-Resource Access Pattern.
682 The wsa:Action MUST contain the URI

```
683   http://docs.oasis-open.org/wsrf/rpw-
684   1/QueryResourceProperties/QueryResourcePropertiesRequest.
```

685 The components of the QueryResourceProperties request message are further described as
686 follows:

687 /wsrf-rp:QueryResourceProperties/wsrf-rp:QueryExpression

688 The context of the expression is to be evaluated against the resource properties
689 document of the WS-Resource identified by the request. The results of evaluating the
690 QueryExpression are returned in the response to this request message.

691 /wsrf-rp:QueryResourceProperties/wsrf-rp:QueryExpression/@Dialect

692 This attribute contains a URI specifying the type of expression contained by the element.
693 If the implementation does not recognize the URI identified by @Dialect, it MUST fault.
694 There are two well known dialects identified by this specification, corresponding to two
695 versions of the XPath language.

```
696   http://www.w3.org/TR/1999/REC-xpath-19991116
```

697 This URI identifies the XPath 1.0 language. The contents of the
698 QueryExpression MUST be a string containing a valid XPath 1.0
699 expression.

```
700   http://www.w3.org/TR/2003/WD-xpath20-20031112
```

701 This URI identifies the Xpath 2.0 (working draft) language. The contents
702 of the QueryExpression MUST be a string containing a valid XPath 2.0
703 expression. Note: an additional URI will be added to represent the W3C
704 Recommendation form of the XPath 2.0 language.

705 For XPath dialects, the namespace URI prefixes for the in-scope namespace
706 declarations of the QueryResourceProperties element may be used in the XPath
707 expression. The actual namespace declaration may be on any of the ancestors of the
708 QueryResourceProperties element.

709 Note: it is RECOMMENDED that users avoid the use of previously-defined namespace
710 prefixes when there is a chance the message could traverse intermediaries or when
711 encryption is applied to the message, as there is a chance that an intermediary will
712 modify the namespace prefixes. In such cases the expression will become incoherent
713 with respect to the namespace prefix to namespace URI mapping intended by the
714 requestor.

715 /wsrf-rp:QueryResourceProperties/QueryExpression/{any}

716 The QueryExpression MUST contain an expression in an expression language specified
717 by the dialect attribute. Note: this element may contain mixed content.

718 The response of the QueryResourceProperties request message MUST be a message of the
719 following form:

```
720 <wsrf-rp:QueryResourcePropertiesResponse>  
721 {any}  
722 </wsrf-rp:QueryResourcePropertiesResponse>
```

723 The wsa:Action MUST contain the URI

724 [http://docs.oasis-open.org/wsrf/rpw-](http://docs.oasis-open.org/wsrf/rpw-1/QueryResourceProperties/QueryResourcePropertiesResponse)
725 [1/QueryResourceProperties/QueryResourcePropertiesResponse](http://docs.oasis-open.org/wsrf/rpw-1/QueryResourceProperties/QueryResourcePropertiesResponse).

726 The contents of the QueryResourcePropertiesResponse message are further described as
727 follows:

728 /wsrf-rp:QueryResourcePropertiesResponse/{any}

729 The response of the QueryResourceProperties request is variable, depending on the
730 nature of the QueryExpression component of the QueryResourceProperties request. The
731 response MUST contain an XML serialization of the results of evaluating the
732 QueryExpression against the resource properties document. Note: this element has
733 mixedContent, to allow for the case where the QueryExpression evaluates to a simple
734 type (such as a Boolean, a string or an integer) as well as the case where a node-set of
735 elements is returned.

736 If the WS-Resource does not respond to the QueryResourceProperties request message with the
737 QueryResourcePropertiesResponse message, then it MUST send a fault. This specification
738 defines the following faults associated with failure to process the QueryResourceProperties
739 request message::

740 ResourceUnknownFault

- 741 • The resource identified in the message (which follows the WS-Resource Access Pattern)
742 is not known to the Web service. This fault is specified by the WS-Resource [WS-
743 Resource] specification.

744 UnknownQueryExpressionDialect

- 745 • The given QueryExpression has a dialect that is unknown to the Web service.

746 InvalidQueryExpression

- 747 • The given Query Expression is not valid within the QueryExpression language identified
748 by the dialect attribute.

749 QueryEvaluationError

- 750 • The Query Expression failed during evaluation.

751 5.4.1 QueryExpressionDialect Resource Property

752 When a portType includes the definition of the QueryResourceProperties operation, it MUST also
753 include a reference to the wsrf-rp:QueryExpressionDialect Resource Property. The form of the
754 wsrf-rp:QueryExpressionDialect Resource Property is:

```
755 <wsrf-rp:QueryExpressionDialect>  
756   xsd:anyURI  
757 </wsrf-rp:QueryExpressionDialect>
```

758 Furthermore, this reference MUST reflect the minOccurs and maxOccurs properties as follows:

```
759 <xsd:element ref="wsrf-rp:QueryExpressionDialect"  
760   minOccurs="0" maxOccurs="unbounded" />
```

761 This resource property element is further constrained as follows:

762 /wsrf-rp:QueryExpressionDialect

763 This resource property declares one or more QueryExpression dialects that are
764 supported by the Web service.

765 /wsrf-rp:QueryExpressionDialect/{anyURI}

766 If a requestor sends a QueryResourceProperties request message, using a
767 QueryExpression with Dialect matching the URI contained in this resource property
768 element, the WS-Resource MUST NOT issue an *UnknownQueryExpressionDialect* fault.
769 The value of this element is a URI that MUST correspond to a QueryExpression dialect.

770 5.4.2 Example SOAP Encoding of the QueryResourceProperties 771 Message Exchange

772 Consider the following resource properties document defining resource properties for a WS-
773 Resource defined by the GenericDiskDrive portType:

```
774 <GenericDiskDriveProperties  
775   xmlns:tns="http://example.com/diskDrive"  
776   xmlns:cap="http://example.com/capabilities">  
777   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>  
778   <tns:BlockSize>1024</tns:BlockSize>  
779   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>  
780   <tns:StorageCapability>  
781     <cap:NoSinglePointOfFailure>true</cap:NoSinglePointOfFailure>  
782   </tns:StorageCapability>  
783   <tns:StorageCapability>  
784     <cap:DataRedundancyMax>42</cap:DataRedundancyMax>  
785   </tns:StorageCapability>  
786 </GenericDiskDriveProperties>
```

787 The following is a non-normative example of a QueryResourceProperties request message using
788 SOAP 1.1:

```
789 <s11:Envelope ...>  
790   <s11:Header>  
791     <wsa:Action>  
792       http://docs.oasis-open.org/wsrf/rpw-  
793       1/QueryResourceProperties/QueryResourcePropertiesRequest
```

```

794     </wsa:Action>
795     ...
796     </s11:Header>
797     <s11:Body>
798         <wsrf-rp:QueryResourceProperties>
799             <wsrf-rp:QueryExpression
800                 Dialect="http://www.w3.org/TR/1999/REC-xpath-19991116" >
801                 boolean(/*/NumberOfBlocks > 20 and */BlockSize=1024)
802             </wsrf-rp:QueryExpression>
803         </wsrf-rp:QueryResourceProperties>
804     </s11:Body>
805 </s11:Envelope>

```

806 The following is an example QueryResourcePropertiesResponse message using SOAP 1.1,
807 containing the results of evaluating that XPath expression against the root element of the
808 resource's resource properties document:

```

809 <s11:Envelope ...>
810   <s11:Header>
811     <wsa:Action>
812     http://docs.oasis-open.org/wsrf/rpw-
813     1/QueryResourceProperties/QueryResourcePropertiesResponse
814   </wsa:Action>
815   </s11:Header>
816   <s11:Body>
817     <wsrf-rp:QueryResourcePropertiesResponse>
818       true
819     </wsrf-rp:QueryResourcePropertiesResponse>
820   </s11:Body>
821 </s11:Envelope>

```

822 5.5 PutResourcePropertyDocument

823 The PutResourcePropertyDocument message exchange allows a requestor to completely replace
824 the values of a WS-Resource's properties with an entirely new resource property document. This
825 message exchange is symmetric to the GetResourcePropertyDocument message exchange
826 defined in Section 5.1.

827 The format of the PutResourcePropertyDocument request message MUST be:

```

828 <wsrf-rp:PutResourcePropertyDocument>
829   {any}
830 </wsrf-rp:PutResourcePropertyDocument>

```

831 The PutResourcePropertyDocument request message MUST follow the WS-Resource Access
832 Pattern. The wsa:Action MUST contain the URI

```

833     http://docs.oasis-open.org/wsrf/rpw-
834     1/PutResourcePropertyDocument/PutResourcePropertyDocumentRequest.

```

835 The contents of the PutResourcePropertyDocument request message are further described as
836 follows:

```

837 /wsrf-rp:PutResourcePropertyDocument/{any}

```

838 An XML element that MUST correspond to the element declared in the value of the
839 ResourceProperties attribute of the portType defining the PutResourcePropertyDocument
840 operation. This is the value the requestor intends to be the new resource property
841 document for the WS-Resource.

842 The response of the PutResourcePropertyDocument request message is a message of the
843 following form:

```
844 <wsrf-rp:PutResourcePropertyDocumentResponse>  
845 {any} ?  
846 </wsrf-rp:PutResourcePropertyDocumentResponse>
```

847 The wsa:Action MUST contain the URI

848 http://docs.oasis-open.org/wsrf/rpw-
849 1/PutResourcePropertyDocument/PutResourcePropertyDocumentResponse.

850 The contents of the PutResourcePropertyDocumentResponse message are further described as
851 follows:

852 /wsrf-rp:PutResourcePropertyDocumentResponse/{any}

853 If, after processing the PutResourcePropertyDocument request, the XML Infoset of the
854 WS-Resource's resource properties document is identical to the XML Infoset of the
855 contents of the PutResourcePropertyDocument request itself, then the contents of the
856 PutResourcePropertyDocumentResponse MUST be empty.

857 If, after processing the PutResourcePropertyDocument request, the XML Infoset of the
858 WS-Resource's resource properties document is **not** identical to the XML Infoset of the
859 contents of the PutResourcePropertyDocument request itself, then the contents of the
860 PutResourcePropertyDocumentResponse MUST contain the updated resource property
861 document.

862 If the WS-Resource does not respond to the PutResourcePropertyDocument request message
863 with the PutResourcePropertyDocumentResponse message, then it MUST send a fault. If the
864 request results in a fault for any reason, such as read-only property changed or some other
865 update fault, none of the resource properties are modified. This specification defines the following
866 faults associated with failure to process the PutResourcePropertyDocument request message:

867 ResourceUnknownFault:

- 868 • The resource identified in the message (which follows the WS-Resource Access Pattern)
869 is not known to the Web service. This fault is specified by the WS-Resource [WS-
870 Resource] specification.

871 UnableToPutResourcePropertyDocument:

- 872 • The WS-Resource was unable to complete the processing of the
873 PutResourcePropertyDocument for some reason.

874 5.5.1 Example SOAP Encoding of the 875 PutResponsePropertyDocument Message Exchange

876 Consider the following resource properties document defining resource properties for a WS-
877 Resource defined by the GenericDiskDrive portType:

```
878 <GenericDiskDriveProperties  
879 xmlns:tns="http://example.com/diskDrive">  
880 <tns:NumberOfBlocks>22</tns:NumberOfBlocks>
```



```
881 <tns:BlockSize>1024</tns:BlockSize>
882 <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
883 <tns:DriveIdentifier>ABC123</tns:DriveIdentifier>
884 </GenericDiskDriveProperties>
```

885 The following is a non-normative example of a PutResourcePropertyDocument request message
886 using SOAP 1.1:

```
887 <s11:Envelope ...>
888 <s11:Header>
889 <wsa:Action>
890 http://docs.oasis-open.org/wsrf/rpw-
891 1/PutResourcePropertyDocument/PutResourcePropertyDocumentResponseRequest
892 </wsa:Action>
893 ...
894 </s11:Header>
895 <s11:Body>
896 <wsrf-rp:PutResourcePropertyDocument>
897 <abc:GenericDiskDriveProperties
898 xmlns:abc="http://example.com/diskDrive">
899 <abc:NumberOfBlocks>22</abc:NumberOfBlocks>
900 <abc:BlockSize>1024</abc:BlockSize>
901 <abc:Manufacturer>DrivesRUs</abc:Manufacturer>
902 <abc:DriveIdentifier>ABC123</abc:DriveIdentifier>
903 </abc:GenericDiskDriveProperties>
904 </wsrf-rp:PutResourcePropertyDocument>
905 </s11:Body>
906 </s11:Envelope>
```

907 The following is an example PutResourcePropertyDocumentResponse message using SOAP
908 1.1:

```
909 <s11:Envelope ...>
910 <s11:Header>
911 <wsa:Action>
912 http://docs.oasis-open.org/wsrf/rpw-
913 1/PutResourcePropertyDocument/PutResourcePropertyDocumentResponse
914 </wsa:Action>
915 ...
916 </s11:Header>
917 <s11:Body>
918 <wsrf-rp:PutResourcePropertyDocumentResponse />
919 </s11:Body>
920 </s11:Envelope>
```

921 **5.6 SetResourceProperties**

922 A WS-Resource MAY support the message exchange defined in this section that allows a
923 requestor to modify the values of multiple resource properties of a WS-Resource.

924 The SetResourceProperties message allows the processing of a single request message to make
925 multiple changes to the resource properties document. There are three types of changes, each

926 modeled as separate types of component (called SetRequestComponent) of a
927 SetResourceProperties request message:

- 928 • Insert: wherein a new resource property element is inserted into the resource properties
929 document;
- 930 • Update: wherein existing resource property element(s) are modified; and
- 931 • Delete: wherein existing resource property element(s) are removed.

932 The format of this request message MUST be:

```
933 <wsrf-rp:SetResourceProperties>  
934 {  
935 <wsrf-rp:Insert >  
936 {any}*  
937 </wsrf-rp:Insert> |  
938  
939 <wsrf-rp:Update >  
940 {any}*  
941 </wsrf-rp:Update> |  
942  
943 <wsrf-rp:Delete ResourceProperty="QName" />  
944 }+  
945 </wsrf-rp:SetResourceProperties>
```

946 The SetResourceProperties request message MUST follow the WS-Resource Access Pattern.
947 The wsa:Action MUST contain the URI

948 [http://docs.oasis-open.org/wsrf/rpw-
949 1/SetResourceProperties/SetResourcePropertiesRequest](http://docs.oasis-open.org/wsrf/rpw-1/SetResourceProperties/SetResourcePropertiesRequest).

950 The contents of the SetResourceProperties request message are further described as follows:

951 /wsrf-rp:SetResourceProperties

952 This element contains a collection of one or more components called
953 SetRequestComponents. Each of the SetRequestComponents must be processed
954 against the WS-Resource's resource properties document. These
955 SetRequestComponents MUST appear to be processed in the order in which they are
956 listed in the request. Each request component MUST be processed to completion in this
957 conceptual sequence before a subsequent SetRequestComponent is processed. The
958 result of processing a given SetRequestComponent MUST be observable to the
959 processing of a subsequent SetRequestComponent, and to subsequent message
960 exchanges with the same WS-Resources.

961 If a service fails to process a SetRequestComponent, it MUST cease processing the
962 SetResourceProperties request message. The values of the resource properties
963 associated with this SetRequestComponent MAY reflect partial processing of this
964 SetRequestComponent. An implementation MAY restore the contents of the resource
965 properties document to a state as if no processing of the failed SetRequestComponent
966 had occurred. The implementation MAY additionally choose to restore the resource
967 properties document as if none of the SetRequestComponents had been processed.
968 Refer to Section 7 for additional information of resource recovery.

969 /wsrf-rp:SetResourceProperties/wsrf-rp:Insert

970 The intent of this component is to insert the contents of the component into the resource
971 properties document. The exact placement of the element insertion is implementation-
972 dependent. If, as a result of processing the Insert component, the resource properties
973 document is no longer able to validate, the processing of the component MUST fault. The
974 implementation may be unable to accept the insertion of an element because it does not
975 allow the requestor to insert a resource property (or its value) of that given name. In such
976 circumstances, the resource MUST fault the processing of the component.

977 `/wsrf-rp:SetResourceProperties/wsrf-rp:Insert/{any}`

978 This component identifies the element(s) to be inserted into the resource properties
979 document. If there are multiple child elements of the Insert component, each MUST have
980 the same namespace and name (i.e. the same QName). The QName MUST correspond
981 to the QName of a resource property element associated with the WS-Resource (i.e. an
982 element that is a valid child element of the root element of the resource properties
983 document). Note, for those resource properties documents that allow open element
984 content, the set of valid content types can be very large.

985 `/wsrf-rp:SetResourceProperties/wsrf-rp:Update`

986 The intent of this component is to change the value of the resource property by removing
987 any and all resource property element(s) of the given QName and replacing them with
988 the contents of this component. If, as a result of processing the Update component, the
989 resource properties document is no longer able to validate, the processing of the
990 component MUST fault. The resource may be unable to accept the update of an element
991 because it does not allow the requestor to update a resource property (or its value) of
992 that given name. In such circumstances, the resource MUST fault the processing of the
993 component.

994 `/wsrf-rp:SetResourceProperties/wsrf-rp:Update/{any}`

995 This identifies the element(s) to be inserted into the resource properties document,
996 replacing all element children of the root of the resource properties document with the
997 same QName. If there are multiple child elements of the Insert component, each MUST
998 have the same namespace and name (i.e. the same QName). The QName MUST
999 correspond to the QName of a resource property element associated with the WS-
1000 Resource (i.e. an element that is a valid child element of the root element of the resource
1001 properties document). Note, for those resource properties documents that allow open
1002 element content, the set of valid content types can be very large.

1003 `/wsrf-rp:SetResourceProperties/wsrf-rp>Delete`

1004 The intent of this component is to remove all element children of the root of the resource
1005 properties document whose QNames correspond to the value of `@ResourceProperty`. If
1006 the resource is unable to remove all identified elements, the processing of the component
1007 MUST fault. If, as a result of processing the Delete component, the resource properties
1008 document is no longer able to validate, the processing of the component MUST fail. The
1009 resource may be unable to accept the delete of an element because it does not allow the
1010 requestor to delete a resource property (or its value) of the given name. In such
1011 circumstances, the resource MUST fault the processing of the component.

1012 `/wsrf-rp:SetResourceProperties/wsrf-rp>Delete/@ResourceProperty`

1013 This attribute contains the QName of a resource property to be deleted by this
1014 component.

1015 The response of the SetResourceProperties request message, all of whose components were
1016 successfully processed, MUST be a message of the following form:

```
1017 <wsrf-rp:SetResourcePropertiesResponse>  
1018 </wsrf-rp:SetResourcePropertiesResponse>
```

1019 The wsra:Action MUST contain the URI

```
1020 http://docs.oasis-open.org/wsrf/rpw-  
1021 1/SetResourceProperties/SetResourcePropertiesResponse.
```

1022 If the WS-Resource does not respond to the SetResourceProperties request message with the
1023 SetResourcePropertiesResponse message, then it MUST send a fault message. This
1024 specification defines the following faults associated with failure to process the
1025 SetResourcePropertyDocument request message:

1026 ResourceUnknownFault:

- 1027 • The resource identified in the message (which follows the WS-Resource Access Pattern)
1028 is not known to the Web service. This fault is specified by the WS-Resource [WS-
1029 Resource] specification.

1030 InvalidModification:

- 1031 • The contents of the SetResourceProperties request component causes the resource
1032 properties document to no longer be able to validate.

1033 UnableToModifyResourceProperty:

- 1034 • A resource property identified by one of the SetResourceProperties request components
1035 is read-only.

1036 InvalidResourcePropertyQName:

- 1037 • A resource property QName does not identify a proper number of resource properties.

1038 SetResourcePropertyRequestFailed

- 1039 • One or more components of the SetResourceProperties request failed.

1040 Any fault message indicating a failure during the update of the resource properties document
1041 MUST also indicate whether the document was restored or not by using the
1042 ResourcePropertyChangeFailure element of the fault. This fault element indicates the resource
1043 property element change associated with the fault and indicates if the resource property
1044 document as a whole was restored. The format of this element is indicated as follows:

```
1045 <wsrf-rp:ResourcePropertyChangeFailure Restored=xsd:boolean?>  
1046 <wsrf-rp:CurrentValue>{any}*</wsrf-rp:CurrentValue> ?  
1047 <wsrf-rp:RequestedValue>{any}*</wsrf-rp:RequestedValue> ?  
1048 </wsrf-rp:ResourcePropertyChangeFailure>
```

1049 This element is further constrained as follows:

1050 /wsrf-rp:ResourcePropertyChangeFailure

1051 The contents of this element provide more information about the element associated with
1052 a failed modification to a resource property document.

1053 /wsrf-rp:ResourcePropertyChangeFailure/@Restored

1054 If the value of this optional attribute is “true”, then the resource property document was
1055 restored to its state prior to the attempt to process the request message. The absence of
1056 this attribute is identical to this attribute having the value “false”, indicating that no attempt
1057 was made to restore the resource property document.

1058 /wsrf-rp:ResourcePropertyChangeFailure/wsrf-rp:CurrentValue
 1059 If present, this component contains the current value(s) of the resource property
 1060 elements associated with the fault.

1061 /wsrf-rp:ResourcePropertyChangeFailure/wsrf-rp:RequestedValue
 1062 If present, this component contains the value(s) of the resource property elements
 1063 associated with the fault as found within the request message.

1064 Note: There is no isolation policy implied, for either modifications to the resource properties
 1065 document resulting from the processing of the request or the modifications implemented by the
 1066 restore. See Section 7 for more discussion.

5.6.1 Example SOAP Encoding of the SetResourceProperties Message Exchange

1067 Consider the following resource properties document defining resource properties for a WS-
 1070 Resource defined by the GenericDiskDrive portType:

```

1071 <GenericDiskDriveProperties
1072   xmlns:tns="http://example.com/diskDrive"
1073   xmlns:cap="http://example.com/capabilities">
1074   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>
1075   <tns:BlockSize>1024</tns:BlockSize>
1076   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
1077   <tns:StorageCapability>
1078     <cap:NoSinglePointOfFailure>true</cap:NoSinglePointOfFailure>
1079   </tns:StorageCapability>
1080   <tns:StorageCapability>
1081     <cap:DataRedundancyMax>42</cap:DataRedundancyMax>
1082   </tns:StorageCapability>
1083 </GenericDiskDriveProperties>
  
```

1084 The following is a non-normative example of a SetResourceProperties request message using
 1085 SOAP 1.1:

```

1086 <s11:Envelope ...>
1087   <s11:Header>
1088     <wsa:Action>
1089     http://docs.oasis-open.org/wsrf/rpw-1/SetResourceProperties/SetResourcePropertiesRequest
1090     </wsa:Action>
1091   ...
1092   </s11:Header>
1093   <s11:Body>
1094     <wsrf-rp:SetResourceProperties
1095       xmlns:tns="http://example.com/diskdrive">
1096       <wsrf-rp:Update>
1097         <tns:NumberOfBlocks>143</tns:NumberOfBlocks>
1098       </wsrf-rp:Update>
1099
1100       <wsrf-rp>Delete ResourceProperty="tns:StorageCapability" />
1101
1102     <wsrf-rp:Insert>
  
```

```
1103     <tns:someElement>42</tns:someElement>
1104     </wsrf-rp:Insert>
1105
1106     </wsrf-rp:SetResourceProperties>
1107 </s11:Body>
1108 </s11:Envelope>
```

1109 The following is an example SetResourcePropertiesResponse message using SOAP 1.1:

```
1110 <s11:Envelope ...>
1111   <s11:Header>
1112     <wsa:Action>
1113     http://docs.oasis-open.org/wsrf/rpw-1/SetResourceProperties/SetResourcePropertiesResponse
1114     </wsa:Action>
1115     ...
1116   </s11:Header>
1117   <s11:Body>
1118     <wsrf-rp:SetResourcePropertiesResponse>
1119     </wsrf-rp:SetResourcePropertiesResponse>
1120   </s11:Body>
1121 </s11:Envelope>
```

1122 The new contents of the resource properties document after successful processing of the request
1123 message MUST be:

```
1124 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >
1125   <tns:NumberOfBlocks>143</tns:NumberOfBlocks>
1126   <tns:BlockSize>1024</tns:BlockSize>
1127   <tns:someElement>42</tns:someElement>
1128   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
1129 </GenericDiskDriveProperties>
```

1130 **5.7 InsertResourceProperties**

1131 A WS-Resource MAY support the message exchange defined in this section that allows a
1132 requestor to insert new values of a resource property of a WS-Resource.

1133 The InsertResourceProperties message is used to request the insertion of one or more element
1134 values of a single resource property into the resource properties document of a WS-Resource.

1135 The format of this request message MUST be:

```
1136 <wsrf-rp:InsertResourceProperties>
1137   <wsrf-rp:Insert>
1138     {any}*
1139   </wsrf-rp:Insert>
1140 </wsrf-rp:InsertResourceProperties>
```

1141 The InsertResourceProperties request message MUST follow the WS-Resource Access Pattern.
1142 The wsa:Action MUST contain the URI

1143 http://docs.oasis-open.org/wsrf/rpw-
1144 1/InsertResourceProperties/InsertResourcePropertiesRequest.

1145 The contents of the InsertResourceProperties request message are further described as follows:

1146 /wsrf-rp:InsertResourceProperties/wsrf-rp:Insert

1147 The intent of this component is to insert the contents of the component into the resource
1148 properties document. The exact placement of the element insertion is implementation-
1149 dependent. If, as a result of processing the InsertResourceProperties request, the
1150 resource properties document is no longer able to validate, the processing of the request
1151 MUST fault. The implementation may be unable to accept the insertion of an element
1152 because it does not allow the requestor to insert a resource property (or its value) of that
1153 given name. In such circumstances, the resource MUST fault the processing of the
1154 request message.

1155 /wsrf-rp:InsertResourceProperties/wsrf-rp:Insert/{any}

1156 This component identifies the element(s) to be inserted into the resource properties
1157 document. If there are multiple child elements of the wsrf-rp:Insert element, each MUST
1158 have the same namespace and name (i.e. the same QName). The QName MUST
1159 correspond to the QName of a resource property element associated with the WS-
1160 Resource (i.e. an element that is a valid child element of the root element of the resource
1161 properties document). Note, for those resource properties documents that allow open
1162 element content, the set of valid content types can be very large.

1163 When an InsertResourceProperties request message has been successfully processed, the
1164 response message, MUST have the following form:

```
1165 <wsrf-rp:InsertResourcePropertiesResponse>  
1166 </wsrf-rp:InsertResourcePropertiesResponse>
```

1167 The wsa:Action MUST contain the URI

1168 [http://docs.oasis-open.org/wsrf/rpw-](http://docs.oasis-open.org/wsrf/rpw-1/InsertResourceProperties/InsertResourcePropertiesResponse)
1169 [1/InsertResourceProperties/InsertResourcePropertiesResponse](http://docs.oasis-open.org/wsrf/rpw-1/InsertResourceProperties/InsertResourcePropertiesResponse).

1170 If the WS-Resource does not respond to the InsertResourceProperties request message with the
1171 InsertResourcePropertiesResponse message, then it MUST send a fault. This specification
1172 defines the following faults associated with failure to process the
1173 InsertResourcePropertiesDocument request message:

1174 ResourceUnknownFault:

- 1175 • The resource identified in the message (which follows the WS-Resource Access Pattern)
1176 is not known to the Web service. This fault is specified by the WS-Resource [WS-
1177 Resource] specification.

1178 InvalidModification:

- 1179 • The contents of the InsertResourceProperties request component causes the resource
1180 properties document to no longer be able to validate.

1181 UnableToModifyResourceProperty:

- 1182 • A resource property identified by the InsertResourceProperties request is not modifiable.

1183 InvalidResourcePropertyQName:

- 1184 • A resource property QName does not identify a resource property.

1185 InsertResourcePropertiesRequestFailed:

- 1186 • The InsertResourceProperties request failed for some reason.

1187 Any fault message indicating a failure during the update of the resource properties document
1188 MUST also indicate whether the document was restored by using the
1189 ResourcePropertyChangeFailure element of the fault. This fault element indicates the resource

1190 property element change associated with the fault and indicates if the resource property
1191 document as a whole was restored. The format of this element is described in Section 5.6.

1192 **5.7.1 Example SOAP Encoding of the InsertResourceProperties** 1193 **Message Exchange**

1194 Consider the following resource properties document defining resource properties for a WS-
1195 Resource defined by the GenericDiskDrive portType:

```
1196 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >  
1197   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>  
1198   <tns:BlockSize>1024</tns:BlockSize>  
1199   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>  
1200 </GenericDiskDriveProperties>
```

1201 The following is a non-normative example of an InsertResourceProperties request message using
1202 SOAP 1.1:

```
1203 <s11:Envelope ...>  
1204   <s11:Header>  
1205     <wsa:Action>  
1206       http://docs.oasis-open.org/wsrf/rpw-  
1207       1/InsertResourceProperties/InsertResourcePropertiesRequest  
1208     </wsa:Action>  
1209     ...  
1210   </s11:Header>  
1211   <s11:Body>  
1212     <wsrf-rp:InsertResourceProperties  
1213       xmlns:tns="http://example.com/diskdrive">  
1214     <wsrf-rp:Insert>  
1215       <tns:StorageCapability>  
1216         <tns:NoSinglePointOfFailure>true</tns:NoSinglePointOfFailure>  
1217       </tns:StorageCapability>  
1218       <tns:StorageCapability>  
1219         <tns:DataRedundancyMax>42</tns:DataRedundancyMax>  
1220       </tns:StorageCapability>  
1221     </wsrf-rp:Insert>  
1222   </wsrf-rp:InsertResourceProperties>  
1223 </s11:Body>  
1224 </s11:Envelope>
```

1226 The following is an example InsertResourcePropertiesResponse message using SOAP 1.1:

```
1227 <s11:Envelope ...>  
1228   <s11:Header>  
1229     <wsa:Action>  
1230       http://docs.oasis-open.org/wsrf/rpw-  
1231       1/InsertResourceProperties/InsertResourcePropertiesResponse  
1232     </wsa:Action>  
1233     ...  
1234   </s11:Header>
```



```
1235 <s11:Body>
1236 <wsrf-rp:InsertResourcePropertiesResponse>
1237 </wsrf-rp:InsertResourcePropertiesResponse>
1238 </s11:Body>
1239 </s11:Envelope>
```

1240 The new contents of the resource properties document after successful processing of the request
1241 message MUST be:

```
1242 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >
1243 <tns:NumberOfBlocks>22</tns:NumberOfBlocks>
1244 <tns:BlockSize>1024</tns:BlockSize>
1245 <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
1246 <tns:StorageCapability>
1247 <tns:NoSinglePointOfFailure>true</tns:NoSinglePointOfFailure>
1248 </tns:StorageCapability>
1249 <tns:StorageCapability>
1250 <tns>DataRedundancyMax>42</tns>DataRedundancyMax>
1251 </tns:StorageCapability>
1252 </GenericDiskDriveProperties>
```

1253 **5.8 UpdateResourceProperties**

1254 A WS-Resource MAY support the message exchange defined in this section that allows a
1255 requestor to replace the existing values of a resource property with new values.

1256 The UpdateResourceProperties message is used to request the replacement of all the element
1257 values of a single resource property in the resource properties document of a WS-Resource with
1258 a new set of values.

1259 The format of this request message MUST be:

```
1260 <wsrf-rp:UpdateResourceProperties>
1261 <wsrf-rp:Update>
1262 {any}*
1263 </wsrf-rp:Update>
1264 </wsrf-rp:UpdateResourceProperties>
```

1265 The UpdateResourceProperties request message MUST follow the WS-Resource Access
1266 Pattern. The wsa:Action MUST contain the URI

```
1267 http://docs.oasis-open.org/wsrf/rpw-
1268 1/UpdateResourceProperties/UpdateResourcePropertiesRequest.
```

1269 The contents of the UpdateResourceProperties request message are further described as
1270 follows:

1271 /wsrf-rp:UpdateResourceProperties/wsrf-rp:Update

1272 The intent of this request is to change the value of the elements of a resource property by
1273 removing any and all resource property element(s) of the given QName and replacing
1274 them with the contents of this component. If, as a result of processing the entire
1275 UpdateResourceProperties request, the resource properties document is no longer able
1276 to validate, the processing of the request MUST fault. The resource may be unable to
1277 accept the update of an element because it does not allow the requestor to update a

1278 resource property (or its value) of that given name. In such circumstances, the resource
1279 MUST fault the processing of the request message.

1280 /wsrf-rp:UpdateResourceProperties/wsrf-rp:Update/{any}

1281 This identifies the element(s) to be inserted into the resource properties document,
1282 replacing all element children of the root of the resource properties document with the
1283 same QName. If there are multiple child elements of the wsrf-rp:Update component, each
1284 MUST have the same namespace and name (i.e. the same QName). The QName MUST
1285 correspond to the QName of a resource property element associated with the WS-
1286 Resource (i.e. an element that is a valid child element of the root element of the resource
1287 properties document). Note, for those resource properties documents that allow open
1288 element content, the set of valid content types can be very large.

1289 When an UpdateResourceProperties request message has been successfully processed, the
1290 response message MUST have the following form:

```
1291 <wsrf-rp:UpdateResourcePropertiesResponse>  
1292 </wsrf-rp:UpdateResourcePropertiesResponse>
```

1293 The wsa:Action MUST contain the URI

1294 [http://docs.oasis-open.org/wsrf/rpw-](http://docs.oasis-open.org/wsrf/rpw-1/UpdateResourceProperties/UpdateResourcePropertiesResponse)
1295 [1/UpdateResourceProperties/UpdateResourcePropertiesResponse](http://docs.oasis-open.org/wsrf/rpw-1/UpdateResourceProperties/UpdateResourcePropertiesResponse).

1296 If the WS-Resource does not respond to the UpdateResourceProperties request message with
1297 the UpdateResourcePropertiesResponse message, then it MUST send a fault. This specification
1298 defines the following faults associated with failure to process the
1299 UpdateResourcePropertiesDocument request message:

1300 ResourceUnknownFault:

- 1301 • The resource identified in the message (which follows the WS-Resource Access Pattern)
1302 is not known to the Web service. This fault is specified by the WS-Resource [WS-
1303 Resource] specification.

1304 InvalidModification:

- 1305 • The contents of the UpdateResourceProperties request component causes the resource
1306 properties document to no longer be able to validate.

1307 UnableToModifyResourceProperty:

- 1308 • A resource property identified by the UpdateResourceProperties request is not
1309 modifiable.

1310 InvalidResourcePropertyQName:

- 1311 • A resource property QName does not identify a resource property.

1312 UpdateResourcePropertiesRequestFailed:

- 1313 • The UpdateResourceProperties request failed for some reason.

1314 Any fault message indicating a failure during the update of the resource properties document
1315 MUST also indicate whether the document was restored by using the
1316 ResourcePropertyChangeFailure element of the fault. This fault element indicates the resource
1317 property element change associated with the fault and indicates if the resource property
1318 document as a whole was restored. The format of this element is described in Section 5.6.

1319 5.8.1 Example SOAP Encoding of the UpdateResourceProperties 1320 Message Exchange

1321 Consider the following resource properties document defining resource properties for a WS-
1322 Resource defined by the GenericDiskDrive portType:

```
1323 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >  
1324   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>  
1325   <tns:BlockSize>1024</tns:BlockSize>  
1326   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>  
1327 </GenericDiskDriveProperties>
```

1328 The following is a non-normative example of a UpdateResourceProperties request message
1329 using SOAP 1.1:

```
1330 <s11:Envelope ...>  
1331   <s11:Header>  
1332     <wsa:Action>  
1333     http://docs.oasis-open.org/wsrf/rpw-  
1334     1/UpdateResourceProperties/UpdateResourcePropertiesRequest  
1335     </wsa:Action>  
1336     ...  
1337   </s11:Header>  
1338   <s11:Body>  
1339     <wsrf-rp:UpdateResourceProperties  
1340       xmlns:tns="http://example.com/diskdrive">  
1341       <wsrf-rp:Update>  
1342         <tns:NumberOfBlocks>143</tns:NumberOfBlocks>  
1343       </wsrf-rp:Update>  
1344     </wsrf-rp:UpdateResourceProperties>  
1345   </s11:Body>  
1346 </s11:Envelope>
```

1347 The following is an example UpdateResourcePropertiesResponse message using SOAP 1.1:

```
1348 <s11:Envelope ...>  
1349   <s11:Header>  
1350     <wsa:Action>  
1351     http://docs.oasis-open.org/wsrf/rpw-  
1352     1/UpdateResourceProperties/UpdateResourcePropertiesResponse  
1353     </wsa:Action>  
1354     ...  
1355   </s11:Header>  
1356   <s11:Body>  
1357     <wsrf-rp:UpdateResourcePropertiesResponse>  
1358     </wsrf-rp:UpdateResourcePropertiesResponse>  
1359   </s11:Body>  
1360 </s11:Envelope>
```

1361 The new contents of the resource properties document after successful processing of the request
1362 message MUST be:

```
1363 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >
```

```
1364 <tns:NumberOfBlocks>143</tns:NumberOfBlocks>
1365 <tns:BlockSize>1024</tns:BlockSize>
1366 <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
1367 </GenericDiskDriveProperties>
```

1368 5.9 DeleteResourceProperties

1369 A WS-Resource MAY support the message exchange defined in this section that allows a
1370 requestor to remove all values of a resource property of a WS-Resource.

1371 The DeleteResourceProperties message is used to request the removal of all values of a single
1372 resource property from the resource properties document of a WS-Resource.

1373 The format of this request message MUST be:

```
1374 <wsrf-rp:DeleteResourceProperties>
1375 <wsrf-rp:Delete ResourceProperty="QName" />
1376 </wsrf-rp:DeleteResourceProperties>
```

1377 The DeleteResourceProperties request message MUST follow the WS-Resource Access Pattern.
1378 The wsa:Action MUST contain the URI

1379 `http://docs.oasis-open.org/wsrf/rpw-`
1380 `1/DeleteResourceProperties/DeleteResourcePropertiesRequest.`

1381 The contents of the DeleteResourceProperties request message are further described as follows:

1382 `/wsrf-rp:DeleteResourceProperties/wsrf-rp:Delete`

1383 The intent of this message is to remove all element children of the root of the resource
1384 properties document whose QNames correspond to the value of @ResourceProperty. If
1385 the resource is unable to remove all identified elements, the processing of the message
1386 MUST fault. If, as a result of processing the DeleteResourceProperty request, the resource
1387 properties document is no longer able to validate, the processing of the request MUST
1388 fault. The resource may be unable to accept the deletion of an element because it does
1389 not allow the requestor to delete a resource property (or its value) of the given name. In
1390 such circumstances, the resource MUST fault the processing of the request message.

1391 `/wsrf-rp:DeleteResourceProperties/wsrf-rp:Delete/@ResourceProperty`

1392 This attribute contains the QName of a resource property to be deleted by this request.

1393 When a DeleteResourceProperties request message has been successfully processed, the
1394 response message MUST have the following form:

```
1395 <wsrf-rp:DeleteResourcePropertiesResponse>
1396 </wsrf-rp:DeleteResourcePropertiesResponse>
```

1397 The wsa:Action MUST contain the URI

1398 `http://docs.oasis-open.org/wsrf/rpw-`
1399 `1/DeleteResourceProperties/DeleteResourcePropertiesResponse.`

1400 If the WS-Resource does not respond to the DeleteResourceProperties request message with the
1401 DeleteResourcePropertiesResponse message, then it MUST send a fault. This specification
1402 defines the following faults associated with failure to process the
1403 DeleteResourcePropertiesDocument request message:

1404 ResourceUnknownFault:

- 1405 • The resource identified in the message (which follows the WS-Resource Access Pattern)
1406 is not known to the Web service. This fault is specified by the WS-Resource [WS-
1407 Resource] specification.

1408 InvalidModification:

- 1409 • The contents of the DeleteResourceProperties request component causes the resource
1410 properties document to no longer be able to validate.

1411 UnableToModifyResourceProperty:

- 1412 • A resource property identified by the DeleteResourceProperties request is not modifiable.

1413 InvalidResourcePropertyQName:

- 1414 • A resource property QName does not identify a resource property.

1415 DeleteResourcePropertiesRequestFailed:

- 1416 • One or more components of the DeleteResourceProperties request failed.

1417 Any fault message indicating a failure during the update of the resource properties document
1418 MUST also indicate whether the document was restored by using the
1419 ResourcePropertyChangeFailure element of the fault. This fault element indicates the resource
1420 property element change associated with the fault and indicates if the resource property
1421 document as a whole was restored. The format of this element is described in Section 5.6.

1422 **5.9.1 Example SOAP Encoding of the DeleteResourceProperties** 1423 **Message Exchange**

1424 Consider the following resource properties document defining resource properties for a WS-
1425 Resource defined by the GenericDiskDrive portType:

```
1426 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >  
1427   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>  
1428   <tns:BlockSize>1024</tns:BlockSize>  
1429   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>  
1430 </GenericDiskDriveProperties>
```

1431 The following is a non-normative example of a DeleteResourceProperties request message using
1432 SOAP 1.1:

```
1433 <s11:Envelope ...>  
1434   <s11:Header>  
1435     <wsa:Action>  
1436     http://docs.oasis-open.org/wsrf/rpw-  
1437     1/DeleteResourceProperties/DeleteResourcePropertiesRequest  
1438     </wsa:Action>  
1439     ...  
1440   </s11:Header>  
1441   <s11:Body>  
1442     <wsrf-rp:DeleteResourceProperties  
1443       xmlns:tns="http://example.com/diskdrive">  
1444       <wsrf-rp:Delete ResourceProperty="tns:Manufacturer" />  
1445     </wsrf-rp:DeleteResourceProperties>  
1446   </s11:Body>  
1447 </s11:Envelope>
```

1448 The following is an example DeleteResourcePropertiesResponse message using SOAP 1.1:

```
1449 <s11:Envelope ...>
1450   <s11:Header>
1451     <wsa:Action>
1452     http://docs.oasis-open.org/wsrf/rpw-
1453     1/DeleteResourceProperties/DeleteResourcePropertiesResponse
1454     </wsa:Action>
1455     ...
1456   </s11:Header>
1457   <s11:Body>
1458     <wsrf-rp>DeleteResourcePropertiesResponse>
1459     </wsrf-rp>DeleteResourcePropertiesResponse>
1460   </s11:Body>
1461 </s11:Envelope>
```

1462 The new contents of the resource properties document after successful processing of the request
1463 message MUST be:

```
1464 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >
1465   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>
1466   <tns:BlockSize>1024</tns:BlockSize>
1467 </GenericDiskDriveProperties>
```

1468 **6 Subscription**

1469 The WS-Notification [WS-BaseNotification][WS-Topics] family of specifications describes the
1470 patterns, concepts, standard message exchanges, and protocols of a topic-based, publish-
1471 subscribe messaging pattern in Web services. In the notification model, a service creates
1472 messages that are delivered to other services that had previously registered interest in the
1473 situation associated with that message.

1474 With WS-ResourceProperties, it is a common pattern for Web service requestors to request
1475 notification of inserts, updates and deletions made to the values of one or more resource property
1476 elements of a given WS-Resource. This suggests the need for the WS-Resource to
1477 encapsulate the stateful resource to ensure all changes made to the stateful resource (those
1478 made by Web services invocations, or those that happen to the resource by other means) are
1479 *observed* by the WS-Resource implementation. To the extent that encapsulation is not provided,
1480 and changes to the stateful resource are made outside of the knowledge of the associated WS-
1481 Resource implementation, the WS-Resource may not be able to provide notifications reflecting
1482 those changes.

1483 If a WS-Resource supports the resource property value-change notification pattern, and if it uses
1484 WS-Notification to implement this feature, then it **MUST** implement the message exchanges for
1485 the NotificationProducer role, as specified in [WS-BaseNotification]. The WS-Resource **MAY**
1486 accept subscriptions to only a subset of the resource properties defined for a WS-Resource. If an
1487 implementation does not use WS-Notification, then it **MAY** ignore the requirements outlined in this
1488 section.

1489 **6.1 Individual Resource Property Value Changes**

1490 One notification message artifact is created for each change to each resource property observed
1491 by the WS-Resource implementation. For example, a SetResourceProperties request message
1492 may contain five SetRequestComponents. Each of these components would result in the creation
1493 of a separate message artifact. A PutResourcePropertyDocument request may result in the
1494 change of most of the WS-Resource's resource properties, in which case each resource property
1495 changed by the PutResourcePropertyDocument request would result in a separate message
1496 artifact.

1497 WS-ResourceProperties defines the Notification Topic and TopicSpace elements [WS-Topics]
1498 that **MUST** be used to express the organization of the WS-Resource property element value
1499 change notifications. By understanding the relationship between Topics and resource properties,
1500 and examining the set of Topics supported by the NotificationProducer Web service, the service
1501 requestor can determine which of the resource properties are able to participate in the value-
1502 change notification pattern. The Topic and TopicSpace elements associated with resource
1503 property value-change notification are described as follows:

- 1504 1. The WS-Resource's resource properties document **MAY** be defined using resource
1505 properties declared in multiple XML namespaces. For each of these XML namespaces, an
1506 associated TopicSpace element **MUST** be defined. The TopicSpace element defines a topic
1507 space intended to contain topics related to value changes of resource properties declared in
1508 that XML namespace.
 - 1509 ○ The value of the TopicSpace element's targetNamespace attribute **MUST** be the
1510 same as the URI of the namespace in which the resource property element is
1511 defined. The name attribute of the TopicSpace element **SHOULD** have the value
1512 "ResourcePropertiesTopicSpace".

- 1513 2. For each resource property participating in the value-change notification pattern, a Topic
1514 element MUST be defined as a child of the TopicSpace element defined in 1.
- 1515 ○ Notification messages reflecting changes to the resource property are associated
1516 with this Topic.
 - 1517 ○ The value of the Topic element's name attribute MUST be the same as the NCName
1518 of the resource property element.
 - 1519 ○ The value of the Topic element's messageTypes attribute MUST include wsrf-
1520 rp:ResourcePropertyValueChangeNotification (defined later in this section). In
1521 addition, it MAY include QNames of other message elements.
 - 1522 ○ A designer MAY introduce additional child sub-topic elements to the topic element
1523 that represent application-specific needs.
- 1524 3. The WS-Resource acting as the NotificationProducer MUST include Topics defined in 2, as
1525 part of the value of its "Topics" resource property element. One such Topic MUST be
1526 included for each resource property element offered as a target for a value-change
1527 subscription.
- 1528 4. When a WS-Resource observes a resource property value change, it SHOULD create a
1529 notification message that expresses the situation, and associate the notification message
1530 with the Topic associated with that resource property. Note: there are many circumstances in
1531 which a change to a resource property might not result in the generation of a notification
1532 message. For example, a resource property value may change frequently, making generation
1533 of notification messages too expensive for the service. In this situation, a WS-Resource may
1534 choose to never generate notification message artifacts to record value change, or it may
1535 choose to generate notification message artifacts for a subset of the value change situations.

1536 The wsrf-rp:ResourcePropertyValueChangeNotification element MUST appear as a component
1537 of the notification message associated with resource property value change topics. This element
1538 is defined as follows:

```
1539 <wsrf-rp:ResourcePropertyValueChangeNotification>  
1540 <wsrf-rp:OldValues> xsd:any */</wsrf-rp:OldValues>?  
1541 <wsrf-rp:NewValues> xsd:any */</wsrf-rp:NewValues>  
1542 </wsrf-rp:ResourcePropertyValueChangeNotification>
```

1543 This element may appear as the root element of the notification message, or it may appear as a
1544 descendent of the root, accommodating patterns where the notification message itself is
1545 contained in an enveloping mechanism. The form of the
1546 ResourcePropertyValueChangeNotification is further constrained as follows:

1547 /wsrf-rp:ResourcePropertyValueChangeNotification

1548 One ResourcePropertyValueChangeNotification element is created for each resource
1549 property value change situation detected and acted upon by the WS-Resource. This
1550 component records the value change of the affected resource property.

1551 /wsrf-rp:ResourcePropertyValueChangeNotification/OldValues

1552 This element, if it appears, MUST contain the resource property elements of the affected
1553 WS-Resource property immediately prior to when the value change was applied. If the
1554 resource property did not have any value prior to the value change (for example, this
1555 notification represents an insertion of a new resource property element) then this element
1556 is empty and will contain the attribute xsi:nil with value "true". If this component does not
1557 appear in the message, then the WS-Resource was unable or unwilling to record the
1558 resource property elements prior to the value change.

1559 /wsrf-rp:ResourcePropertyValueChangeNotification/NewValues
1560 This element MUST contain the resource property elements of the affected WS-Resource
1561 property after the value change condition was detected. If the WS-Resource property
1562 does not have any value after the value change (for example, this notification represents
1563 a deletion of the resource property element) then this element is empty and will contain
1564 the attribute xsi:nil with value "true".

1565 **6.2 Value Changes on Any Resource Property**

1566 In addition to the Topics defined for value change notification to individual resource properties
1567 (described in the previous section), the WS-Resource MAY also support subscription for changes
1568 to *any* resource property. This specification defines a distinguished topic, named
1569 "AnyResourcePropertyValueChange" in a distinguished TopicSpace corresponding to the WS-
1570 ResourceProperties specification namespace.

1571 If the WS-Resource supports the NotificationProducer interface (as defined by WS-
1572 BaseNotification) and it supports subscriptions on the wsrf-rp:AnyResourcePropertyValueChange
1573 topic, then it MUST include this Topic's QName in the value of its wsnt:Topics resource property.
1574 Furthermore, for any ResourcePropertyValueChange notification message published on any
1575 Topic, the WS-Resource MUST also publish the notification message on the wsrf-
1576 rp:AnyResourcePropertyValueChange Topic.

1577

7 ACID Properties of Operations on WS-Resources

1578

1579 The ability to associate a transactional recovery policy to the execution of a Web service
1580 message exchange is a quality of service the designer would compose into the definition of a
1581 WS-Resource. In the presence of a transactional unit of work, a Web service capable of
1582 participating in the transactional protocol must abide by the rules of two-phase-commit
1583 transaction management. However, in the absence of a transaction management policy, the Web
1584 service is under no obligation to recover the state of the WS-Resource in the event of a failure
1585 during message processing.

1586 This specification is not prescriptive with respect to policy that governs concurrent read or write
1587 access to a WS-Resource. The definition of specific policy governing concurrent updates,
1588 whether or not separate message executions targeting the same WS-Resource may be
1589 interleaved, and whether partially-completed WS-Resource updates within a given message
1590 execution may be observed by other concurrent requests is beyond the scope of this definition.
1591 The scope and extent of the isolation of changes made to the WS-Resource is an implementation
1592 dependent responsibility of the WS-Resource itself. The WS-Resource must also take on the
1593 responsibility for the scope and extent to which notifications of changes to the WS-Resource are
1594 isolated and made observable. If WS-Resource update isolation is needed, we suggest the use of
1595 a transaction to provide a context within which isolation of WS-Resource updates can be
1596 provided. In the absence of a transactional unit of work, the level of WS-Resource update
1597 atomicity, recovery, isolation, and durability provided is implementation-dependent.

1598 The ability to declare and attach isolation-level policy to the definition of a Web service message
1599 exchange, whether or not a transactional unit of work is present, represents a general
1600 requirement not met by the current Web service architecture. In the future, isolation-level policy
1601 declarations may be introduced as a formal part of the WS-Resource definition.

1602 **8 Security Considerations**

1603 This specification defines the resource properties document and also the set of message
1604 exchanges that MUST be supported by a WS-Resource. In this context, there are two categories
1605 of security aspects that need to be considered: (a) securing the message exchanges and (b)
1606 securing the resource properties.

1607 **8.1 Securing the message exchanges**

1608 When messages are exchanged between a requestor and a WS-Resource in order to access or
1609 act upon one or more resource properties, it is RECOMMENDED that the communication
1610 between the services be secured using the mechanisms described in WS-Security.

1611 **8.2 Securing Resource Properties**

1612 Since WS-ResourceProperties defines a mechanism to expose properties of a WS-Resource,
1613 security policies should be established that ensure that only authorized requestors can access
1614 the value of a resource property. In order to secure access to the resource properties, the
1615 message exchanges that provide the access should be appropriately controlled. Authorization
1616 policies should be put in place so that the implications of providing the state information (through
1617 GetResourceProperty, GetMultipleResourceProperties, or QueryResourceProperties messages
1618 or through notification of value change and modification of the resource properties), are taken into
1619 account. These policies should also take into account the semantic difference between
1620 components of the SetResourceProperties message – i.e. that an Update component updates a
1621 *value* of a resource property, whereas Insert and Delete components modify whether the WS-
1622 Resource actually *contains* the resource property values.

1623 The authorization policies may also reflect the sensitivity of the resource property(ies) that are
1624 accessible from a WS-Resource. Policies can be set at the coarse granularity of the message
1625 exchange (e.g., Get(Multiple)ResourceProperty(ies) vs SetResourceProperty), but finer-grained
1626 control at the level of individual resource properties may be desired in some scenarios (e.g. user
1627 Bob can access value of “Manufacturer” but not “NumberOfBlocks”).

1628 Given that a requestor will be able to access a resource property value by subscribing to state
1629 changes, care should be taken to set up security policies so that a consistent policy is in effect
1630 irrespective of whether the resource property value is accessed through direct message
1631 exchanges (e.g., GetResourceProperty) or indirectly through subscription for state changes (i.e.,
1632 subscription to “ResourcePropertyValueChangeNotification” topic). It should also be noted that a
1633 requestor will be able to query the value of a property through the QueryResourceProperties
1634 operation, or by using a domain-specific operation corresponding to a resource property (e.g.,
1635 getNumberOfBlocks) if one exists. Therefore, the authorization policy on
1636 QueryResourceProperties operation (and the getXXX operation, if one is declared on the Web
1637 service for resource property named XXX) should be set so that a requestor who is not
1638 authorized to get a value of a resource property through a GetResourceProperty request is not
1639 able to deduce the value indirectly through the QueryResourceProperties request (or the getXXX
1640 operation on the Web service).

1641 Even if the requestor is authorized to access the requested resource properties, it is
1642 RECOMMENDED that the resource properties that are exchanged between a requestor and a
1643 Web service are secured to ensure integrity and/or confidentiality of the resource property values.
1644 This will prevent unauthorized alteration of and/or access to the property values while in transit.
1645 This would mean that the specific resource property elements are signed and/or encrypted within
1646 the message by leveraging WS-Security as discussed in the previous section.

1647 9 References

1648 9.1 Normative

- 1649 [RFC2119] S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*, <http://www.ietf.org/rfc/rfc2119.txt>, IETF RFC 2119, March 1997.
- 1650
- 1651
- 1652 [URI] T. Berners-Lee, R. Fielding, L. Masinter, "Uniform Resource Identifiers (URI): Generic Syntax," RFC 2396, MIT/LCS, U.C. Irvine, Xerox Corporation, August 1998.
- 1653
- 1654
- 1655 [WS-Addressing] <http://www.w3.org/TR/ws-addr-core>
- 1656 [WS-BaseNotification] <http://docs.oasis-open.org/wsn/wsn-WS-Base-Notification-1.3-cd-01.pdf>
- 1657
- 1658 [WS-Resource] http://docs.oasis-open.org/wsrf/wsrf-ws_resource-1.2-spec-cd-01.pdf
- 1659
- 1660 [WS-ResourceLifetime] http://docs.oasis-open.org/wsrf/wsrf-ws_resource_lifetime-1.2-spec-cd-01.pdf
- 1661
- 1662 [WS-Topics] <http://docs.oasis-open.org/wsn/wsn-WS-Topics-1.3-cd-01.pdf>
- 1663 [XML-Infoset] <http://www.w3.org/TR/xml-infoset/>
- 1664 [XPath] <http://www.w3.org/TR/xpath>

1665 9.2 Non-Normative

- 1666 [OGSI 1.0] Open Grid Services Infrastructure (OGSI) V1.0
- 1667 <http://forge.gridforum.org/projects/ggf-editor/document/draft-ogsi-service-1/en/1>
- 1668
- 1669 [WS-Security] <http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0.pdf>
- 1670
- 1671 [WSDL 2.0] <http://www.w3.org/TR/wsdl12/>

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1700 Appendix B. XML Schema

1701 The XML types and elements used in this specification are included here for convenience. The
1702 authoritative version of this schema document is available at

1703 <http://docs.oasis-open.org/wsrf/rp-1>

1704 <?xml version="1.0" encoding="UTF-8"?>

1705 <!--

1706

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1740 PARTICULAR PURPOSE.

1741

1742 -->

1743 <xsd:schema

1744 xmlns:xsd="http://www.w3.org/2001/XMLSchema"

1745 xmlns:wsrf-rp="http://docs.oasis-open.org/wsrf/rp-1"

```

1746 xmlns:wsrf-bf="http://docs.oasis-open.org/wsrf/bf-1"
1747 elementFormDefault="qualified" attributeFormDefault="unqualified"
1748 targetNamespace="http://docs.oasis-open.org/wsrf/rp-1"
1749 >
1750 <xsd:import
1751     namespace="http://docs.oasis-open.org/wsrf/bf-1"
1752     schemaLocation="http://docs.oasis-open.org/wsrf/bf-1"
1753 />
1754 <!-- ===== Resource Property Related ===== -->
1755 <!-- ===== Resource Properties for QueryResourceProperties ===== -->
1756 <xsd:element name="QueryExpressionDialect" type="xsd:anyURI"/>
1757
1758 <xsd:element name="QueryExpressionRPDocument">
1759     <xsd:complexType>
1760         <xsd:sequence>
1761             <xsd:element ref="wsrf-rp:QueryExpressionDialect"
1762                 minOccurs="0" maxOccurs="unbounded" />
1763         </xsd:sequence>
1764     </xsd:complexType>
1765 </xsd:element>
1766
1767 <!-- ===== Global Attribute Declaration for WSDL 1.1 portType===== -->
1768 <xsd:attribute name="ResourceProperties" type="xsd:QName" />
1769
1770 <!-- = Notification Message for ResourceProperties value change === -->
1771 <xsd:complexType name="ResourcePropertyValueChangeNotificationType">
1772     <xsd:sequence>
1773         <xsd:element name="OldValues" nillable="true"
1774             minOccurs="0" maxOccurs="1" >
1775             <xsd:complexType>
1776                 <xsd:sequence>
1777                     <xsd:any minOccurs="1" maxOccurs="unbounded" />
1778                 </xsd:sequence>
1779             </xsd:complexType>
1780         </xsd:element>
1781         <xsd:element name="NewValues" nillable="true"
1782             minOccurs="1" maxOccurs="1" >
1783             <xsd:complexType>
1784                 <xsd:sequence>
1785                     <xsd:any minOccurs="1" maxOccurs="unbounded" />
1786                 </xsd:sequence>
1787             </xsd:complexType>
1788         </xsd:element>
1789     </xsd:sequence>
1790 </xsd:complexType>
1791
1792 <xsd:element name="ResourcePropertyValueChangeNotification"
1793     type="wsrf-rp:ResourcePropertyValueChangeNotificationType" />
1794

```

```

1795 <xsd:complexType name="QueryExpressionType" mixed="true">
1796   <xsd:sequence>
1797     <xsd:any minOccurs="0" maxOccurs="1" processContents="lax" />
1798   </xsd:sequence>
1799   <xsd:attribute name="Dialect" type="xsd:anyURI" />
1800 </xsd:complexType>
1801
1802 <xsd:element name="QueryExpression" type="wsrf-rp:QueryExpressionType" />
1803
1804 <!-- ===== Message Types for GetResourcePropertyDocument ===== -->
1805
1806 <xsd:element name="GetResourcePropertyDocument">
1807   <xsd:complexType/>
1808 </xsd:element>
1809
1810 <xsd:element name="GetResourcePropertyDocumentResponse">
1811   <xsd:complexType>
1812     <xsd:sequence>
1813       <xsd:any minOccurs="1" maxOccurs="1"/>
1814     </xsd:sequence>
1815   </xsd:complexType>
1816 </xsd:element>
1817
1818 <!-- ===== Message Types for GetResourceProperty ===== -->
1819
1820 <xsd:element name="GetResourceProperty"
1821   type="xsd:QName" />
1822
1823 <xsd:element name="GetResourcePropertyResponse" >
1824   <xsd:complexType>
1825     <xsd:sequence>
1826       <xsd:any minOccurs="0" maxOccurs="unbounded" />
1827     </xsd:sequence>
1828   </xsd:complexType>
1829 </xsd:element>
1830
1831 <xsd:complexType name="InvalidResourcePropertyQNameFaultType">
1832   <xsd:complexContent>
1833     <xsd:extension base="wsrf-bf:BaseFaultType"/>
1834   </xsd:complexContent>
1835 </xsd:complexType>
1836 <xsd:element name="InvalidResourcePropertyQNameFault"
1837   type="wsrf-rp:InvalidResourcePropertyQNameFaultType"/>
1838
1839 <!-- ===== Message Types for GetMultipleResourceProperties ===== -->
1840 <xsd:element name="GetMultipleResourceProperties">
1841   <xsd:complexType>
1842     <xsd:sequence>
1843       <xsd:element name="ResourceProperty" type="xsd:QName"

```



```

1844         minOccurs="1" maxOccurs="unbounded" />
1845     </xsd:sequence>
1846 </xsd:complexType>
1847 </xsd:element>
1848
1849 <xsd:element name="GetMultipleResourcePropertiesResponse">
1850 <xsd:complexType>
1851 <xsd:sequence>
1852     <xsd:any minOccurs="0" maxOccurs="unbounded" />
1853 </xsd:sequence>
1854 </xsd:complexType>
1855 </xsd:element>
1856
1857 <!-- ===== Message Types for PutResourceProperty ===== -->
1858
1859 <xsd:element name="PutResourcePropertyDocument">
1860 <xsd:complexType>
1861 <xsd:sequence>
1862     <xsd:any minOccurs="1" maxOccurs="1"/>
1863 </xsd:sequence>
1864 </xsd:complexType>
1865 </xsd:element>
1866
1867 <xsd:element name="PutResourcePropertyDocumentResponse">
1868 <xsd:complexType>
1869 <xsd:sequence>
1870     <xsd:any minOccurs="0" maxOccurs="1"/>
1871 </xsd:sequence>
1872 </xsd:complexType>
1873 </xsd:element>
1874
1875 <xsd:complexType name="ResourcePropertyChangeFailureType">
1876 <xsd:sequence>
1877 <xsd:element name="CurrentValue" minOccurs="0" maxOccurs="1">
1878 <xsd:complexType>
1879 <xsd:sequence>
1880     <xsd:any minOccurs="1" maxOccurs="unbounded" />
1881 </xsd:sequence>
1882 </xsd:complexType>
1883 </xsd:element>
1884 <xsd:element name="RequestedValue" minOccurs="0" maxOccurs="1">
1885 <xsd:complexType>
1886 <xsd:sequence>
1887     <xsd:any minOccurs="1" maxOccurs="unbounded" />
1888 </xsd:sequence>
1889 </xsd:complexType>
1890 </xsd:element>
1891 </xsd:sequence>
1892 <xsd:attribute name="Restored" type="xsd:boolean"/>

```

```

1893 </xsd:complexType>
1894
1895 <xsd:complexType
1896   name="UnableToPutResourcePropertyDocumentFaultType">
1897   <xsd:complexContent>
1898     <xsd:extension base="wsrf-bf:BaseFaultType">
1899       <xsd:sequence>
1900         <xsd:element name="ResourcePropertyChangeFailure" type=
1901           "wsrf-rp:ResourcePropertyChangeFailureType"/>
1902       </xsd:sequence>
1903     </xsd:extension>
1904   </xsd:complexContent>
1905 </xsd:complexType>
1906 <xsd:element name="UnableToPutResourcePropertyDocumentFault"
1907   type=
1908   "wsrf-rp:UnableToPutResourcePropertyDocumentFaultType"/>
1909
1910 <!-- ===== Message Types for SetResourceProperties ===== -->
1911
1912 <xsd:complexType name="InsertType">
1913   <xsd:sequence>
1914     <xsd:any processContents="lax"
1915       minOccurs="1" maxOccurs="unbounded" />
1916   </xsd:sequence>
1917 </xsd:complexType>
1918 <xsd:element name="Insert" type="wsrf-rp:InsertType"/>
1919
1920 <xsd:complexType name="UpdateType">
1921   <xsd:sequence>
1922     <xsd:any processContents="lax"
1923       minOccurs="1" maxOccurs="unbounded" />
1924   </xsd:sequence>
1925 </xsd:complexType>
1926 <xsd:element name="Update" type="wsrf-rp:UpdateType"/>
1927
1928 <xsd:complexType name="DeleteType">
1929   <xsd:attribute name="ResourceProperty"
1930     type="xsd:QName" use="required" />
1931 </xsd:complexType>
1932 <xsd:element name="Delete" type="wsrf-rp:DeleteType"/>
1933
1934 <xsd:element name="SetResourceProperties">
1935   <xsd:complexType>
1936     <xsd:choice minOccurs="1" maxOccurs="unbounded">
1937       <xsd:element ref="wsrf-rp:Insert"/>
1938       <xsd:element ref="wsrf-rp:Update"/>
1939       <xsd:element ref="wsrf-rp:Delete"/>
1940     </xsd:choice>
1941   </xsd:complexType>

```

```

1942 </xsd:element>
1943
1944 <xsd:element name="SetResourcePropertiesResponse" >
1945   <xsd:complexType />
1946 </xsd:element>
1947
1948 <xsd:complexType
1949   name="InvalidModificationFaultType">
1950 <xsd:complexContent>
1951   <xsd:extension base="wsrf-bf:BaseFaultType">
1952     <xsd:sequence>
1953       <xsd:element name="ResourcePropertyChangeFailure" type=
1954         "wsrf-rp:ResourcePropertyChangeFailureType"/>
1955     </xsd:sequence>
1956   </xsd:extension>
1957 </xsd:complexContent>
1958 </xsd:complexType>
1959 <xsd:element name=
1960   "InvalidModificationFault"
1961   type=
1962   "wsrf-rp:InvalidModificationFaultType"/>
1963
1964 <xsd:complexType name="UnableToModifyResourcePropertyFaultType">
1965 <xsd:complexContent>
1966   <xsd:extension base="wsrf-bf:BaseFaultType">
1967     <xsd:sequence>
1968       <xsd:element name="ResourcePropertyChangeFailure" type=
1969         "wsrf-rp:ResourcePropertyChangeFailureType"/>
1970     </xsd:sequence>
1971   </xsd:extension>
1972 </xsd:complexContent>
1973 </xsd:complexType>
1974 <xsd:element name="UnableToModifyResourcePropertyFault"
1975   type="wsrf-rp:UnableToModifyResourcePropertyFault"/>
1976
1977 <xsd:complexType name="SetResourcePropertyRequestFailedFaultType">
1978 <xsd:complexContent>
1979   <xsd:extension base="wsrf-bf:BaseFaultType">
1980     <xsd:sequence>
1981       <xsd:element name="ResourcePropertyChangeFailure" type=
1982         "wsrf-rp:ResourcePropertyChangeFailureType"/>
1983     </xsd:sequence>
1984   </xsd:extension>
1985 </xsd:complexContent>
1986 </xsd:complexType>
1987 <xsd:element name="SetResourcePropertyRequestFailedFault"
1988   type=
1989   "wsrf-rp:SetResourcePropertyRequestFailedFaultType"/>
1990

```

```

1991 <xsd:complexType name="InsertResourcePropertiesRequestFailedFaultType">
1992 <xsd:complexContent>
1993 <xsd:extension base="wsrf-bf:BaseFaultType">
1994 <xsd:sequence>
1995 <xsd:element name="ResourcePropertyChangeFailure" type=
1996 "wsrf-rp:ResourcePropertyChangeFailureType"/>
1997 </xsd:sequence>
1998 </xsd:extension>
1999 </xsd:complexContent>
2000 </xsd:complexType>
2001 <xsd:element name="InsertResourcePropertiesRequestFailedFault"
2002 type=
2003 "wsrf-rp:InsertResourcePropertiesRequestFailedFaultType"/>
2004
2005 <xsd:complexType name="UpdateResourcePropertiesRequestFailedFaultType">
2006 <xsd:complexContent>
2007 <xsd:extension base="wsrf-bf:BaseFaultType">
2008 <xsd:sequence>
2009 <xsd:element name="ResourcePropertyChangeFailure" type=
2010 "wsrf-rp:ResourcePropertyChangeFailureType"/>
2011 </xsd:sequence>
2012 </xsd:extension>
2013 </xsd:complexContent>
2014 </xsd:complexType>
2015 <xsd:element
2016 name="UpdateResourcePropertiesRequestFailedFault"
2017 type="wsrf-rp:UpdateResourcePropertiesRequestFailedFaultType"/>
2018
2019 <xsd:complexType name="DeleteResourcePropertiesRequestFailedFaultType">
2020 <xsd:complexContent>
2021 <xsd:extension base="wsrf-bf:BaseFaultType">
2022 <xsd:sequence>
2023 <xsd:element name="ResourcePropertyChangeFailure" type=
2024 "wsrf-rp:ResourcePropertyChangeFailureType"/>
2025 </xsd:sequence>
2026 </xsd:extension>
2027 </xsd:complexContent>
2028 </xsd:complexType>
2029 <xsd:element
2030 name="DeleteResourcePropertiesRequestFailedFault"
2031 type="wsrf-rp:DeleteResourcePropertiesRequestFailedFaultType"/>
2032
2033 <!-- ===== Message Types for InsertResourceProperties ===== -->
2034 <xsd:element name="InsertResourceProperties">
2035 <xsd:complexType>
2036 <xsd:sequence>
2037 <xsd:element ref="wsrf-rp:Insert"/>
2038 </xsd:sequence>
2039 </xsd:complexType>

```

```

2040 </xsd:element>
2041
2042 <xsd:element name="InsertResourcePropertiesResponse" >
2043 <xsd:complexType />
2044 </xsd:element>
2045
2046 <!-- ===== Message Types for UpdateResourceProperties ===== -->
2047 <xsd:element name="UpdateResourceProperties">
2048 <xsd:complexType>
2049 <xsd:sequence>
2050 <xsd:element ref="wsrf-rp:Update"/>
2051 </xsd:sequence>
2052 </xsd:complexType>
2053 </xsd:element>
2054
2055 <xsd:element name="UpdateResourcePropertiesResponse" >
2056 <xsd:complexType />
2057 </xsd:element>
2058
2059 <!-- ===== Message Types for DeleteResourceProperties ===== -->
2060 <xsd:element name="DeleteResourceProperties">
2061 <xsd:complexType>
2062 <xsd:sequence>
2063 <xsd:element ref="wsrf-rp:Delete"/>
2064 </xsd:sequence>
2065 </xsd:complexType>
2066 </xsd:element>
2067
2068 <xsd:element name="DeleteResourcePropertiesResponse" >
2069 <xsd:complexType />
2070 </xsd:element>
2071
2072 <!-- ===== Message Types for QueryResourceProperties ===== -->
2073
2074 <xsd:element name="QueryResourceProperties" >
2075 <xsd:complexType>
2076 <xsd:sequence>
2077 <xsd:element ref="wsrf-rp:QueryExpression"
2078 minOccurs="1" maxOccurs="1"/>
2079 </xsd:sequence>
2080 </xsd:complexType>
2081 </xsd:element>
2082
2083 <xsd:element name="QueryResourcePropertiesResponse" >
2084 <xsd:complexType>
2085 <xsd:complexContent mixed="true">
2086 <xsd:restriction base="xsd:anyType">
2087 <xsd:sequence>
2088 <xsd:any processContents="lax"

```

```

2089         minOccurs="1" maxOccurs="unbounded"/>
2090     </xsd:sequence>
2091 </xsd:restriction>
2092 </xsd:complexContent>
2093 </xsd:complexType>
2094 </xsd:element>
2095
2096 <xsd:complexType name="UnknownQueryExpressionDialectFaultType">
2097     <xsd:complexContent>
2098         <xsd:extension base="wsrf-bf:BaseFaultType"/>
2099     </xsd:complexContent>
2100 </xsd:complexType>
2101 <xsd:element name="UnknownQueryExpressionDialectFault"
2102     type="wsrf-rp:UnknownQueryExpressionDialectFaultType"/>
2103
2104 <xsd:complexType name="InvalidQueryExpressionFaultType">
2105     <xsd:complexContent>
2106         <xsd:extension base="wsrf-bf:BaseFaultType"/>
2107     </xsd:complexContent>
2108 </xsd:complexType>
2109 <xsd:element name="InvalidQueryExpressionFault"
2110     type="wsrf-rp:InvalidQueryExpressionFaultType"/>
2111
2112 <xsd:complexType name="QueryEvaluationErrorFaultType">
2113     <xsd:complexContent>
2114         <xsd:extension base="wsrf-bf:BaseFaultType"/>
2115     </xsd:complexContent>
2116 </xsd:complexType>
2117 <xsd:element name="QueryEvaluationErrorFault"
2118     type="wsrf-rp:QueryEvaluationErrorFaultType"/>
2119
2120 </xsd:schema>

```

2121

Appendix C. WSDL 1.1

2122 The WSDL 1.1 for the Web service methods described in this specification is compliant with WS-I
2123 Basic Profile 1.1 and is included here for convenience. The authoritative version of this WSDL is
2124 available at:

2125 <http://docs.oasis-open.org/wsrf/rpw-1>

2126 <?xml version="1.0" encoding="utf-8"?>

2127 <!--

2128

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2130 that might be claimed to pertain to the implementation or use of the technology described in this
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2162 PARTICULAR PURPOSE.

2163

2164 -->

2165

2166 <wsdl:definitions name="WS-ResourceProperties"

```

2167 xmlns="http://schemas.xmlsoap.org/wsdl/"
2168 xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
2169 xmlns:xsd="http://www.w3.org/2001/XMLSchema"
2170 xmlns:wsa="http://www.w3.org/2005/03/addressing"
2171 xmlns:wsrf-bf="http://docs.oasis-open.org/wsrf/bf-1"
2172 xmlns:wsrf-rp="http://docs.oasis-open.org/wsrf/rp-1"
2173 xmlns:wsrf-rpw="http://docs.oasis-open.org/wsrf/rpw-1"
2174 xmlns:wsrf-rw="http://docs.oasis-open.org/wsrf/rw-1"
2175 targetNamespace="http://docs.oasis-open.org/wsrf/rpw-1"
2176 >
2177
2178 <!-- ===== Imports ===== -->
2179
2180 <wsdl:import
2181   namespace="http://docs.oasis-open.org/wsrf/rw-1"
2182   location="http://docs.oasis-open.org/wsrf/rw-1" />
2183
2184 <!-- ===== Types Definitions ===== -->
2185 <wsdl:types>
2186   <xsd:schema>
2187     <xsd:import
2188       namespace="http://docs.oasis-open.org/wsrf/rp-1"
2189       schemaLocation="http://docs.oasis-open.org/wsrf/rp-1" />
2190     </xsd:schema>
2191   </wsdl:types>
2192
2193 <!-- ===== GetResourcePropertyDocument =====
2194   GetResourcePropertyDocument()
2195   returns: any
2196 -->
2197 <wsdl:message name="GetResourcePropertyDocumentRequest">
2198   <wsdl:part name="GetResourcePropertyDocumentRequest"
2199     element="wsrf-rp:GetResourcePropertyDocument"/>
2200 </wsdl:message>
2201
2202 <wsdl:message name="GetResourcePropertyDocumentResponse">
2203   <wsdl:part name="GetResourcePropertyDocumentResponse"
2204     element="wsrf-rp:GetResourcePropertyDocumentResponse"/>
2205 </wsdl:message>
2206
2207 <!-- ===== GetResourceProperty =====
2208   GetResourceProperty(QName)
2209   returns: any
2210 -->
2211 <wsdl:message name="GetResourcePropertyRequest">
2212   <wsdl:part name="GetResourcePropertyRequest"
2213     element="wsrf-rp:GetResourceProperty" />
2214 </wsdl:message>
2215

```



```

2216 <wsdl:message name="GetResourcePropertyResponse">
2217   <wsdl:part name="GetResourcePropertyResponse"
2218     element="wsrf-rp:GetResourcePropertyResponse" />
2219 </wsdl:message>
2220
2221 <wsdl:message name="InvalidResourcePropertyQNameFault">
2222   <part name="InvalidResourcePropertyQNameFault"
2223     element="wsrf-rp:InvalidResourcePropertyQNameFault" />
2224 </wsdl:message>
2225
2226 <!-- =====GetMultipleResourceProperties =====
2227 GetMultipleResourceProperties(list of QName)
2228 returns: sequence of any
2229 -->
2230 <wsdl:message name="GetMultipleResourcePropertiesRequest">
2231   <wsdl:part name="GetMultipleResourcePropertiesRequest"
2232     element="wsrf-rp:GetMultipleResourceProperties" />
2233 </wsdl:message>
2234
2235 <wsdl:message name="GetMultipleResourcePropertiesResponse">
2236   <wsdl:part name="GetMultipleResourcePropertiesResponse"
2237     element="wsrf-rp:GetMultipleResourcePropertiesResponse" />
2238 </wsdl:message>
2239 <!-- ===== PutResourcePropertyDocument =====
2240 PutResourcePropertyDocument(any)
2241 returns: any?
2242 -->
2243 <wsdl:message name="PutResourcePropertyDocumentRequest">
2244   <wsdl:part name="PutResourcePropertyDocumentRequest"
2245     element="wsrf-rp:PutResourcePropertyDocument"/>
2246 </wsdl:message>
2247
2248 <wsdl:message name="PutResourcePropertyDocumentResponse">
2249   <wsdl:part name="PutResourcePropertyDocumentResponse"
2250     element="wsrf-rp:PutResourcePropertyDocumentResponse"/>
2251 </wsdl:message>
2252
2253 <wsdl:message name="UnableToPutResourcePropertyDocumentFault">
2254   <part name="UnableToPutResourcePropertyDocumentFault"
2255     element="wsrf-rp:UnableToPutResourcePropertyDocumentFault" />
2256 </wsdl:message>
2257
2258 <!-- ===== SetResourceProperties =====
2259 SetResourceProperties(
2260 { insert (any)* |
2261   update (any)* |
2262   delete@QName } +
2263 )
2264 returns: empty

```

```

2265 -->
2266 <wsdl:message name="SetResourcePropertiesRequest">
2267   <wsdl:part name="SetResourcePropertiesRequest"
2268     element="wsrf-rp:SetResourceProperties" />
2269 </wsdl:message>
2270
2271 <wsdl:message name="SetResourcePropertiesResponse">
2272   <wsdl:part name="SetResourcePropertiesResponse"
2273     element="wsrf-rp:SetResourcePropertiesResponse" />
2274 </wsdl:message>
2275
2276 <wsdl:message name="InvalidModificationFault">
2277   <part name="InvalidModificationFault"
2278     element="wsrf-rp:InvalidModificationFault" />
2279 </wsdl:message>
2280
2281 <wsdl:message name="UnableToModifyResourcePropertyFault">
2282   <part name="UnableToModifyResourcePropertyFault"
2283     element="wsrf-rp:UnableToModifyResourcePropertyFault" />
2284 </wsdl:message>
2285
2286 <wsdl:message name="SetResourcePropertyRequestFailedFault">
2287   <part name="SetResourcePropertyRequestFailedFault"
2288     element="wsrf-rp:SetResourcePropertyRequestFailedFault" />
2289 </wsdl:message>
2290
2291 <!-- ===== InsertResourceProperties =====
2292 InsertResourceProperties((any)* )
2293 returns: empty
2294 -->
2295 <wsdl:message name="InsertResourcePropertiesRequest">
2296   <wsdl:part name="InsertResourcePropertiesRequest"
2297     element="wsrf-rp:InsertResourceProperties" />
2298 </wsdl:message>
2299
2300 <wsdl:message name="InsertResourcePropertiesResponse">
2301   <wsdl:part name="InsertResourcePropertiesResponse"
2302     element="wsrf-rp:InsertResourcePropertiesResponse" />
2303 </wsdl:message>
2304
2305 <wsdl:message name="InsertResourcePropertiesRequestFailedFault">
2306   <part name="InsertResourcePropertiesRequestFailedFault"
2307     element="wsrf-rp:InsertResourcePropertiesRequestFailedFault" />
2308 </wsdl:message>
2309
2310 <!-- ===== UpdateResourceProperties =====
2311 UpdateResourceProperties((any)* )
2312 returns: empty
2313 -->

```

```

2314 <wsdl:message name="UpdateResourcePropertiesRequest">
2315   <wsdl:part name="UpdateResourcePropertiesRequest"
2316     element="wsrf-rp:UpdateResourceProperties" />
2317 </wsdl:message>
2318
2319 <wsdl:message name="UpdateResourcePropertiesResponse">
2320   <wsdl:part name="UpdateResourcePropertiesResponse"
2321     element="wsrf-rp:UpdateResourcePropertiesResponse" />
2322 </wsdl:message>
2323
2324 <wsdl:message name="UpdateResourcePropertiesRequestFailedFault">
2325   <part name="UpdateResourcePropertiesRequestFailedFault"
2326     element="wsrf-rp:UpdateResourcePropertiesRequestFailedFault" />
2327 </wsdl:message>
2328
2329 <!-- ===== DeleteResourceProperties =====
2330 DeleteResourceProperties( ResourceProperty )
2331 returns: empty
2332 -->
2333 <wsdl:message name="DeleteResourcePropertiesRequest">
2334   <wsdl:part name="DeleteResourcePropertiesRequest"
2335     element="wsrf-rp:DeleteResourceProperties" />
2336 </wsdl:message>
2337
2338 <wsdl:message name="DeleteResourcePropertiesResponse">
2339   <wsdl:part name="DeleteResourcePropertiesResponse"
2340     element="wsrf-rp:DeleteResourcePropertiesResponse" />
2341 </wsdl:message>
2342
2343 <wsdl:message name="DeleteResourcePropertiesRequestFailedFault">
2344   <part name="DeleteResourcePropertiesRequestFailedFault"
2345     element="wsrf-rp:DeleteResourcePropertiesRequestFailedFault" />
2346 </wsdl:message>
2347
2348 <!-- ===== QueryResourceProperties =====
2349 QueryResourceProperties(QueryExpression)
2350 returns: any
2351 -->
2352 <wsdl:message name="QueryResourcePropertiesRequest">
2353   <wsdl:part name="QueryResourcePropertiesRequest"
2354     element="wsrf-rp:QueryResourceProperties" />
2355 </wsdl:message>
2356
2357 <wsdl:message name="QueryResourcePropertiesResponse">
2358   <wsdl:part name="QueryResourcePropertiesResponse"
2359     element="wsrf-rp:QueryResourcePropertiesResponse" />
2360 </wsdl:message>
2361
2362 <wsdl:message name="UnknownQueryExpressionDialectFault">

```

```

2363     <part name="UnknownQueryExpressionDialectFault"
2364         element="wsrf-rp:UnknownQueryExpressionDialectFault" />
2365 </wsdl:message>
2366
2367 <wsdl:message name="InvalidQueryExpressionFault">
2368     <part name="InvalidQueryExpressionFault"
2369         element="wsrf-rp:InvalidQueryExpressionFault" />
2370 </wsdl:message>
2371
2372 <wsdl:message name="QueryEvaluationErrorFault">
2373     <part name="QueryEvaluationErrorFault"
2374         element="wsrf-rp:QueryEvaluationErrorFault" />
2375 </wsdl:message>
2376
2377 <!-- ===== PortType Definitions ===== -->
2378 <wsdl:portType name="GetResourcePropertyDocument">
2379     <wsdl:operation name="GetResourcePropertyDocument">
2380         <wsdl:input name="GetResourcePropertyDocumentRequest"
2381             message="wsrf-rpw:GetResourcePropertyDocumentRequest"/>
2382         <wsdl:output name="GetResourcePropertyDocumentResponse"
2383             message="wsrf-rpw:GetResourcePropertyDocumentResponse"/>
2384         <wsdl:fault name="ResourceUnknownFault"
2385             message="wsrf-rw:ResourceUnknownFault"/>
2386     </wsdl:operation>
2387 </wsdl:portType>
2388
2389 <wsdl:portType name="GetResourceProperty">
2390     <wsdl:operation name="GetResourceProperty">
2391         <wsdl:input name="GetResourcePropertyRequest"
2392             message="wsrf-rpw:GetResourcePropertyRequest" />
2393         <wsdl:output name="GetResourcePropertyResponse"
2394             message="wsrf-rpw:GetResourcePropertyResponse" />
2395         <wsdl:fault name="ResourceUnknownFault"
2396             message="wsrf-rw:ResourceUnknownFault"/>
2397         <wsdl:fault name="InvalidResourcePropertyQNameFault"
2398             message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2399     </wsdl:operation>
2400 </wsdl:portType>
2401
2402 <wsdl:portType name="GetMultipleResourceProperties">
2403     <wsdl:operation name="GetMultipleResourceProperties">
2404         <wsdl:input name="GetMultipleResourcePropertiesRequest"
2405             message="wsrf-rpw:GetMultipleResourcePropertiesRequest" />
2406         <wsdl:output name="GetMultipleResourcePropertiesResponse"
2407             message="wsrf-rpw:GetMultipleResourcePropertiesResponse" />
2408         <wsdl:fault name="ResourceUnknownFault"
2409             message="wsrf-rw:ResourceUnknownFault"/>
2410         <wsdl:fault name="InvalidResourcePropertyQNameFault"
2411             message="wsrf-rpw:InvalidResourcePropertyQNameFault" />

```

```

2412 </wsdl:operation>
2413 </wsdl:portType>
2414
2415 <wsdl:portType name="PutResourcePropertyDocument">
2416 <wsdl:operation name="PutResourcePropertyDocument">
2417 <wsdl:input name="PutResourcePropertyDocumentRequest"
2418     message="wsrf-rpw:PutResourcePropertyDocumentRequest" />
2419 <wsdl:output name="PutResourcePropertyDocumentResponse"
2420     message="wsrf-rpw:PutResourcePropertyDocumentResponse" />
2421 <wsdl:fault name="ResourceUnknownFault"
2422     message="wsrf-rw:ResourceUnknownFault"/>
2423 <wsdl:fault name="UnableToPutResourcePropertyDocumentFault"
2424     message="wsrf-rpw:UnableToPutResourcePropertyDocumentFault" />
2425 </wsdl:operation>
2426 </wsdl:portType>
2427
2428 <wsdl:portType name="SetResourceProperties">
2429 <wsdl:operation name="SetResourceProperties">
2430 <wsdl:input name="SetResourcePropertiesRequest"
2431     message="wsrf-rpw:SetResourcePropertiesRequest" />
2432 <wsdl:output name="SetResourcePropertiesResponse"
2433     message="wsrf-rpw:SetResourcePropertiesResponse" />
2434 <wsdl:fault name="ResourceUnknownFault"
2435     message="wsrf-rw:ResourceUnknownFault"/>
2436 <wsdl:fault name="InvalidModificationFault"
2437     message="wsrf-rpw:InvalidModificationFault" />
2438 <wsdl:fault name="UnableToModifyResourcePropertyFault"
2439     message="wsrf-rpw:UnableToModifyResourcePropertyFault" />
2440 <wsdl:fault name="InvalidResourcePropertyQNameFault"
2441     message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2442 <wsdl:fault name="SetResourcePropertyRequestFailedFault"
2443     message="wsrf-rpw:SetResourcePropertyRequestFailedFault" />
2444 </wsdl:operation>
2445 </wsdl:portType>
2446
2447 <wsdl:portType name="InsertResourceProperties">
2448 <wsdl:operation name="InsertResourceProperties">
2449 <wsdl:input name="InsertResourcePropertiesRequest"
2450     message="wsrf-rpw:InsertResourcePropertiesRequest" />
2451 <wsdl:output name="InsertResourcePropertiesResponse"
2452     message="wsrf-rpw:InsertResourcePropertiesResponse" />
2453 <wsdl:fault name="ResourceUnknownFault"
2454     message="wsrf-rw:ResourceUnknownFault"/>
2455 <wsdl:fault name="InvalidModificationFault"
2456     message="wsrf-rpw:InvalidModificationFault" />
2457 <wsdl:fault name="UnableToModifyResourcePropertyFault"
2458     message="wsrf-rpw:UnableToModifyResourcePropertyFault" />
2459 <wsdl:fault name="InvalidResourcePropertyQNameFault"
2460     message="wsrf-rpw:InvalidResourcePropertyQNameFault" />

```

```

2461     <wsdl:fault name="InsertResourcePropertiesRequestFailedFault"
2462             message="wsrf-rpw:InsertResourcePropertiesRequestFailedFault" />
2463   </wsdl:operation>
2464 </wsdl:portType>
2465
2466 <wsdl:portType name="UpdateResourceProperties">
2467   <wsdl:operation name="UpdateResourceProperties">
2468     <wsdl:input name="UpdateResourcePropertiesRequest"
2469             message="wsrf-rpw:UpdateResourcePropertiesRequest" />
2470     <wsdl:output name="UpdateResourcePropertiesResponse"
2471             message="wsrf-rpw:UpdateResourcePropertiesResponse" />
2472     <wsdl:fault name="ResourceUnknownFault"
2473             message="wsrf-rw:ResourceUnknownFault"/>
2474     <wsdl:fault name="InvalidModificationFault"
2475             message="wsrf-rpw:InvalidModificationFault" />
2476     <wsdl:fault name="UnableToModifyResourcePropertyFault"
2477             message="wsrf-rpw:UnableToModifyResourcePropertyFault" />
2478     <wsdl:fault name="InvalidResourcePropertyQNameFault"
2479             message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2480     <wsdl:fault name="UpdateResourcePropertiesRequestFailedFault"
2481             message="wsrf-rpw:UpdateResourcePropertiesRequestFailedFault" />
2482   </wsdl:operation>
2483 </wsdl:portType>
2484
2485 <wsdl:portType name="DeleteResourceProperties">
2486   <wsdl:operation name="DeleteResourceProperties">
2487     <wsdl:input name="DeleteResourcePropertiesRequest"
2488             message="wsrf-rpw:DeleteResourcePropertiesRequest" />
2489     <wsdl:output name="DeleteResourcePropertiesResponse"
2490             message="wsrf-rpw:DeleteResourcePropertiesResponse" />
2491     <wsdl:fault name="ResourceUnknownFault"
2492             message="wsrf-rw:ResourceUnknownFault"/>
2493     <wsdl:fault name="InvalidModificationFault"
2494             message="wsrf-rpw:InvalidModificationFault" />
2495     <wsdl:fault name="UnableToModifyResourcePropertyFault"
2496             message="wsrf-rpw:UnableToModifyResourcePropertyFault" />
2497     <wsdl:fault name="InvalidResourcePropertyQNameFault"
2498             message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2499     <wsdl:fault name="DeleteResourcePropertiesRequestFailedFault"
2500             message="wsrf-rpw:DeleteResourcePropertiesRequestFailedFault" />
2501   </wsdl:operation>
2502 </wsdl:portType>
2503
2504 <wsdl:portType name="QueryResourceProperties"
2505             wsrf-rp:ResourceProperties="wsrf-rp:QueryExpressionRPDocument">
2506   <wsdl:operation name="QueryResourceProperties">
2507     <wsdl:input name="QueryResourcePropertiesRequest"
2508             message="wsrf-rpw:QueryResourcePropertiesRequest" />
2509     <wsdl:output name="QueryResourcePropertiesResponse"

```

```
2510         message="wsrf-rpw:QueryResourcePropertiesResponse" />
2511     <wsdl:fault name="ResourceUnknownFault"
2512         message="wsrf-rw:ResourceUnknownFault"/>
2513     <wsdl:fault name="InvalidResourcePropertyQNameFault"
2514         message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2515     <wsdl:fault name="UnknownQueryExpressionDialectFault"
2516         message="wsrf-rpw:UnknownQueryExpressionDialectFault" />
2517     <wsdl:fault name="InvalidQueryExpressionFault"
2518         message="wsrf-rpw:InvalidQueryExpressionFault" />
2519     <wsdl:fault name="QueryEvaluationErrorFault"
2520         message="wsrf-rpw:QueryEvaluationErrorFault" />
2521 </wsdl:operation>
2522
2523 </wsdl:portType>
2524
2525 </wsdl:definitions>
```

Appendix D. Revision History

Rev	Date	By Whom	What
wd-01	2004-05-18	Steve Graham	Initial version created from submission by contributing companies. Minor modifications made to reflect OASIS formatting and the following issues: WSRF2, WSRF3, WSRF14, WSRF33.
wd-02	2004-05-31	Steve Graham, Jem Treadwell	Mods to draft 01, including hyphenation, clarification of acknowledgements section
wd-03	2004-06-04	Steve Graham	Reformat rogue Veranda text with Arial.
wd-04	2004-06-07	Steve Graham	Base faults comment on faults (align with ResourceLifetime), update date URIs to 2004/06, update URLs in references to point to .pdfs, update Acknowledgements
wd-05	2004-07-19	Jem Treadwell	Changed [State Paper] & [WS-Notification] references to public URLs.
wd-06 (wd-05.b)	2004-09-17	Steve Graham	WSRF15, WSRF16, WSRF21
wd-05.c	2004-11-22	Jem Treadwell Steve Graham	Confirm WSRF15. WSRF16, WSRF21, fix up some small typos (Jem), verify typos fixes are correct and reversion to 05.c (sgg)
wd-05.d	2004-11-22	Steve Graham	Incorporate Chairman's editorial modifications (from Ian Robinson) on Title page, namespace URIs and References section. Incorporate changes due to adoption of WS-Resource specification. Addresses: WSRF4, WSRF24, WSRF27, WSRF30, WSRF43, WSRF49, WSRF53, WSRF56
wd-05.e	2004-11-26	Ian Robinson	Handful of typos corrected.
wd-05	2004-11-30	Steve Graham	Final typos accepted, PDF generated.
wd-06.a	2005-02-18	Steve Graham	WSRF25, WSRF51, WSRF55, WSRF62, WSRF63, WSRF68, WSRF72, WSRF79, WSRF81, WSRF83, WSRF86, WSRF93, WSRF95, WSRF96

Rev	Date	By Whom	What
wd-06.b	2005-02-25	Jem Treadwell	Few minor typos etc. corrected.
wd-06.c	2005-03-07	Jem Treadwell	Updated wsa namespace reference.
wd-06.d	2005-03-24	Ian Robinson	Added ResourcePropertyChangeFailure type to schema
wd-07.a	2005-05-16	Steve Graham	91, 92 (no changes required), 97, 98, 99, 101, 102, 103
wd-07.c	2005-05-17	Steve Graham	100, 109
wd-07.d	2005-05-17	Steve Graham	113
wd-07.e	2005-05-18	Steve Graham	Updates to 114, per Ian Robinson and F2F discussion.
wd-07.f	2005-05-18	Steve Graham	WSRF 91,97,99,100,101,102, 103
wd-07.g	2005-06-10	Steve Graham	Minor typos as reported by Hideharu Kato, a few additional related typos, update references to WS-Notification, update Acknowledgements.
pr-01	2005-06-10	Steve Graham	Change status to PR

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