



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 "committee 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 wsrf@lists.oasis-open.org list. Others may submit comments to the TC via the web form found on the TC's web page at <http://www.oasis->

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

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

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95 1 Introduction

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

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

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

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

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

121 1.1 Goals and Requirements

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

126 1.1.1 Requirements

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

128 **This specification MUST:**

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

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

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

153 1.1.2 Non-Goals

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

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

158 1.2 Notational Conventions

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

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

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

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

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

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

183 </element>

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

189 1.3 Namespaces

190 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/wsr/rp-1
wsrf-rpw	http://docs.oasis-open.org/wsr/rpw-1
wsrf-bf	http://docs.oasis-open.org/wsr/bf-1
wsrf-rw	http://docs.oasis-open.org/wsr/rw-1

191 1.4 Fault Definitions

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

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

195 <http://docs.oasis-open.org/wsr/fault>.

196 2 Terminology and Concepts

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

199 Resource Property:

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

204 Resource Properties Document:

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

213 Resource Property Element:

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

219 Resource Property Value:

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

221 3 Example

222 The simple example below defines the GenericDiskDrive portType and the resource properties
223 document associated with GenericDiskDrive. The association of the resource properties
224 document with the portType defines the type of the WS-Resource.

```
225 <wsdl:definitions ... xmlns:tns="http://example.com/diskDrive" ...>
226 ...
227 <wsdl:types>
228   <xsd:schema targetNamespace="http://example.com/diskDrive" ... >
229
230     <!-- Resource property element declarations -->
231     <xsd:element name="NumberOfBlocks" type="xsd:integer"/>
232     <xsd:element name="BlockSize" type="xsd:integer" />
233     <xsd:element name="Manufacturer" type="xsd:string" />
234     <xsd:element name="StorageCapability" type="xsd:string" />
235
236     <!-- Resource properties document declaration -->
237     <xsd:element name="GenericDiskDriveProperties">
238       <xsd:complexType>
239         <xsd:sequence>
240           <xsd:element ref="tns:NumberOfBlocks"/>
241           <xsd:element ref="tns:BlockSize" />
242           <xsd:element ref="tns:Manufacturer" />
243           <xsd:any minOccurs="0" maxOccurs="unbounded" />
244           <xsd:element ref="tns:StorageCapability"
245             minOccurs="0" maxOccurs="unbounded" />
246         </xsd:sequence>
247       </xsd:complexType>
248     </xsd:element>
249   ...
250 </xsd:schema>
251 </wsdl:types>
252 ...
253 <!-- Association of resource properties document to a portType -->
254 <wsdl:portType name="GenericDiskDrive"
255   wsrf-rp:ResourceProperties="tns:GenericDiskDriveProperties" >
256
257   <operation name="start" .../>
258   <operation name="stop" .../>
259 ...
260 </wsdl:portType>
261 ...
262 </wsdl:definitions>
```

263 The following represents the request message used to retrieve two resource property elements
264 from the WS-Resource that implements the GenericDiskDrive portType:

```
265 ...
266 <wsrf-rp:GetMultipleResourceProperties
267   xmlns:tns="http://example.com/diskdrive" ...>
```

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

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

```
280 ...
281 <wsrf-rp:GetMultipleResourcePropertiesResponse
282   xmlns:ns1="http://example.com/diskdrive"
283   xmlns:ns2="http://example.com/capabilities" ...>
284   <ns1:NumberOfBlocks>22</ns1:NumberOfBlocks>
285   <ns1:BlockSize>1024</ns1:BlockSize>
286   <ns1:StorageCapability>
287     <ns2:NoSinglePointOfFailure>true</ns2:NoSinglePointOfFailure>
288   </ns1:StorageCapability>
289   <ns1:StorageCapability>
290     <ns2:DataRedundancyMax>42</ns2:DataRedundancyMax>
291   </ns1:StorageCapability>
292
293 </wsrf-rp:GetMultipleResourcePropertiesResponse>
294 ...
```

295

4 Declaring Resource Properties

296

4.1 Resource Properties Document

297

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.

303

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).

311

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.

317

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.

326

4.2 Resource Properties Document Type

327

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

328

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.

330

331

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

332

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

333

334

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.

335

336

337

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

338

339 **4.3 Declaring the Resource Properties Document Type in WSDL**

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

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

347 This definition is further constrained as follows:

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

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

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

5 Operations on Resource Properties

357

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

361

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

366

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

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

373

```
http://docs.oasis-open.org/wsrf/rpw-
```

374

```
1/GetResourcePropertyDocument/GetResourcePropertyDocumentRequest.
```

375

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

377

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

378

```
{any}
```

379

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

380

The wsa:Action MUST contain the URI

381

```
http://docs.oasis-open.org/wsrf/rpw-
```

382

```
1/GetResourcePropertyDocument/GetResourcePropertyDocumentResponse.
```

383

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

385

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

386

An XML element that MUST correspond to the element declared in the value of the

387

ResourceProperties attribute of the portType defining the

388

GetResourcePropertyDocument operation. The contents of the element comprise all the

389

resource property values contained in the WS-Resource's resource properties document.

390

If the WS-Resource does not respond to the GetResourcePropertyDocument request message

391

with the GetResourcePropertyDocumentResponse message, then it MUST send a fault. This

392

specification defines the following faults associated with failure to process the

393

GetResourcePropertyDocument request message:

394

ResourceUnknownFault

395

- The resource identified in the message (which follows the WS-Resource Access Pattern)

396

is not known to the Web service. This fault is specified by the WS-Resource [WS-

397

Resource] specification.

398 **5.1.1 Example SOAP Encoding of the**
399 **GetResponsePropertyDocument Message Exchange**

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

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

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

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

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

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

```

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

```

457 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 The format of this request message MUST be:

```

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

```

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

```

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

```

472 The components of the GetResourceProperty request message are further described as follows:

473 /wsrf-rp:GetResourceProperty/QName

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

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

```

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

```

482 The wsa:Action MUST contain the URI

```

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

```

485 The contents of the GetResourceProperty response message are further described as follows:

486 /wsrf-rp:GetResourcePropertyResponse/{any}

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

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

496 ResourceUnknownFault

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

500 InvalidResourcePropertyQName

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

503 **5.2.1 Example SOAP Encoding of the GetResourceProperty Message** 504 **Exchange**

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

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

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

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



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

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

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

551 **5.3 GetMultipleResourceProperties**

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

554 The format of this request message MUST be:

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

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

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

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

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

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

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

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

573 The wsa:Action MUST contain the URI

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

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

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

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

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

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

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

597 `ResourceUnknownFault`

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

601 `InvalidResourcePropertyQName`

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

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

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

614 **5.3.1 Example SOAP Encoding of the `GetMultipleResourceProperties`** 615 **Message Exchange**

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

```

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

```

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

```

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

```

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

```

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

```

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

670 5.4 QueryResourceProperties

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

674 The format of this request message MUST be:

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

680 The QueryResourceProperties request message MUST follow the WS-Resource Access Pattern.

681 The `wsa:Action` MUST contain the URI

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

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

686 `/wsrf-rp:QueryResourceProperties/wsrf-rp:QueryExpression`

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

690 `/wsrf-rp:QueryResourceProperties/wsrf-rp:QueryExpression/@Dialect`

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

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

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

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

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

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

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

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

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

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

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

722 The wsa:Action MUST contain the URI

723 http://docs.oasis-open.org/wsrf/rpw-
724 1/QueryResourceProperties/QueryResourcePropertiesResponse.

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

727 /wsrf-rp:QueryResourcePropertiesResponse/{any}

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

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

739 ResourceUnknownFault

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

743 UnknownQueryExpressionDialect

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

745 InvalidQueryExpression

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

748 QueryEvaluationError

- 749 • The Query Expression failed during evaluation.

750 5.4.1 QueryExpressionDialect Resource Property

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

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

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

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

760 This resource property element is further constrained as follows:

761 /wsrf-rp:QueryExpressionDialect

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

764 /wsrf-rp:QueryExpressionDialect/{anyURI}

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

769 5.4.2 Example SOAP Encoding of the QueryResourceProperties 770 Message Exchange

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

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

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

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

```

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

```

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

```

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

```

821 **5.5 PutResourcePropertyDocument**

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

826 The format of the PutResourcePropertyDocument request message MUST be:

```

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

```

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

```

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

```

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

```

836 /wsrf-rp:PutResourcePropertyDocument/{any}

```

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

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

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

846 The wsa:Action MUST contain the URI

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

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

851 /wsrf-rp:PutResourcePropertyDocumentResponse/{any}

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

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

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

866 ResourceUnknownFault:

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

870 UnableToPutResourcePropertyDocument:

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

873 **5.5.1 Example SOAP Encoding of the** 874 **PutResponsePropertyDocument Message Exchange**

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

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



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

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

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

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

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

920 **5.6 SetResourceProperties**

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

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

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

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

931 The format of this request message MUST be:

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

945 The SetResourceProperties request message MUST follow the WS-Resource Access Pattern.

946 The wsa:Action MUST contain the URI

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

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

950 /wsrf-rp:SetResourceProperties

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

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

968 /wsrf-rp:SetResourceProperties/wsrf-rp:Insert

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

976 /wsrf-rp:SetResourceProperties/wsrf-rp:Insert/{any}

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

984 /wsrf-rp:SetResourceProperties/wsrf-rp:Update

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

993 /wsrf-rp:SetResourceProperties/wsrf-rp:Update/{any}

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

1002 /wsrf-rp:SetResourceProperties/wsrf-rp>Delete

1003 The intent of this component is to remove all element children of the root of the resource
1004 properties document whose QNames correspond to the value of @ResourceProperty. If
1005 the resource is unable to remove all identified elements, the processing of the component
1006 MUST fault. If, as a result of processing the Delete component, the resource properties
1007 document is no longer able to validate, the processing of the component MUST fail. The
1008 resource may be unable to accept the delete of an element because it does not allow the
1009 requestor to delete a resource property (or its value) of the given name. In such
1010 circumstances, the resource MUST fault the processing of the component.

1011 /wsrf-rp:SetResourceProperties/wsrf-rp>Delete/@ResourceProperty

1012 This attribute contains the QName of a resource property to be deleted by this
1013 component.

1014 The response of the SetResourceProperties request message, all of whose components were
1015 successfully processed, MUST be a message of the following form:

```
1016 <wsrf-rp:SetResourcePropertiesResponse>  
1017 </wsrf-rp:SetResourcePropertiesResponse>
```

1018 The wsa:Action MUST contain the URI

```
1019 http://docs.oasis-open.org/wsrf/rpw-  
1020 1/SetResourceProperties/SetResourcePropertiesResponse.
```

1021 If the WS-Resource does not respond to the SetResourceProperties request message with the
1022 SetResourcePropertiesResponse message, then it MUST send a fault message. This
1023 specification defines the following faults associated with failure to process the
1024 SetResourcePropertyDocument request message:

1025 ResourceUnknownFault:

- 1026 • The resource identified in the message (which follows the WS-Resource Access Pattern)
1027 is not known to the Web service. This fault is specified by the WS-Resource [WS-
1028 Resource] specification.

1029 InvalidModification:

- 1030 • The contents of the SetResourceProperties request component causes the resource
1031 properties document to no longer be able to validate.

1032 UnableToModifyResourceProperty:

- 1033 • A resource property identified by one of the SetResourceProperties request components
1034 is read-only.

1035 InvalidResourcePropertyQName:

- 1036 • A resource property QName does not identify a proper number of resource properties.

1037 SetResourcePropertyRequestFailed

- 1038 • One or more components of the SetResourceProperties request failed.

1039 Any fault message indicating a failure during the update of the resource properties document
1040 MUST also indicate whether the document was restored or not by using the
1041 ResourcePropertyChangeFailure element of the fault. This fault element indicates the resource
1042 property element change associated with the fault and indicates if the resource property
1043 document as a whole was restored. The format of this element is indicated as follows:

```
1044 <wsrf-rp:ResourcePropertyChangeFailure Restored=xsd:boolean?>  
1045 <wsrf-rp:CurrentValue>{any}*</wsrf-rp:CurrentValue> ?  
1046 <wsrf-rp:RequestedValue>{any}*</wsrf-rp:RequestedValue> ?  
1047 </wsrf-rp:ResourcePropertyChangeFailure>
```

1048 This element is further constrained as follows:

1049 /wsrf-rp:ResourcePropertyChangeFailure

1050 The contents of this element provide more information about the element associated with
1051 a failed modification to a resource property document.

1052 /wsrf-rp:ResourcePropertyChangeFailure/@Restored

1053 If the value of this optional attribute is "true", then the resource property document was
1054 restored to its state prior to the attempt to process the request message. The absence of
1055 this attribute is identical to this attribute having the value "false", indicating that no attempt
1056 was made to restore the resource property document.

1057 /wsrf-rp:ResourcePropertyChangeFailure/wsrf-rp:CurrentValue
 1058 If present, this component contains the current value(s) of the resource property
 1059 elements associated with the fault.

1060 /wsrf-rp:ResourcePropertyChangeFailure/wsrf-rp:RequestedValue
 1061 If present, this component contains the value(s) of the resource property elements
 1062 associated with the fault as found within the request message.

1063 Note: There is no isolation policy implied, for either modifications to the resource properties
 1064 document resulting from the processing of the request or the modifications implemented by the
 1065 restore. See Section 7 for more discussion.

5.6.1 Example SOAP Encoding of the SetResourceProperties Message Exchange

1066 Consider the following resource properties document defining resource properties for a WS-
 1067 Resource defined by the GenericDiskDrive portType:

```

1070 <GenericDiskDriveProperties
1071   xmlns:tns="http://example.com/diskDrive"
1072   xmlns:cap="http://example.com/capabilities">
1073   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>
1074   <tns:BlockSize>1024</tns:BlockSize>
1075   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
1076   <tns:StorageCapability>
1077     <cap:NoSinglePointOfFailure>true</cap:NoSinglePointOfFailure>
1078   </tns:StorageCapability>
1079   <tns:StorageCapability>
1080     <cap:DataRedundancyMax>42</cap:DataRedundancyMax>
1081   </tns:StorageCapability>
1082 </GenericDiskDriveProperties>
  
```

1083 The following is a non-normative example of a SetResourceProperties request message using
 1084 SOAP 1.1:

```

1085 <s11:Envelope ...>
1086   <s11:Header>
1087     <wsa:Action>
1088       http://docs.oasis-open.org/wsrf/rpw-1/SetResourceProperties/SetResourcePropertiesRequest
1089     </wsa:Action>
1090     ...
1091   </s11:Header>
1092   <s11:Body>
1093     <wsrf-rp:SetResourceProperties
1094       xmlns:tns="http://example.com/diskdrive">
1095       <wsrf-rp:Update>
1096         <tns:NumberOfBlocks>143</tns:NumberOfBlocks>
1097       </wsrf-rp:Update>
1098
1099       <wsrf-rp>Delete ResourceProperty="tns:StorageCapability" />
1100
1101     <wsrf-rp:Insert>
  
```

```
1102     <tns:someElement>42</tns:someElement>
1103     </wsrf-rp:Insert>
1104
1105     </wsrf-rp:SetResourceProperties>
1106   </s11:Body>
1107 </s11:Envelope>
```

1108 The following is an example SetResourcePropertiesResponse message using SOAP 1.1:

```
1109 <s11:Envelope ...>
1110   <s11:Header>
1111     <wsa:Action>
1112     http://docs.oasis-open.org/wsrf/rpw-1/SetResourceProperties/SetResourcePropertiesResponse
1113     </wsa:Action>
1114     ...
1115   </s11:Header>
1116   <s11:Body>
1117     <wsrf-rp:SetResourcePropertiesResponse>
1118     </wsrf-rp:SetResourcePropertiesResponse>
1119   </s11:Body>
1120 </s11:Envelope>
```

1121 The new contents of the resource properties document after successful processing of the request
1122 message MUST be:

```
1123 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >
1124   <tns:NumberOfBlocks>143</tns:NumberOfBlocks>
1125   <tns:BlockSize>1024</tns:BlockSize>
1126   <tns:someElement>42</tns:someElement>
1127   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
1128 </GenericDiskDriveProperties>
```

1129 **5.7 InsertResourceProperties**

1130 A WS-Resource MAY support the message exchange defined in this section that allows a
1131 requestor to insert new values of a resource property of a WS-Resource.

1132 The InsertResourceProperties message is used to request the insertion of one or more element
1133 values of a single resource property into the resource properties document of a WS-Resource.

1134 The format of this request message MUST be:

```
1135 <wsrf-rp:InsertResourceProperties>
1136   <wsrf-rp:Insert>
1137     {any}*
1138   </wsrf-rp:Insert>
1139 </wsrf-rp:InsertResourceProperties>
```

1140 The InsertResourceProperties request message MUST follow the WS-Resource Access Pattern.

1141 The wsa:Action MUST contain the URI

```
1142     http://docs.oasis-open.org/wsrf/rpw-
1143     1/InsertResourceProperties/InsertResourcePropertiesRequest.
```

1144 The contents of the InsertResourceProperties request message are further described as follows:

```
1145 /wsrf-rp:InsertResourceProperties/wsrf-rp:Insert
```

1146 The intent of this component is to insert the contents of the component into the resource
1147 properties document. The exact placement of the element insertion is implementation-
1148 dependent. If, as a result of processing the InsertResourceProperty request, the resource
1149 properties document is no longer able to validate, the processing of the request MUST
1150 fault. The implementation may be unable to accept the insertion of an element because it
1151 does not allow the requestor to insert a resource property (or its value) of that given
1152 name. In such circumstances, the resource MUST fault the processing of the request
1153 message.

1154 /wsrf-rp:InsertResourceProperties/wsrf-rp:Insert/{any}

1155 This component identifies the element(s) to be inserted into the resource properties
1156 document. If there are multiple child elements of the wsrf-rp:Insert element, each MUST
1157 have the same namespace and name (i.e. the same QName). The QName MUST
1158 correspond to the QName of a resource property element associated with the WS-
1159 Resource (i.e. an element that is a valid child element of the root element of the resource
1160 properties document). Note, for those resource properties documents that allow open
1161 element content, the set of valid content types can be very large.

1162 When an InsertResourceProperties request message has been successfully processed, the
1163 response message, MUST have the following form:

```
1164 <wsrf-rp:InsertResourcePropertiesResponse>  
1165 </wsrf-rp:InsertResourcePropertiesResponse>
```

1166 The wsa:Action MUST contain the URI

1167 [http://docs.oasis-open.org/wsrf/rpw-](http://docs.oasis-open.org/wsrf/rpw-1/InsertResourceProperties/InsertResourcePropertiesResponse)
1168 [1/InsertResourceProperties/InsertResourcePropertiesResponse.](http://docs.oasis-open.org/wsrf/rpw-1/InsertResourceProperties/InsertResourcePropertiesResponse)

1169 If the WS-Resource does not respond to the InsertResourceProperties request message with the
1170 InsertResourcePropertiesResponse message, then it MUST send a fault. This specification
1171 defines the following faults associated with failure to process the
1172 InsertResourcePropertyDocument request message:

1173 ResourceUnknownFault:

- 1174 • The resource identified in the message (which follows the WS-Resource Access Pattern)
1175 is not known to the Web service. This fault is specified by the WS-Resource [WS-
1176 Resource] specification.

1177 InvalidModification:

- 1178 • The contents of the InsertResourceProperties request component causes the resource
1179 properties document to no longer be able to validate.

1180 UnableToModifyResourceProperty:

- 1181 • A resource property identified by the InsertResourceProperties request is not modifiable.

1182 InvalidResourcePropertyQName:

- 1183 • A resource property QName does not identify a resource property.

1184 InsertResourcePropertyRequestFailed:

- 1185 • The InsertResourceProperty request failed for some reason.

1186 Any fault message indicating a failure during the update of the resource properties document
1187 MUST also indicate whether the document was restored by using the
1188 ResourcePropertyChangeFailure element of the fault. This fault element indicates the resource

1189 property element change associated with the fault and indicates if the resource property
1190 document as a whole was restored. The format of this element is described in Section 5.6.

1191 **5.7.1 Example SOAP Encoding of the InsertResourceProperties** 1192 **Message Exchange**

1193 Consider the following resource properties document defining resource properties for a WS-
1194 Resource defined by the GenericDiskDrive portType:

```
1195 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >  
1196   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>  
1197   <tns:BlockSize>1024</tns:BlockSize>  
1198   <tns:Manufacturer>DrivesRUs</tns:Manufacturer>  
1199 </GenericDiskDriveProperties>
```

1200 The following is a non-normative example of an InsertResourceProperties request message using
1201 SOAP 1.1:

```
1202 <s11:Envelope ...>  
1203   <s11:Header>  
1204     <wsa:Action>  
1205       http://docs.oasis-open.org/wsrf/rpw-  
1206       1/InsertResourceProperties/InsertResourcePropertiesRequest  
1207     </wsa:Action>  
1208     ...  
1209   </s11:Header>  
1210   <s11:Body>  
1211     <wsrf-rp:InsertResourceProperties  
1212       xmlns:tns="http://example.com/diskdrive">  
1213       <wsrf-rp:Insert>  
1214         <tns:StorageCapability>  
1215           <tns:NoSinglePointOfFailure>true</tns:NoSinglePointOfFailure>  
1216         </tns:StorageCapability>  
1217         <tns:StorageCapability>  
1218           <tns>DataRedundancyMax>42</tns>DataRedundancyMax>  
1219         </tns:StorageCapability>  
1220       </wsrf-rp:Insert>  
1221     </wsrf-rp:InsertResourceProperties>  
1222   </s11:Body>  
1223 </s11:Envelope>
```

1225 The following is an example InsertResourcePropertiesResponse message using SOAP 1.1:

```
1226 <s11:Envelope ...>  
1227   <s11:Header>  
1228     <wsa:Action>  
1229       http://docs.oasis-open.org/wsrf/rpw-  
1230       1/InsertResourceProperties/InsertResourcePropertiesResponse  
1231     </wsa:Action>  
1232     ...  
1233   </s11:Header>
```



```
1234 <s11:Body>
1235 <wsrf-rp:InsertResourcePropertiesResponse>
1236 </wsrf-rp:InsertResourcePropertiesResponse>
1237 </s11:Body>
1238 </s11:Envelope>
```

1239 The new contents of the resource properties document after successful processing of the request
1240 message MUST be:

```
1241 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >
1242 <tns:NumberOfBlocks>22</tns:NumberOfBlocks>
1243 <tns:BlockSize>1024</tns:BlockSize>
1244 <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
1245 <tns:StorageCapability>
1246 <tns:NoSinglePointOfFailure>true</tns:NoSinglePointOfFailure>
1247 </tns:StorageCapability>
1248 <tns:StorageCapability>
1249 <tns>DataRedundancyMax>42</tns>DataRedundancyMax>
1250 </tns:StorageCapability>
1251 </GenericDiskDriveProperties>
```

1252 5.8 UpdateResourceProperties

1253 A WS-Resource MAY support the message exchange defined in this section that allows a
1254 requestor to replace the existing values of a resource property with new values.

1255 The UpdateResourceProperties message is used to request the replacement of all the element
1256 values of a single resource property in the resource properties document of a WS-Resource with
1257 a new set of values.

1258 The format of this request message MUST be:

```
1259 <wsrf-rp:UpdateResourceProperties>
1260 <wsrf-rp:Update>
1261 {any}*
1262 </wsrf-rp:Update>
1263 </wsrf-rp:UpdateResourceProperties>
```

1264 The UpdateResourceProperties request message MUST follow the WS-Resource Access
1265 Pattern. The wsa:Action MUST contain the URI

```
1266 http://docs.oasis-open.org/wsrf/rpw-
1267 1/UpdateResourceProperties/UpdateResourcePropertiesRequest.
```

1268 The contents of the UpdateResourceProperties request message are further described as
1269 follows:

1270 /wsrf-rp:UpdateResourceProperties/wsrf-rp:Update

1271 The intent of this request is to change the value of the elements of a resource property by
1272 removing any and all resource property element(s) of the given QName and replacing
1273 them with the contents of this component. If, as a result of processing the entire
1274 UpdateResourceProperty request, the resource properties document is no longer able to
1275 validate, the processing of the request MUST fault. The resource may be unable to
1276 accept the update of an element because it does not allow the requestor to update a

1277 resource property (or its value) of that given name. In such circumstances, the resource
1278 MUST fault the processing of the request message.

1279 /wsrf-rp:UpdateResourceProperties/wsrf-rp:Update/{any}

1280 This identifies the element(s) to be inserted into the resource properties document,
1281 replacing all element children of the root of the resource properties document with the
1282 same QName. If there are multiple child elements of the wsrf-rp:Update component, each
1283 MUST have the same namespace and name (i.e. the same QName). The QName MUST
1284 correspond to the QName of a resource property element associated with the WS-
1285 Resource (i.e. an element that is a valid child element of the root element of the resource
1286 properties document). Note, for those resource properties documents that allow open
1287 element content, the set of valid content types can be very large.

1288 When an UpdateResourceProperties request message has been successfully processed, the
1289 response message MUST have the following form:

```
1290 <wsrf-rp:UpdateResourcePropertiesResponse>  
1291 </wsrf-rp:UpdateResourcePropertiesResponse>
```

1292 The wsa:Action MUST contain the URI

1293 [http://docs.oasis-open.org/wsrf/rpw-](http://docs.oasis-open.org/wsrf/rpw-1/UpdateResourceProperties/UpdateResourcePropertiesResponse)
1294 [1/UpdateResourceProperties/UpdateResourcePropertiesResponse](http://docs.oasis-open.org/wsrf/rpw-1/UpdateResourceProperties/UpdateResourcePropertiesResponse).

1295 If the WS-Resource does not respond to the UpdateResourceProperties request message with
1296 the UpdateResourcePropertiesResponse message, then it MUST send a fault. This specification
1297 defines the following faults associated with failure to process the
1298 UpdateResourcePropertyDocument request message:

1299 ResourceUnknownFault:

- 1300 • The resource identified in the message (which follows the WS-Resource Access Pattern)
1301 is not known to the Web service. This fault is specified by the WS-Resource [WS-
1302 Resource] specification.

1303 InvalidModification:

- 1304 • The contents of the UpdateResourceProperties request component causes the resource
1305 properties document to no longer be able to validate.

1306 UnableToModifyResourceProperty:

- 1307 • A resource property identified by the UpdateResourceProperties request is not
1308 modifiable.

1309 InvalidResourcePropertyQName:

- 1310 • A resource property QName does not identify a resource property.

1311 UpdateResourcePropertiesRequestFailed:

- 1312 • The UpdateResourceProperties request failed for some reason.

1313 Any fault message indicating a failure during the update of the resource properties document
1314 MUST also indicate whether the document was restored by using the
1315 ResourcePropertyChangeFailure element of the fault. This fault element indicates the resource
1316 property element change associated with the fault and indicates if the resource property
1317 document as a whole was restored. The format of this element is described in Section 5.6.

1318 **5.8.1 Example SOAP Encoding of the UpdateResourceProperties**
1319 **Message Exchange**

1320 Consider the following resource properties document defining resource properties for a WS-
1321 Resource defined by the GenericDiskDrive portType:

```
1322 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >  
1323 <tns:NumberOfBlocks>22</tns:NumberOfBlocks>  
1324 <tns:BlockSize>1024</tns:BlockSize>  
1325 <tns:Manufacturer>DrivesRUs</tns:Manufacturer>  
1326 </GenericDiskDriveProperties>
```

1327 The following is a non-normative example of a UpdateResourceProperties request message
1328 using SOAP 1.1:

```
1329 <s11:Envelope ...>  
1330 <s11:Header>  
1331 <wsa:Action>  
1332 http://docs.oasis-open.org/wsrf/rpw-  
1333 1/UpdateResourceProperties/UpdateResourcePropertiesRequest  
1334 </wsa:Action>  
1335 ...  
1336 </s11:Header>  
1337 <s11:Body>  
1338 <wsrf-rp:UpdateResourceProperties  
1339 xmlns:tns="http://example.com/diskdrive">  
1340 <wsrf-rp:Update>  
1341 <tns:NumberOfBlocks>143</tns:NumberOfBlocks>  
1342 </wsrf-rp:Update>  
1343 </wsrf-rp:UpdateResourceProperties>  
1344 </s11:Body>  
1345 </s11:Envelope>
```

1346 The following is an example UpdateResourcePropertiesResponse message using SOAP 1.1:

```
1347 <s11:Envelope ...>  
1348 <s11:Header>  
1349 <wsa:Action>  
1350 http://docs.oasis-open.org/wsrf/rpw-  
1351 1/UpdateResourceProperties/UpdateResourcePropertiesResponse  
1352 </wsa:Action>  
1353 ...  
1354 </s11:Header>  
1355 <s11:Body>  
1356 <wsrf-rp:UpdateResourcePropertiesResponse>  
1357 </wsrf-rp:UpdateResourcePropertiesResponse>  
1358 </s11:Body>  
1359 </s11:Envelope>
```

1360 The new contents of the resource properties document after successful processing of the request
1361 message MUST be:

```
1362 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >
```

```
1363 <tns:NumberOfBlocks>143</tns:NumberOfBlocks>
1364 <tns:BlockSize>1024</tns:BlockSize>
1365 <tns:Manufacturer>DrivesRUs</tns:Manufacturer>
1366 </GenericDiskDriveProperties>
```

1367 5.9 DeleteResourceProperties

1368 A WS-Resource MAY support the message exchange defined in this section that allows a
1369 requestor to remove all values of a resource property of a WS-Resource.

1370 The DeleteResourceProperties message is used to request the removal of all values of a single
1371 resource property from the resource properties document of a WS-Resource.

1372 The format of this request message MUST be:

```
1373 <wsrf-rp:DeleteResourceProperties>
1374 <wsrf-rp:Delete ResourceProperty="QName" />
1375 </wsrf-rp:DeleteResourceProperties>
```

1376 The DeleteResourceProperties request message MUST follow the WS-Resource Access Pattern.

1377 The wsa:Action MUST contain the URI

```
1378 http://docs.oasis-open.org/wsrf/rpw-
1379 1/DeleteResourceProperties/DeleteResourcePropertiesRequest.
```

1380 The contents of the DeleteResourceProperties request message are further described as follows:

1381 /wsrf-rp:DeleteResourceProperties/wsrf-rp:Delete

1382 The intent of this message is to remove all element children of the root of the resource
1383 properties document whose QNames correspond to the value of @ResourceProperty. If
1384 the resource is unable to remove all identified elements, the processing of the message
1385 MUST fault. If, as a result of processing the DeleteResourceProperty request, the resource
1386 properties document is no longer able to validate, the processing of the request MUST
1387 fault. The resource may be unable to accept the deletion of an element because it does
1388 not allow the requestor to delete a resource property (or its value) of the given name. In
1389 such circumstances, the resource MUST fault the processing of the request message.

1390 /wsrf-rp:DeleteResourceProperties/wsrf-rp:Delete/@ResourceProperty

1391 This attribute contains the QName of a resource property to be deleted by this request.

1392 When a DeleteResourceProperties request message has been successfully processed, the
1393 response message MUST have the following form:

```
1394 <wsrf-rp:DeleteResourcePropertiesResponse>
1395 </wsrf-rp:DeleteResourcePropertiesResponse>
```

1396 The wsa:Action MUST contain the URI

```
1397 http://docs.oasis-open.org/wsrf/rpw-
1398 1/DeleteResourceProperties/DeleteResourcePropertiesResponse.
```

1399 If the WS-Resource does not respond to the DeleteResourceProperties request message with the
1400 DeleteResourcePropertiesResponse message, then it MUST send a fault. This specification
1401 defines the following faults associated with failure to process the
1402 DeleteResourcePropertyDocument request message:

1403 ResourceUnknownFault:

1404 • The resource identified in the message (which follows the WS-Resource Access Pattern)
1405 is not known to the Web service. This fault is specified by the WS-Resource [WS-
1406 Resource] specification.

1407 InvalidModification:

1408 • The contents of the DeleteResourceProperties request component causes the resource
1409 properties document to no longer be able to validate.

1410 UnableToModifyResourceProperty:

1411 • A resource property identified by the DeleteResourceProperties request is not modifiable.

1412 InvalidResourcePropertyQName:

1413 • A resource property QName does not identify a resource property.

1414 DeleteResourcePropertiesRequestFailed:

1415 • One or more components of the DeleteResourceProperties request failed.

1416 Any fault message indicating a failure during the update of the resource properties document
1417 MUST also indicate whether the document was restored by using the
1418 ResourcePropertyChangeFailure element of the fault. This fault element indicates the resource
1419 property element change associated with the fault and indicates if the resource property
1420 document as a whole was restored. The format of this element is described in Section 5.6.

1421 **5.9.1 Example SOAP Encoding of the DeleteResourceProperties** 1422 **Message Exchange**

1423 Consider the following resource properties document defining resource properties for a WS-
1424 Resource defined by the GenericDiskDrive portType:

```
1425 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >  
1426 <tns:NumberOfBlocks>22</tns:NumberOfBlocks>  
1427 <tns:BlockSize>1024</tns:BlockSize>  
1428 <tns:Manufacturer>DrivesRUs</tns:Manufacturer>  
1429 </GenericDiskDriveProperties>
```

1430 The following is a non-normative example of a DeleteResourceProperties request message using
1431 SOAP 1.1:

```
1432 <s11:Envelope ...>  
1433 <s11:Header>  
1434 <wsa:Action>  
1435 http://docs.oasis-open.org/wsrf/rpw-  
1436 1/DeleteResourceProperties/DeleteResourcePropertiesRequest  
1437 </wsa:Action>  
1438 ...  
1439 </s11:Header>  
1440 <s11:Body>  
1441 <wsrf-rp:DeleteResourceProperties  
1442 xmlns:tns="http://example.com/diskdrive">  
1443 <wsrf-rp:Delete ResourceProperty="tns:Manufacturer" />  
1444 </wsrf-rp:DeleteResourceProperties>  
1445 </s11:Body>  
1446 </s11:Envelope>
```

1447 The following is an example DeleteResourcePropertiesResponse message using SOAP 1.1:

```
1448 <s11:Envelope ...>
1449   <s11:Header>
1450     <wsa:Action>
1451       http://docs.oasis-open.org/wsrf/rpw-
1452       1/DeleteResourceProperties/DeleteResourcePropertiesResponse
1453     </wsa:Action>
1454     ...
1455   </s11:Header>
1456   <s11:Body>
1457     <wsrf-rp:DeleteResourcePropertiesResponse>
1458     </wsrf-rp:DeleteResourcePropertiesResponse>
1459   </s11:Body>
1460 </s11:Envelope>
```

1461 The new contents of the resource properties document after successful processing of the request
1462 message MUST be:

```
1463 <GenericDiskDriveProperties xmlns:tns="http://example.com/diskDrive" >
1464   <tns:NumberOfBlocks>22</tns:NumberOfBlocks>
1465   <tns:BlockSize>1024</tns:BlockSize>
1466 </GenericDiskDriveProperties>
```

1467

6 Subscription

1468 The WS-Notification [WS-BaseNotification][WS-Topics] family of specifications describes the
1469 patterns, concepts, standard message exchanges, and protocols of a topic-based, publish-
1470 subscribe messaging pattern in Web services. In the notification model, a service creates
1471 messages that are delivered to other services that had previously registered interest in the
1472 situation associated with that message.

1473 With WS-ResourceProperties, it is a common pattern for Web service requestors to request
1474 notification of inserts, updates and deletions made to the values of one or more resource property
1475 elements of a given WS-Resource. This suggests the need for the WS-Resource to
1476 encapsulate the stateful resource to ensure all changes made to the stateful resource (those
1477 made by Web services invocations, or those that happen to the resource by other means) are
1478 *observed* by the WS-Resource implementation. To the extent that encapsulation is not provided,
1479 and changes to the stateful resource are made outside of the knowledge of the associated WS-
1480 Resource implementation, the WS-Resource may not be able to provide notifications reflecting
1481 those changes.

1482 If a WS-Resource supports the resource property value-change notification pattern, and if it uses
1483 WS-Notification to implement this feature, then it MUST implement the message exchanges for
1484 the NotificationProducer role, as specified in [WS-BaseNotification]. The WS-Resource MAY
1485 accept subscriptions to only a subset of the resource properties defined for a WS-Resource. If an
1486 implementation does not use WS-Notification, then it MAY ignore the requirements outlined in this
1487 section.

6.1 Individual Resource Property Value Changes

1488 One notification message artifact is created for each change to each resource property observed
1489 by the WS-Resource implementation. For example, a SetResourceProperties request message
1490 may contain five SetRequestComponents. Each of these components would result in the creation
1491 of a separate message artifact. A PutResourcePropertyDocument request may result in the
1492 change of most of the WS-Resource's resource properties, in which case each resource property
1493 changed by the PutResourcePropertyDocument request would result in a separate message
1494 artifact.
1495

1496 WS-ResourceProperties defines the Notification Topic and TopicSpace elements [WS-Topics]
1497 that MUST be used to express the organization of the WS-Resource property element value
1498 change notifications. By understanding the relationship between Topics and resource properties,
1499 and examining the set of Topics supported by the NotificationProducer Web service, the service
1500 requestor can determine which of the resource properties are able to participate in the value-
1501 change notification pattern. The Topic and TopicSpace elements associated with resource
1502 property value-change notification are described as follows:

- 1503 1. The WS-Resource's resource properties document MAY be defined using resource
1504 properties declared in multiple XML namespaces. For each of these XML namespaces, an
1505 associated TopicSpace element MUST be defined. The TopicSpace element defines a topic
1506 space intended to contain topics related to value changes of resource properties declared in
1507 that XML namespace.
 - 1508 ○ The value of the TopicSpace element's targetNamespace attribute MUST be the
1509 same as the URI of the namespace in which the resource property element is
1510 defined. The name attribute of the TopicSpace element SHOULD have the value
1511 "ResourcePropertiesTopicSpace".

- 1512 2. For each resource property participating in the value-change notification pattern, a Topic
 1513 element MUST be defined as a child of the TopicSpace element defined in 1.
- 1514 ○ Notification messages reflecting changes to the resource property are associated
 1515 with this Topic.
 - 1516 ○ The value of the Topic element's name attribute MUST be the same as the NCName
 1517 of the resource property element.
 - 1518 ○ The value of the Topic element's messageTypes attribute MUST include wsrf-
 1519 rp:ResourcePropertyValueChangeNotification (defined later in this section). In
 1520 addition, it MAY include QNames of other message elements.
 - 1521 ○ A designer MAY introduce additional child sub-topic elements to the topic element
 1522 that represent application-specific needs.
- 1523 3. The WS-Resource acting as the NotificationProducer MUST include Topics defined in 2, as
 1524 part of the value of its "Topics" resource property element. One such Topic MUST be
 1525 included for each resource property element offered as a target for a value-change
 1526 subscription.
- 1527 4. When a WS-Resource observes a resource property value change, it SHOULD create a
 1528 notification message that expresses the situation, and associate the notification message
 1529 with the Topic associated with that resource property. Note: there are many circumstances in
 1530 which a change to a resource property might not result in the generation of a notification
 1531 message. For example, a resource property value may change frequently, making generation
 1532 of notification messages too expensive for the service. In this situation, a WS-Resource may
 1533 choose to never generate notification message artifacts to record value change, or it may
 1534 choose to generate notification message artifacts for a subset of the value change situations.

1535 The wsrf-rp:ResourcePropertyValueChangeNotification element MUST appear as a component
 1536 of the notification message associated with resource property value change topics. This element
 1537 is defined as follows:

```

1538 <wsrf-rp:ResourcePropertyValueChangeNotification>
1539   <wsrf-rp:OldValues> xsd:any *</wsrf-rp:OldValues>?
1540   <wsrf-rp:NewValues> xsd:any *</wsrf-rp:NewValues>
1541 </wsrf-rp:ResourcePropertyValueChangeNotification>
  
```

1542 This element may appear as the root element of the notification message, or it may appear as a
 1543 descendent of the root, accommodating patterns where the notification message itself is
 1544 contained in an enveloping mechanism. The form of the
 1545 ResourcePropertyValueChangeNotification is further constrained as follows:

1546 /wsrf-rp:ResourcePropertyValueChangeNotification

1547 One ResourcePropertyValueChangeNotification element is created for each resource
 1548 property value change situation detected and acted upon by the WS-Resource. This
 1549 component records the value change of the affected resource property.

1550 /wsrf-rp:ResourcePropertyValueChangeNotification/OldValues

1551 This element, if it appears, MUST contain the resource property elements of the affected
 1552 WS-Resource property immediately prior to when the value change was applied. If the
 1553 resource property did not have any value prior to the value change (for example, this
 1554 notification represents an insertion of a new resource property element) then this element
 1555 is empty and will contain the attribute xsi:nil with value "true". If this component does not
 1556 appear in the message, then the WS-Resource was unable or unwilling to record the
 1557 resource property elements prior to the value change.

1558 /wsrf-rp:ResourcePropertyValueChangeNotification/NewValues
1559 This element MUST contain the resource property elements of the affected WS-Resource
1560 property after the value change condition was detected. If the WS-Resource property
1561 does not have any value after the value change (for example, this notification represents
1562 a deletion of the resource property element) then this element is empty and will contain
1563 the attribute xsi:nil with value "true".

1564 **6.2 Value Changes on Any Resource Property**

1565 In addition to the Topics defined for value change notification to individual resource properties
1566 (described in the previous section), the WS-Resource MAY also support subscription for changes
1567 to *any* resource property. This specification defines a distinguished topic, named
1568 "AnyResourcePropertyValueChange" in a distinguished TopicSpace corresponding to the WS-
1569 ResourceProperties specification namespace.

1570 If the WS-Resource supports the NotificationProducer interface (as defined by WS-
1571 BaseNotification) and it supports subscriptions on the wsrf-rp:AnyResourcePropertyValueChange
1572 topic, then it MUST include this Topic's QName in the value of its wsnt:Topics resource property.
1573 Furthermore, for any ResourcePropertyValueChange notification message published on any
1574 Topic, the WS-Resource MUST also publish the notification message on the wsrf-
1575 rp:AnyResourcePropertyValueChange Topic.

1576

7 ACID Properties of Operations on WS-Resources

1577

1578 The ability to associate a transactional recovery policy to the execution of a Web service
1579 message exchange is a quality of service the designer would compose into the definition of a
1580 WS-Resource. In the presence of a transactional unit of work, a Web service capable of
1581 participating in the transactional protocol must abide by the rules of two-phase-commit
1582 transaction management. However, in the absence of a transaction management policy, the Web
1583 service is under no obligation to recover the state of the WS-Resource in the event of a failure
1584 during message processing.

1585 This specification is not prescriptive with respect to policy that governs concurrent read or write
1586 access to a WS-Resource. The definition of specific policy governing concurrent updates,
1587 whether or not separate message executions targeting the same WS-Resource may be
1588 interleaved, and whether partially-completed WS-Resource updates within a given message
1589 execution may be observed by other concurrent requests is beyond the scope of this definition.

1590 The scope and extent of the isolation of changes made to the WS-Resource is an implementation
1591 dependent responsibility of the WS-Resource itself. The WS-Resource must also take on the
1592 responsibility for the scope and extent to which notifications of changes to the WS-Resource are
1593 isolated and made observable. If WS-Resource update isolation is needed, we suggest the use of
1594 a transaction to provide a context within which isolation of WS-Resource updates can be
1595 provided. In the absence of a transactional unit of work, the level of WS-Resource update
1596 atomicity, recovery, isolation, and durability provided is implementation-dependent.

1597 The ability to declare and attach isolation-level policy to the definition of a Web service message
1598 exchange, whether or not a transactional unit of work is present, represents a general
1599 requirement not met by the current Web service architecture. In the future, isolation-level policy
1600 declarations may be introduced as a formal part of the WS-Resource definition.

1601 8 Security Considerations

1602 This specification defines the resource properties document and also the set of message
1603 exchanges that MUST be supported by a WS-Resource. In this context, there are two categories
1604 of security aspects that need to be considered: (a) securing the message exchanges and (b)
1605 securing the resource properties.

1606 8.1 Securing the message exchanges

1607 When messages are exchanged between a requestor and a WS-Resource in order to access or
1608 act upon one or more resource properties, it is RECOMMENDED that the communication
1609 between the services be secured using the mechanisms described in WS-Security.

1610 8.2 Securing Resource Properties

1611 Since WS-ResourceProperties defines a mechanism to expose properties of a WS-Resource,
1612 security policies should be established that ensure that only authorized requestors can access
1613 the value of a resource property. In order to secure access to the resource properties, the
1614 message exchanges that provide the access should be appropriately controlled. Authorization
1615 policies should be put in place so that the implications of providing the state information (through
1616 GetResourceProperty, GetMultipleResourceProperties, or QueryResourceProperties messages
1617 or through notification of value change and modification of the resource properties), are taken into
1618 account. These policies should also take into account the semantic difference between
1619 components of the SetResourceProperties message – i.e. that an Update component updates a
1620 *value* of a resource property, whereas Insert and Delete components modify whether the WS-
1621 Resource actually *contains* the resource property values.

1622 The authorization policies may also reflect the sensitivity of the resource property(ies) that are
1623 accessible from a WS-Resource. Policies can be set at the coarse granularity of the message
1624 exchange (e.g., Get(Multiple)ResourceProperty(ies) vs SetResourceProperty), but finer-grained
1625 control at the level of individual resource properties may be desired in some scenarios (e.g. user
1626 Bob can access value of “Manufacturer” but not “NumberOfBlocks”).

1627 Given that a requestor will be able to access a resource property value by subscribing to state
1628 changes, care should be taken to set up security policies so that a consistent policy is in effect
1629 irrespective of whether the resource property value is accessed through direct message
1630 exchanges (e.g., GetResourceProperty) or indirectly through subscription for state changes (i.e.,
1631 subscription to “ResourceChangePropertyValueNotification” topic). It should also be noted that a
1632 requestor will be able to query the value of a property through the QueryResourceProperty
1633 operation, or by using a domain-specific operation corresponding to a resource property (e.g.,
1634 getNumberOfBlocks) if one exists. Therefore, the authorization policy on QueryResourceProperty
1635 operation (and the getXXX operation, if one is declared on the Web service for resource property
1636 named XXX) should be set so that a requestor who is not authorized to get a value of a resource
1637 property through a GetResourceProperty request is not able to deduce the value indirectly
1638 through the QueryResourceProperty request (or the getXXX operation on the Web service).

1639 Even if the requestor is authorized to access the requested resource properties, it is
1640 RECOMMENDED that the resource properties that are exchanged between a requestor and a
1641 Web service are secured to ensure integrity and/or confidentiality of the resource property values.
1642 This will prevent unauthorized alteration of and/or access to the property values while in transit.
1643 This would mean that the specific resource property elements are signed and/or encrypted within
1644 the message by leveraging WS-Security as discussed in the previous section.

1645 **9 References**

1646 **9.1 Normative**

- 1647 **[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.
- 1648
- 1649
- 1650 **[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.
- 1651
- 1652
- 1653 **[WS-Addressing]** <http://www.w3.org/TR/ws-addr-core>
- 1654 **[WS-BaseNotification]** <http://docs.oasis-open.org/wsn/2004/06/wsn-WS-BaseNotification-1.2-draft-04.pdf>
- 1655
- 1656 **[WS-Resource]** http://docs.oasis-open.org/wsr/wsr/ws_resource-1.2-spec-cd-01.pdf
- 1657
- 1658 **[WS-ResourceLifetime]** http://docs.oasis-open.org/wsr/wsr/ws_resource_lifetime-1.2-spec-cd-01.pdf
- 1659
- 1660 **[WS-Topics]** <http://docs.oasis-open.org/wsn/2004/06/wsn-WS-Topics-1.2-draft-01.pdf>
- 1661
- 1662 **[XML-Infoset]** <http://www.w3.org/TR/xml-infoset/>
- 1663 **[XPath]** <http://www.w3.org/TR/xpath>

Comment: Update this

Comment: Update this

1664 **9.2 Non-Normative**

- 1665 **[OGSI 1.0]** Open Grid Services Infrastructure (OGSI) V1.0
<http://forge.gridforum.org/projects/ggf-editions/document/draft-ogsi-service-1/en/1>
- 1666
- 1667
- 1668 **[WS-Security]** <http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0.pdf>
- 1669
- 1670 **[WSDL 2.0]** <http://www.w3.org/TR/wsdl12/>



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1698 Appendix B. XML Schema

1699 The XML types and elements used in this specification are included here for convenience. The
1700 authoritative version of this schema document is available at
1701 <http://docs.oasis-open.org/wsrf/rp-1>

```
1702 <?xml version="1.0" encoding="UTF-8"?>
1703 <!--
1704
1705 OASIS takes no position regarding the validity or scope of any intellectual property or other rights
1706 that might be claimed to pertain to the implementation or use of the technology described in this
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1736 ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE
1737 ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A
1738 PARTICULAR PURPOSE.
1739
1740 -->
1741 <xsd:schema
1742   xmlns:xsd="http://www.w3.org/2001/XMLSchema"
1743   xmlns:wsrf-rp="http://docs.oasis-open.org/wsrf/rp-1"
```

```

1744 xmlns:wsrf-bf="http://docs.oasis-open.org/wsrf/bf-1"
1745 elementFormDefault="qualified" attributeFormDefault="unqualified"
1746 targetNamespace="http://docs.oasis-open.org/wsrf/rp-1"
1747 >
1748 <xsd:import
1749     namespace="http://docs.oasis-open.org/wsrf/bf-1"
1750     schemaLocation="http://docs.oasis-open.org/wsrf/bf-1.xsd"
1751     />
1752 <!-- ===== Resource Property Related ===== -->
1753 <!-- ===== Resource Properties for QueryResourceProperties ===== -->
1754 <xsd:element name="QueryExpressionDialect" type="xsd:anyURI"/>
1755
1756 <xsd:element name="QueryExpressionRPDocument">
1757     <xsd:complexType>
1758         <xsd:sequence>
1759             <xsd:element ref="wsrf-rp:QueryExpressionDialect"
1760                 minOccurs="0" maxOccurs="unbounded" />
1761         </xsd:sequence>
1762     </xsd:complexType>
1763 </xsd:element>
1764
1765 <!-- ===== Global Attribute Declaration for WSDL 1.1 portType===== -->
1766 <xsd:attribute name="ResourceProperties" type="xsd:QName" />
1767
1768 <!-- = Notification Message for ResourceProperties value change === -->
1769 <xsd:complexType name="ResourcePropertyValueChangeNotificationType">
1770     <xsd:sequence>
1771         <xsd:element name="OldValues" nillable="true"
1772             minOccurs="0" maxOccurs="1" >
1773             <xsd:complexType>
1774                 <xsd:sequence>
1775                     <xsd:any minOccurs="1" maxOccurs="unbounded" />
1776                 </xsd:sequence>
1777             </xsd:complexType>
1778         </xsd:element>
1779         <xsd:element name="NewValues" nillable="true"
1780             minOccurs="1" maxOccurs="1" >
1781             <xsd:complexType>
1782                 <xsd:sequence>
1783                     <xsd:any minOccurs="1" maxOccurs="unbounded" />
1784                 </xsd:sequence>
1785             </xsd:complexType>
1786         </xsd:element>
1787     </xsd:sequence>
1788 </xsd:complexType>
1789
1790 <xsd:element name="ResourcePropertyValueChangeNotification"
1791     type="wsrf-rp:ResourcePropertyValueChangeNotificationType" />
1792

```

```

1793 <xsd:complexType name="QueryExpressionType" mixed="true">
1794 <xsd:sequence>
1795 <xsd:any minOccurs="0" maxOccurs="1" processContents="lax" />
1796 </xsd:sequence>
1797 <xsd:attribute name="Dialect" type="xsd:anyURI" />
1798 </xsd:complexType>
1799
1800 <xsd:element name="QueryExpression" type="wsrf-rp:QueryExpressionType" />
1801
1802 <!-- ===== Message Types for GetResourcePropertyDocument ===== -->
1803
1804 <xsd:element name="GetResourcePropertyDocument">
1805 <xsd:complexType/>
1806 </xsd:element>
1807
1808 <xsd:element name="GetResourcePropertyDocumentResponse">
1809 <xsd:complexType>
1810 <xsd:sequence>
1811 <xsd:any minOccurs="1" maxOccurs="1"/>
1812 </xsd:sequence>
1813 </xsd:complexType>
1814 </xsd:element>
1815
1816 <!-- ===== Message Types for GetResourceProperty ===== -->
1817
1818 <xsd:element name="GetResourceProperty"
1819 <xsd:complexType base="xsd:QName" />
1820
1821 <xsd:element name="GetResourcePropertyResponse" >
1822 <xsd:complexType>
1823 <xsd:sequence>
1824 <xsd:any minOccurs="0" maxOccurs="unbounded" />
1825 </xsd:sequence>
1826 </xsd:complexType>
1827 </xsd:element>
1828
1829 <xsd:complexType name="InvalidResourcePropertyQNameFaultType">
1830 <xsd:complexContent>
1831 <xsd:extension base="wsrf-bf:BaseFaultType"/>
1832 </xsd:complexContent>
1833 </xsd:complexType>
1834 <xsd:element name="InvalidResourcePropertyQNameFault"
1835 <xsd:complexType base="wsrf-rp:InvalidResourcePropertyQNameFaultType"/>
1836
1837 <!-- ===== Message Types for GetMultipleResourceProperties ===== -->
1838 <xsd:element name="GetMultipleResourceProperties">
1839 <xsd:complexType>
1840 <xsd:sequence>
1841 <xsd:element name="ResourceProperty" type="xsd:QName"

```



```

1842         minOccurs="1" maxOccurs="unbounded" />
1843     </xsd:sequence>
1844 </xsd:complexType>
1845 </xsd:element>
1846
1847 <xsd:element name="GetMultipleResourcePropertiesResponse">
1848     <xsd:complexType>
1849         <xsd:sequence>
1850             <xsd:any minOccurs="0" maxOccurs="unbounded" />
1851         </xsd:sequence>
1852     </xsd:complexType>
1853 </xsd:element>
1854
1855 <!-- ===== Message Types for PutResourceProperty ===== -->
1856
1857 <xsd:element name="PutResourcePropertyDocument">
1858     <xsd:complexType>
1859         <xsd:sequence>
1860             <xsd:any minOccurs="1" maxOccurs="1"/>
1861         </xsd:sequence>
1862     </xsd:complexType>
1863 </xsd:element>
1864
1865 <xsd:element name="PutResourcePropertyDocumentResponse">
1866     <xsd:complexType>
1867         <xsd:sequence>
1868             <xsd:any minOccurs="0" maxOccurs="1"/>
1869         </xsd:sequence>
1870     </xsd:complexType>
1871 </xsd:element>
1872
1873 <xsd:complexType name="ResourcePropertyChangeFailureType">
1874     <xsd:sequence>
1875         <xsd:element name="CurrentValue" minOccurs="0" maxOccurs="1">
1876             <xsd:complexType>
1877                 <xsd:sequence>
1878                     <xsd:any minOccurs="1" maxOccurs="unbounded" />
1879                 </xsd:sequence>
1880             </xsd:complexType>
1881         </xsd:element>
1882         <xsd:element name="RequestedValue" minOccurs="0" maxOccurs="1">
1883             <xsd:complexType>
1884                 <xsd:sequence>
1885                     <xsd:any minOccurs="1" maxOccurs="unbounded" />
1886                 </xsd:sequence>
1887             </xsd:complexType>
1888         </xsd:element>
1889     </xsd:sequence>
1890     <xsd:attribute name="Restored" type="xsd:boolean"/>

```

```

1891 </xsd:complexType>
1892
1893 <xsd:complexType
1894   name="UnableToPutResourcePropertyDocumentFaultType">
1895   <xsd:complexContent>
1896     <xsd:extension base="wsrf-bf:BaseFaultType">
1897       <xsd:sequence>
1898         <xsd:element name="ResourcePropertyChangeFailure" type=
1899           "wsrf-rp:ResourcePropertyChangeFailureType"/>
1900       </xsd:sequence>
1901     </xsd:extension>
1902   </xsd:complexContent>
1903 </xsd:complexType>
1904 <xsd:element name="UnableToPutResourcePropertyDocumentFault"
1905   type=
1906   "wsrf-rp:UnableToPutResourcePropertyDocumentFaultType"/>
1907
1908 <!-- ===== Message Types for SetResourceProperties ===== -->
1909
1910 <xsd:complexType name="InsertType">
1911   <xsd:sequence>
1912     <xsd:any processContents="lax"
1913       minOccurs="1" maxOccurs="unbounded" />
1914   </xsd:sequence>
1915 </xsd:complexType>
1916 <xsd:element name="Insert" type="wsrf-rp:InsertType"/>
1917
1918 <xsd:complexType name="UpdateType">
1919   <xsd:sequence>
1920     <xsd:any processContents="lax"
1921       minOccurs="1" maxOccurs="unbounded" />
1922   </xsd:sequence>
1923 </xsd:complexType>
1924 <xsd:element name="Update" type="wsrf-rp:UpdateType"/>
1925
1926 <xsd:complexType name="DeleteType">
1927   <xsd:attribute name="ResourceProperty"
1928     type="xsd:QName" use="required" />
1929 </xsd:complexType>
1930 <xsd:element name="Delete" type="wsrf-rp:DeleteType"/>
1931
1932 <xsd:element name="SetResourceProperties">
1933   <xsd:complexType>
1934     <xsd:choice minOccurs="1" maxOccurs="unbounded">
1935       <xsd:element ref="wsrf-rp:Insert"/>
1936       <xsd:element ref="wsrf-rp:Update"/>
1937       <xsd:element ref="wsrf-rp:Delete"/>
1938     </xsd:choice>
1939   </xsd:complexType>

```

```

1940 </xsd:element>
1941
1942 <xsd:element name="SetResourcePropertiesResponse" >
1943 <xsd:complexType />
1944 </xsd:element>
1945
1946 <xsd:complexType
1947     name="InvalidModificationFaultType">
1948 <xsd:complexContent>
1949 <xsd:extension base="wsrf-bf:BaseFaultType">
1950 <xsd:sequence>
1951 <xsd:element name="ResourcePropertyChangeFailure" type=
1952     "wsrf-rp:ResourcePropertyChangeFailureType"/>
1953 </xsd:sequence>
1954 </xsd:extension>
1955 </xsd:complexContent>
1956 </xsd:complexType>
1957 <xsd:element name=
1958     "InvalidModificationFault"
1959     type=
1960     "wsrf-rp:InvalidModificationFaultType"/>
1961
1962 <xsd:complexType name="UnableToModifyResourcePropertyFaultType">
1963 <xsd:complexContent>
1964 <xsd:extension base="wsrf-bf:BaseFaultType">
1965 <xsd:sequence>
1966 <xsd:element name="ResourcePropertyChangeFailure" type=
1967     "wsrf-rp:ResourcePropertyChangeFailureType"/>
1968 </xsd:sequence>
1969 </xsd:extension>
1970 </xsd:complexContent>
1971 </xsd:complexType>
1972 <xsd:element name="UnableToModifyResourcePropertyFault"
1973     type="wsrf-rp:UnableToModifyResourcePropertyFaultType"/>
1974
1975 <xsd:complexType name="SetResourcePropertyRequestFailedFaultType">
1976 <xsd:complexContent>
1977 <xsd:extension base="wsrf-bf:BaseFaultType">
1978 <xsd:sequence>
1979 <xsd:element name="ResourcePropertyChangeFailure" type=
1980     "wsrf-rp:ResourcePropertyChangeFailureType"/>
1981 </xsd:sequence>
1982 </xsd:extension>
1983 </xsd:complexContent>
1984 </xsd:complexType>
1985 <xsd:element name="SetResourcePropertyRequestFailedFault"
1986     type=
1987     "wsrf-rp:SetResourcePropertyRequestFailedFaultType"/>
1988

```

```

1989 <xsd:complexType name="InsertResourcePropertyRequestFailedFaultType">
1990 <xsd:complexContent>
1991 <xsd:extension base="wsrf-bf:BaseFaultType">
1992 <xsd:sequence>
1993 <xsd:element name="ResourcePropertyChangeFailure" type=
1994 "wsrf-rp:ResourcePropertyChangeFailureType"/>
1995 </xsd:sequence>
1996 </xsd:extension>
1997 </xsd:complexContent>
1998 </xsd:complexType>
1999 <xsd:element name="InsertResourcePropertyRequestFailedFault"
2000 type=
2001 "wsrf-rp:InsertResourcePropertyRequestFailedFaultType"/>
2002
2003 <xsd:complexType name="UpdateResourcePropertyRequestFailedFaultType">
2004 <xsd:complexContent>
2005 <xsd:extension base="wsrf-bf:BaseFaultType">
2006 <xsd:sequence>
2007 <xsd:element name="ResourcePropertyChangeFailure" type=
2008 "wsrf-rp:ResourcePropertyChangeFailureType"/>
2009 </xsd:sequence>
2010 </xsd:extension>
2011 </xsd:complexContent>
2012 </xsd:complexType>
2013 <xsd:element
2014 name="UpdateResourcePropertyRequestFailedFault"
2015 type="wsrf-rp:UpdateResourcePropertyRequestFailedFaultType"/>
2016
2017 <xsd:complexType name="DeleteResourcePropertyRequestFailedFaultType">
2018 <xsd:complexContent>
2019 <xsd:extension base="wsrf-bf:BaseFaultType">
2020 <xsd:sequence>
2021 <xsd:element name="ResourcePropertyChangeFailure" type=
2022 "wsrf-rp:ResourcePropertyChangeFailureType"/>
2023 </xsd:sequence>
2024 </xsd:extension>
2025 </xsd:complexContent>
2026 </xsd:complexType>
2027 <xsd:element
2028 name="DeleteResourcePropertyRequestFailedFault"
2029 type="wsrf-rp:DeleteResourcePropertyRequestFailedFaultType"/>
2030
2031 <!-- ===== Message Types for InsertResourceProperties ===== -->
2032 <xsd:element name="InsertResourceProperties">
2033 <xsd:complexType>
2034 <xsd:sequence>
2035 <xsd:element ref="wsrf-rp:Insert"/>
2036 </xsd:sequence>
2037 </xsd:complexType>

```

```

2038 </xsd:element>
2039
2040 <xsd:element name="InsertResourcePropertiesResponse" >
2041 <xsd:complexType />
2042 </xsd:element>
2043
2044 <!-- ===== Message Types for UpdateResourceProperties ===== -->
2045 <xsd:element name="UpdateResourceProperties">
2046 <xsd:complexType>
2047 <xsd:sequence>
2048 <xsd:element ref="wsrf-rp:Update"/>
2049 </xsd:sequence>
2050 </xsd:complexType>
2051 </xsd:element>
2052
2053 <xsd:element name="UpdateResourcePropertiesResponse" >
2054 <xsd:complexType />
2055 </xsd:element>
2056
2057 <!-- ===== Message Types for DeleteResourceProperties ===== -->
2058 <xsd:element name="DeleteResourceProperties">
2059 <xsd:complexType>
2060 <xsd:sequence>
2061 <xsd:element ref="wsrf-rp:Delete"/>
2062 </xsd:sequence>
2063 </xsd:complexType>
2064 </xsd:element>
2065
2066 <xsd:element name="DeleteResourcePropertiesResponse" >
2067 <xsd:complexType />
2068 </xsd:element>
2069
2070 <!-- ===== Message Types for QueryResourceProperties ===== -->
2071
2072 <xsd:element name="QueryResourceProperties" >
2073 <xsd:complexType>
2074 <xsd:sequence>
2075 <xsd:element ref="wsrf-rp:QueryExpression"
2076 minOccurs="1" maxOccurs="1"/>
2077 </xsd:sequence>
2078 </xsd:complexType>
2079 </xsd:element>
2080
2081 <xsd:element name="QueryResourcePropertiesResponse" >
2082 <xsd:complexType>
2083 <xsd:complexContent mixed="true">
2084 <xsd:restriction base="xsd:anyType">
2085 <xsd:sequence>
2086 <xsd:any processContents="lax"

```

```
2087         minOccurs="1" maxOccurs="unbounded"/>
2088     </xsd:sequence>
2089 </xsd:restriction>
2090 </xsd:complexContent>
2091 </xsd:complexType>
2092 </xsd:element>
2093
2094 <xsd:complexType name="UnknownQueryExpressionDialectFaultType">
2095 <xsd:complexContent>
2096 <xsd:extension base="wsrf-bf:BaseFaultType"/>
2097 </xsd:complexContent>
2098 </xsd:complexType>
2099 <xsd:element name="UnknownQueryExpressionDialectFault"
2100     type="wsrf-rp:UnknownQueryExpressionDialectFaultType"/>
2101
2102 <xsd:complexType name="InvalidQueryExpressionFaultType">
2103 <xsd:complexContent>
2104 <xsd:extension base="wsrf-bf:BaseFaultType"/>
2105 </xsd:complexContent>
2106 </xsd:complexType>
2107 <xsd:element name="InvalidQueryExpressionFault"
2108     type="wsrf-rp:InvalidQueryExpressionFaultType"/>
2109
2110 <xsd:complexType name="QueryEvaluationErrorFaultType">
2111 <xsd:complexContent>
2112 <xsd:extension base="wsrf-bf:BaseFaultType"/>
2113 </xsd:complexContent>
2114 </xsd:complexType>
2115 <xsd:element name="QueryEvaluationErrorFault"
2116     type="wsrf-rp:QueryEvaluationErrorFaultType"/>
2117
2118 </xsd:schema>
```

2119 Appendix C. WSDL 1.1

2120 The WSDL 1.1 for the Web service methods described in this specification is compliant with WS-I
2121 Basic Profile 1.1 and is included here for convenience. The authoritative version of this WSDL is
2122 available at:

2123 <http://docs.oasis-open.org/wsr/rpw-1>

2124 <?xml version="1.0" encoding="utf-8"?>

2125 <!--

2126

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2128 that might be claimed to pertain to the implementation or use of the technology described in this
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2160 PARTICULAR PURPOSE.

2161

2162 -->

2163

2164 <wsdl:definitions name="WS-ResourceProperties"

```

2165 xmlns="http://schemas.xmlsoap.org/wsdl/"
2166 xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
2167 xmlns:xsd="http://www.w3.org/2001/XMLSchema"
2168 xmlns:wsa="http://www.w3.org/2005/03/addressing"
2169 xmlns:wsrp-bf="http://docs.oasis-open.org/wsrp/bf-1"
2170 xmlns:wsrp-rp="http://docs.oasis-open.org/wsrp/rp-1"
2171 xmlns:wsrp-rpw="http://docs.oasis-open.org/wsrp/rpw-1"
2172 xmlns:wsrp-rw="http://docs.oasis-open.org/wsrp/rw-1"
2173 targetNamespace="http://docs.oasis-open.org/wsrp/rpw-1"
2174 >
2175
2176 <!-- ===== Imports ===== -->
2177
2178 <wsdl:import
2179   namespace="http://docs.oasis-open.org/wsrp/rw-1"
2180   location="http://docs.oasis-open.org/wsrp/rw-1.wsdl" />
2181
2182 <!-- ===== Types Definitions ===== -->
2183 <wsdl:types>
2184   <xsd:schema>
2185     <xsd:import
2186       namespace="http://docs.oasis-open.org/wsrp/rp-1"
2187       schemaLocation="http://docs.oasis-open.org/wsrp/rp-1.xsd" />
2188     </xsd:schema>
2189   </wsdl:types>
2190
2191 <!-- ===== GetResourcePropertyDocument =====
2192   GetResourcePropertyDocument()
2193   returns: any
2194 -->
2195 <wsdl:message name="GetResourcePropertyDocumentRequest">
2196   <wsdl:part name="GetResourcePropertyDocumentRequest"
2197     element="wsrf-rp:GetResourcePropertyDocument"/>
2198 </wsdl:message>
2199
2200 <wsdl:message name="GetResourcePropertyDocumentResponse">
2201   <wsdl:part name="GetResourcePropertyDocumentResponse"
2202     element="wsrf-rp:GetResourcePropertyDocumentResponse"/>
2203 </wsdl:message>
2204
2205 <!-- ===== GetResourceProperty =====
2206   GetResourceProperty(QName)
2207   returns: any
2208 -->
2209 <wsdl:message name="GetResourcePropertyRequest">
2210   <wsdl:part name="GetResourcePropertyRequest"
2211     element="wsrf-rp:GetResourceProperty" />
2212 </wsdl:message>
2213

```



```

2214 <wsdl:message name="GetResourcePropertyResponse">
2215   <wsdl:part name="GetResourcePropertyResponse"
2216     element="wsrf-rp:GetResourcePropertyResponse" />
2217 </wsdl:message>
2218
2219 <wsdl:message name="InvalidResourcePropertyQNameFault">
2220   <part name="InvalidResourcePropertyQNameFault"
2221     element="wsrf-rp:InvalidResourcePropertyQNameFault" />
2222 </wsdl:message>
2223
2224 <!-- =====GetMultipleResourceProperties =====
2225 GetMultipleResourceProperties(list of QName)
2226 returns: sequence of any
2227 -->
2228 <wsdl:message name="GetMultipleResourcePropertiesRequest">
2229   <wsdl:part name="GetMultipleResourcePropertiesRequest"
2230     element="wsrf-rp:GetMultipleResourceProperties" />
2231 </wsdl:message>
2232
2233 <wsdl:message name="GetMultipleResourcePropertiesResponse">
2234   <wsdl:part name="GetMultipleResourcePropertiesResponse"
2235     element="wsrf-rp:GetMultipleResourcePropertiesResponse" />
2236 </wsdl:message>
2237 <!-- ===== PutResourcePropertyDocument =====
2238 PutResourcePropertyDocument(any)
2239 returns: any?
2240 -->
2241 <wsdl:message name="PutResourcePropertyDocumentRequest">
2242   <wsdl:part name="PutResourcePropertyDocumentRequest"
2243     element="wsrf-rp:PutResourcePropertyDocument"/>
2244 </wsdl:message>
2245
2246 <wsdl:message name="PutResourcePropertyDocumentResponse">
2247   <wsdl:part name="PutResourcePropertyDocumentResponse"
2248     element="wsrf-rp:PutResourcePropertyDocumentResponse"/>
2249 </wsdl:message>
2250
2251 <wsdl:message name="UnableToPutResourcePropertyDocumentFault">
2252   <part name="UnableToPutResourcePropertyDocumentFault"
2253     element="wsrf-rp:UnableToPutResourcePropertyDocumentFault" />
2254 </wsdl:message>
2255
2256 <!-- ===== SetResourceProperties =====
2257 SetResourceProperties(
2258 { insert (any)* |
2259   update (any)* |
2260   delete@QName } +
2261 )
2262 returns: empty

```

```

2263 -->
2264 <wsdl:message name="SetResourcePropertiesRequest">
2265   <wsdl:part name="SetResourcePropertiesRequest"
2266     element="wsrf-rp:SetResourceProperties" />
2267 </wsdl:message>
2268
2269 <wsdl:message name="SetResourcePropertiesResponse">
2270   <wsdl:part name="SetResourcePropertiesResponse"
2271     element="wsrf-rp:SetResourcePropertiesResponse" />
2272 </wsdl:message>
2273
2274 <wsdl:message name="InvalidModificationFault">
2275   <part name="InvalidModificationFault"
2276     element="wsrf-rp:InvalidModificationFault" />
2277 </wsdl:message>
2278
2279 <wsdl:message name="UnableToModifyResourcePropertyFault">
2280   <part name="UnableToModifyResourcePropertyFault"
2281     element="wsrf-rp:UnableToModifyResourcePropertyFault" />
2282 </wsdl:message>
2283
2284 <wsdl:message name="SetResourcePropertyRequestFailedFault">
2285   <part name="SetResourcePropertyRequestFailedFault"
2286     element="wsrf-rp:SetResourcePropertyRequestFailedFault" />
2287 </wsdl:message>
2288
2289 <!-- ===== InsertResourceProperties =====>
2290 InsertResourceProperties((any)* )
2291 returns: empty
2292 -->
2293 <wsdl:message name="InsertResourcePropertiesRequest">
2294   <wsdl:part name="InsertResourcePropertiesRequest"
2295     element="wsrf-rp:InsertResourceProperties" />
2296 </wsdl:message>
2297
2298 <wsdl:message name="InsertResourcePropertiesResponse">
2299   <wsdl:part name="InsertResourcePropertiesResponse"
2300     element="wsrf-rp:InsertResourcePropertiesResponse" />
2301 </wsdl:message>
2302
2303 <wsdl:message name="InsertResourcePropertyRequestFailedFault">
2304   <part name="InsertResourcePropertyRequestFailedFault"
2305     element="wsrf-rp:InsertResourcePropertyRequestFailedFault" />
2306 </wsdl:message>
2307
2308 <!-- ===== UpdateResourceProperties =====>
2309 UpdateResourceProperties((any)* )
2310 returns: empty
2311 -->

```

```

2312 <wsdl:message name="UpdateResourcePropertiesRequest">
2313   <wsdl:part name="UpdateResourcePropertiesRequest"
2314     element="wsrf-rp:UpdateResourceProperties" />
2315 </wsdl:message>
2316
2317 <wsdl:message name="UpdateResourcePropertiesResponse">
2318   <wsdl:part name="UpdateResourcePropertiesResponse"
2319     element="wsrf-rp:UpdateResourcePropertiesResponse" />
2320 </wsdl:message>
2321
2322 <wsdl:message name="UpdateResourcePropertyRequestFailedFault">
2323   <part name="UpdateResourcePropertyRequestFailedFault"
2324     element="wsrf-rp:UpdateResourcePropertyRequestFailedFault" />
2325 </wsdl:message>
2326
2327 <!-- ===== DeleteResourceProperties =====
2328 DeleteResourceProperties( ResourceProperty )
2329 returns: empty
2330 -->
2331 <wsdl:message name="DeleteResourcePropertiesRequest">
2332   <wsdl:part name="DeleteResourcePropertiesRequest"
2333     element="wsrf-rp:DeleteResourceProperties" />
2334 </wsdl:message>
2335
2336 <wsdl:message name="DeleteResourcePropertiesResponse">
2337   <wsdl:part name="DeleteResourcePropertiesResponse"
2338     element="wsrf-rp:DeleteResourcePropertiesResponse" />
2339 </wsdl:message>
2340
2341 <wsdl:message name="DeleteResourcePropertyRequestFailedFault">
2342   <part name="DeleteResourcePropertyRequestFailedFault"
2343     element="wsrf-rp:DeleteResourcePropertyRequestFailedFault" />
2344 </wsdl:message>
2345
2346 <!-- ===== QueryResourceProperties =====
2347 QueryResourceProperties(QueryExpression)
2348 returns: any
2349 -->
2350 <wsdl:message name="QueryResourcePropertiesRequest">
2351   <wsdl:part name="QueryResourcePropertiesRequest"
2352     element="wsrf-rp:QueryResourceProperties" />
2353 </wsdl:message>
2354
2355 <wsdl:message name="QueryResourcePropertiesResponse">
2356   <wsdl:part name="QueryResourcePropertiesResponse"
2357     element="wsrf-rp:QueryResourcePropertiesResponse" />
2358 </wsdl:message>
2359
2360 <wsdl:message name="UnknownQueryExpressionDialectFault">

```

```

2361     <part name="UnknownQueryExpressionDialectFault"
2362         element="wsrf-rp:UnknownQueryExpressionDialectFault" />
2363 </wsdl:message>
2364
2365 <wsdl:message name="InvalidQueryExpressionFault">
2366     <part name="InvalidQueryExpressionFault"
2367         element="wsrf-rp:InvalidQueryExpressionFault" />
2368 </wsdl:message>
2369
2370 <wsdl:message name="QueryEvaluationErrorFault">
2371     <part name="QueryEvaluationErrorFault"
2372         element="wsrf-rp:QueryEvaluationErrorFault" />
2373 </wsdl:message>
2374
2375 <!-- ===== PortType Definitions ===== -->
2376 <wsdl:portType name="GetResourcePropertyDocument">
2377     <wsdl:operation name="GetResourcePropertyDocument">
2378         <wsdl:input name="GetResourcePropertyDocumentRequest"
2379             message="wsrf-rpw:GetResourcePropertyDocumentRequest"/>
2380         <wsdl:output name="GetResourcePropertyDocumentResponse"
2381             message="wsrf-rpw:GetResourcePropertyDocumentResponse"/>
2382         <wsdl:fault name="ResourceUnknownFault"
2383             message="wsrf-rw:ResourceUnknownFault"/>
2384     </wsdl:operation>
2385 </wsdl:portType>
2386
2387 <wsdl:portType name="GetResourceProperty">
2388     <wsdl:operation name="GetResourceProperty">
2389         <wsdl:input name="GetResourcePropertyRequest"
2390             message="wsrf-rpw:GetResourcePropertyRequest" />
2391         <wsdl:output name="GetResourcePropertyResponse"
2392             message="wsrf-rpw:GetResourcePropertyResponse" />
2393         <wsdl:fault name="ResourceUnknownFault"
2394             message="wsrf-rw:ResourceUnknownFault"/>
2395         <wsdl:fault name="InvalidResourcePropertyQNameFault"
2396             message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2397     </wsdl:operation>
2398 </wsdl:portType>
2399
2400 <wsdl:portType name="GetMultipleResourceProperties">
2401     <wsdl:operation name="GetMultipleResourceProperties">
2402         <wsdl:input name="GetMultipleResourcePropertiesRequest"
2403             message="wsrf-rpw:GetMultipleResourcePropertiesRequest" />
2404         <wsdl:output name="GetMultipleResourcePropertiesResponse"
2405             message="wsrf-rpw:GetMultipleResourcePropertiesResponse" />
2406         <wsdl:fault name="ResourceUnknownFault"
2407             message="wsrf-rw:ResourceUnknownFault"/>
2408         <wsdl:fault name="InvalidResourcePropertyQNameFault"
2409             message="wsrf-rpw:InvalidResourcePropertyQNameFault" />

```

```

2410     </wsdl:operation>
2411 </wsdl:portType>
2412
2413 <wsdl:portType name="PutResourcePropertyDocument">
2414   <wsdl:operation name="PutResourcePropertyDocument">
2415     <wsdl:input name="PutResourcePropertyDocumentRequest"
2416       message="wsrf-rpw:PutResourcePropertyDocumentRequest" />
2417     <wsdl:output name="PutResourcePropertyDocumentResponse"
2418       message="wsrf-rpw:PutResourcePropertyDocumentResponse" />
2419     <wsdl:fault name="ResourceUnknownFault"
2420       message="wsrf-rw:ResourceUnknownFault"/>
2421     <wsdl:fault name="UnableToPutResourcePropertyDocumentFault"
2422       message="wsrf-rpw:UnableToPutResourcePropertyDocumentFault" />
2423   </wsdl:operation>
2424 </wsdl:portType>
2425
2426 <wsdl:portType name="SetResourceProperties">
2427   <wsdl:operation name="SetResourceProperties">
2428     <wsdl:input name="SetResourcePropertiesRequest"
2429       message="wsrf-rpw:SetResourcePropertiesRequest" />
2430     <wsdl:output name="SetResourcePropertiesResponse"
2431       message="wsrf-rpw:SetResourcePropertiesResponse" />
2432     <wsdl:fault name="ResourceUnknownFault"
2433       message="wsrf-rw:ResourceUnknownFault"/>
2434     <wsdl:fault name="InvalidModificationFault"
2435       message="wsrf-rpw:InvalidModificationFault" />
2436     <wsdl:fault name="UnableToModifyResourcePropertyFault"
2437       message="wsrf-rpw:UnableToModifyResourcePropertyFault" />
2438     <wsdl:fault name="InvalidResourcePropertyQNameFault"
2439       message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2440     <wsdl:fault name="SetResourcePropertyRequestFailedFault"
2441       message="wsrf-rpw:SetResourcePropertyRequestFailedFault" />
2442   </wsdl:operation>
2443 </wsdl:portType>
2444
2445 <wsdl:portType name="InsertResourceProperties">
2446   <wsdl:operation name="InsertResourceProperties">
2447     <wsdl:input name="InsertResourcePropertiesRequest"
2448       message="wsrf-rpw:InsertResourcePropertiesRequest" />
2449     <wsdl:output name="InsertResourcePropertiesResponse"
2450       message="wsrf-rpw:InsertResourcePropertiesResponse" />
2451     <wsdl:fault name="ResourceUnknownFault"
2452       message="wsrf-rw:ResourceUnknownFault"/>
2453     <wsdl:fault name="InvalidModificationFault"
2454       message="wsrf-rpw:InvalidModificationFault" />
2455     <wsdl:fault name="UnableToModifyResourcePropertyFault"
2456       message="wsrf-rpw:UnableToModifyResourcePropertyFault" />
2457     <wsdl:fault name="InvalidResourcePropertyQNameFault"
2458       message="wsrf-rpw:InvalidResourcePropertyQNameFault" />

```

```

2459     <wsdl:fault name="InsertResourcePropertyRequestFailedFault"
2460         message="wsrf-rpw:InsertResourcePropertyRequestFailedFault" />
2461     </wsdl:operation>
2462 </wsdl:portType>
2463
2464 <wsdl:portType name="UpdateResourceProperties">
2465     <wsdl:operation name="UpdateResourceProperties">
2466         <wsdl:input name="UpdateResourcePropertiesRequest"
2467             message="wsrf-rpw:UpdateResourcePropertiesRequest" />
2468         <wsdl:output name="UpdateResourcePropertiesResponse"
2469             message="wsrf-rpw:UpdateResourcePropertiesResponse" />
2470         <wsdl:fault name="ResourceUnknownFault"
2471             message="wsrf-rw:ResourceUnknownFault"/>
2472         <wsdl:fault name="InvalidModificationFault"
2473             message="wsrf-rpw:InvalidModificationFault" />
2474         <wsdl:fault name="UnableToModifyResourcePropertyFault"
2475             message="wsrf-rpw:UnableToModifyResourcePropertyFault" />
2476         <wsdl:fault name="InvalidResourcePropertyQNameFault"
2477             message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2478         <wsdl:fault name="UpdateResourcePropertyRequestFailedFault"
2479             message="wsrf-rpw:UpdateResourcePropertyRequestFailedFault" />
2480     </wsdl:operation>
2481 </wsdl:portType>
2482
2483 <wsdl:portType name="DeleteResourceProperties">
2484     <wsdl:operation name="DeleteResourceProperties">
2485         <wsdl:input name="DeleteResourcePropertiesRequest"
2486             message="wsrf-rpw:DeleteResourcePropertiesRequest" />
2487         <wsdl:output name="DeleteResourcePropertiesResponse"
2488             message="wsrf-rpw:DeleteResourcePropertiesResponse" />
2489         <wsdl:fault name="ResourceUnknownFault"
2490             message="wsrf-rw:ResourceUnknownFault"/>
2491         <wsdl:fault name="InvalidModificationFault"
2492             message="wsrf-rpw:InvalidModificationFault" />
2493         <wsdl:fault name="UnableToModifyResourcePropertyFault"
2494             message="wsrf-rpw:UnableToModifyResourcePropertyFault" />
2495         <wsdl:fault name="InvalidResourcePropertyQNameFault"
2496             message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2497         <wsdl:fault name="DeleteResourcePropertyRequestFailedFault"
2498             message="wsrf-rpw:DeleteResourcePropertyRequestFailedFault" />
2499     </wsdl:operation>
2500 </wsdl:portType>
2501
2502 <wsdl:portType name="QueryResourceProperties"
2503     wsrf-rp:ResourceProperties="wsrf-rp:QueryExpressionRPDocument">
2504     <wsdl:operation name="QueryResourceProperties">
2505         <wsdl:input name="QueryResourcePropertiesRequest"
2506             message="wsrf-rpw:QueryResourcePropertiesRequest" />
2507         <wsdl:output name="QueryResourcePropertiesResponse"

```

```
2508     message="wsrf-rpw:QueryResourcePropertiesResponse" />
2509 <wsdl:fault name="ResourceUnknownFault"
2510     message="wsrf-rw:ResourceUnknownFault"/>
2511 <wsdl:fault name="InvalidResourcePropertyQNameFault"
2512     message="wsrf-rpw:InvalidResourcePropertyQNameFault" />
2513 <wsdl:fault name="UnknownQueryExpressionDialectFault"
2514     message="wsrf-rpw:UnknownQueryExpressionDialectFault" />
2515 <wsdl:fault name="InvalidQueryExpressionFault"
2516     message="wsrf-rpw:InvalidQueryExpressionFault" />
2517 <wsdl:fault name="QueryEvaluationErrorFault"
2518     message="wsrf-rpw:QueryEvaluationErrorFault" />
2519 </wsdl:operation>
2520
2521 </wsdl:portType>
2522
2523 </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.

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