



SOA-EERP Business Quality of Service Version 1.0

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Related work:

This specification is related to:

- SOA-EERP Business Rating of Service specification, Version 1.0, <http://docs.oasis-open.org/soa-eerp/rt/v1.0/SOA-EERP-Rating-Specification.pdf>
- SOA-EERP Business Service Level Agreement specification, Version 1.0, <http://docs.oasis-open.org/soa-eerp/sla/v1.0/SOA-EERP-BSLA-Specification.pdf>

This document is one of three closely related specifications, SOA-EERP Business Quality of Service (bQoS), SOA-EERP Rating and SOA-EERP Service Level Agreement which need to be understood in combination.

Declared XML Namespace(s):

<http://docs.oasis-open.org/ns/soa-eerp/bqos/200903>

Abstract:

This document specifies the XML vocabulary for business quality of service (bQoS), one of three Specifications for end-to-end resource planning (EERP). Business quality of service describes the business-related characteristics or attributes of a service.

Status:

This document was last revised by the SOA-EERP TC on the above date. The level of approval is also listed above. Check the “Latest Version” or “Latest Approved Version” location noted above for possible later revisions of this document.

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1 Introduction

This document is the specification for Business Quality of Service (bQoS) for End-to-End Resource Planning (EERP), an XML vocabulary by which a business application may communicate selected characteristics of the service it provides.

EERP applies service discovery, composition, simulation, and optimization techniques in a novel way to improve business results. It models the business process and the range of potential services, then guide the selection and deployment of services based on the end-to-end business value.

Modeling the business characteristics of a service is a prerequisite for estimating the business value of the process that uses those services. The business characteristics of the service defined in this bQoS specification will enable EERP to determine the varieties of optimization to be supported, and to select optimal end-to-end solution.

1.1 Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

1.1.1 Notational Conventions

This specification uses the following syntax to define outlines for detailed elements:

- The syntax appears as an XML instance, but values in italics indicate data types instead of literal values.
- Characters are appended to elements and attributes to indicate cardinality:
 - "?" (0 or 1)
 - "*" (0 or more)
 - "+" (1 or more)
- The character "|" is used to indicate a choice between alternatives.
- The characters "(" and ")" are used to indicate that contained items are to be treated as a group with respect to cardinality or choice.
- The characters "[" and "]" are used to call out references and property names.
- Ellipses (i.e., "...") indicate points of extensibility. Additional children and/or attributes MAY be added at the indicated extension points but MUST NOT contradict the semantics of the parent and/or owner, respectively. By default, if a receiver does not recognize an extension, the receiver SHOULD ignore the extension; exceptions to this processing rule, if any, are clearly indicated below.
- XML namespace prefixes (see Table 2) are used to indicate the namespace of the element being defined.

Elements and Attributes defined by this specification are referred to in the text of this document using XPath 1.0 expressions. Extensibility points are referred to using an extended version of this syntax:

- An element extensibility point is referred to using {any} in place of the element name. This indicates that any element name can be used, from any namespace other than the namespace of this specification.
- An attribute extensibility point is referred to using @{any} in place of the attribute name. This indicates that any attribute name can be used, from any namespace other than the namespace of this specification.

43 Extensibility points in the exemplar may not be described in the corresponding text.

44

45 1.2 Normative References

- 46 **[RFC2119]** S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*,
47 <http://www.ietf.org/rfc/rfc2119.txt>, IETF RFC 2119, March 1997.
- 48 **[SOAP]** W3C Note, "SOAP: Simple Object Access Protocol 1.1", 08 May 2000.
49 <http://www.w3.org/TR/2000/NOTE-SOAP-20000508/>
- 50 **[SOAP12]** W3C Recommendation, "SOAP 1.2 Part 1: Messaging Framework", 24 June
51 2003.
52 <http://www.w3.org/TR/2003/REC-soap12-part1-20030624/>
- 53 **[URI]** T. Berners-Lee, R. Fielding, L. Masinter, "Uniform Resource Identifiers (URI):
54 Generic Syntax", RFC 3986, MIT/LCS, Day Software, Adobe Systems, January
55 2005.
56 <http://www.ietf.org/rfc/rfc3986.txt>
- 57 **[UBL-20]** OASIS Standard, "Universal Business Language (UBL) v2.0", 12 December 2006
58 <http://docs.oasis-open.org/ubl/os-UBL-2.0/UBL-2.0.pdf>
- 59 **[UBL-20-cbc]** Universal Business Language (UBL) v2.0, Common Basic Components
60 <http://docs.oasis-open.org/ubl/os-UBL-2.0/xsd/common/UBL-CommonBasicComponents-2.0.xsd>
61
- 62 **[UBL-20-udt]** Universal Business Language (UBL) v2.0. Unqualified Data Type
63 <http://docs.oasis-open.org/ubl/os-UBL-2.0/xsd/common/UnqualifiedDataTypeSchemaModule-2.0.xsd>
64
- 65 **[XML-Schema1]** W3C Recommendation, "XML Schema Part 1: Structures Second Edition", 28
66 October 2004.
67 <http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/>
- 68 **[XML-Schema2]** W3C Recommendation, "XML Schema Part 2: Datatypes Second Edition", 28
69 October 2004.
70 <http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/>
- 71 **[ISO8601]** ISO Standard 8601:2004(E), "Data elements and interchange formats –
72 Information interchange - Representation of dates and times", Third edition,
73 December 2004
74 http://isotc.iso.org/livelink/livelink/4021199/ISO_8601_2004_E.zip?func=doc.Fetch&nodeid=4021199
75
- 76 **[CEFACT]** CEFACT – Core components specifications - <http://webster.disa.org/cefact-groups/tmg/>
77

78 1.2.1 Reference

79 In this document reference is made to some basic elements and data types in [UBL 2.0](#), in the following
80 schema:

- 81
 - UBL 2.0 Common Basic Components [[UBL-20-cbc](#)], [UBL-CommonBasicComponents-2.0.xsd](#)
 - UBL 2.0 Unqualified Data Type [[UBL-20-udt](#)], [UnqualifiedDataTypeSchemaModule-2.0.xsd](#)

83

84 This specification is designed to work with the general Web Services framework including WSDL service
85 descriptions, and [SOAP](#) message structure and message processing model. The XML vocabulary
86 defined in bQoS should be applicable to any version of [SOAP](#).

87 **1.3 Non-Normative References**

88 None.

89 2 Quality Measurement Indicators

90 The Business Quality of Service (BQoS) of the XML vocabulary is defined in XML Schema format that
91 defines many quality measurement indicators.

92 2.1 Namespaces

93 The XML namespace URI that MUST be used by implementations of this specification is:

94 `http://docs.oasis-open.org/ns/soa-eerp/bqos/200903`

95 Table 2 lists XML namespaces that are used in this specification. The choice of any namespace prefix is
96 arbitrary and not semantically significant.

97 *Table 1: Prefixes and XML Namespaces used in this specification.*

Prefix	Namespace	Specification(s)
S	http://schemas.xmlsoap.org/soap/envelope/	[SOAP]
S12	http://www.w3.org/2003/05/soap-envelope	[SOAP12]
xsd	http://www.w3.org/2001/XMLSchema	[XML-Schema1], [XML-Schema2]
cbc	urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2	[UBL-20-cbc]
udt	urn:un:unece:uncefact:data:specification:UnqualifiedDataTypesSchemaModule:2	[UBL-20-udt] , [CEFACT]
ccts	urn:un:unece:uncefact:documentation:2	[UBL-20], [CEFACT]
bqos	http://docs.oasis-open.org/ns/soa-eerp/bqos/200903	This specification

98 2.2 Schema Files

99 A normative copy of the XML Schema [XML-Schema1, XML-Schema2] description for this specification
100 can be retrieved from the following address:

101 `http://docs.oasis-open.org/soa-eerp/eerp-bqos/200903/eerp-bqos.xsd`

102 2.3 BQoS Element

103 The BQoS is the root element for the Business Quality of Service schema. It can have one or more of the
104 following elements:

- 105 • BQoSPrice indicates price or cost for the service
- 106 • BQoSPerformance indicates time to complete the service, or in the alternative, throughput and
107 latency.
- 108 • BQoSQualities indicates additional properties and attributes.
- 109 • Any additional elements for quality of service can be either:
 - 110 ○ Technical aspect such as service availability, accessibility, integrity, reliability, and
111 security; or

- o Business aspects such as regulatory, geo location, operation hours, and payment methods.

114 **Syntax**

```
115 <bqos:BQoS xmlns:bqos="..." ...>  
116 <bqos:BQoSPrice ...>bqos:BQoSPriceType</bqos:BQoSPrice>  
117 <bqos:BQoSPerformance ...>bqos:BQoSPerformanceType</bqos:BQoSPerformance> ?  
118 <bqos:BQoSQualities...>bqos:BQoSQualitiesType</bqos:BQoSQualities> ?  
119 ...  
120 </bqos:BQoS>
```

121 The following describes the attributes and elements listed in the schema outlined above:

122 /bqos:BQoS

123 The root element for bQoS

124 /bqos:BQoS/bqos:BQoSPrice

125 Price aspect of the service, including the price and other optional elements, see Section 3 for
126 more details.

127 /bqos:BQoS/bqos:BQoSPrice/@{any}

128 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
129 to the BQoSPrice element in the future. Unrecognized attributes MAY cause a fault or be silently
130 ignored.

131 /bqos:BQoS/bqos:BQoSPerformance

132 Performance aspect of the service that has time period for the time to complete the whole
133 service, the throughput for duration to complete number of jobs, or optional elements, see Section
134 4 for more details.

135 /bqos:BQoS/bqos:BQoSPerformance/@{any}

136 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
137 to the BQoSPerformance element in the future. Unrecognized attributes MAY cause a fault or be
138 silently ignore.

139 /bqos:BQoS/bqos:BQoSQualities

140 Quality aspect of the service that has additional properties and attributes to describe the quality of
141 the service, see Section 5 for more details.

142 /bqos:BQoS/bqos:BQoSQualities/@{any}

143 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
144 to the BQoSQualities element in the future. Unrecognized attributes MAY cause a fault or be
145 silently ignore.

146 /bqos:BQoS/@{any}

147 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
148 to the BQoS element in the future. Unrecognized attributes MAY cause a fault or be silently
149 ignore.

150 /bqos:BQoS/{any}

151 This is an extensibility mechanism to allow different (extensible) elements to be specified in the
152 future. Unrecognized elements MAY cause a fault or be silently ignored.

153 3 BQoSPrice

154 BQoSPrice, the Price element for bQoS, describes the price for the service. Price can be expressed in
155 various ways.

156 There SHOULD be one BQoSPrice element present in the business quality of service.

157 Syntax

```
158 <bqos:BQoSPrice xmlns:bqos="..." ...>  
159   <bqos:Price>bqos:PriceType  
160     <bqos:Unit unitCode="clm66411:UnitCodeContentType"  
161     >cbc:BaseUnitMeasureType</bqos:Unit> ?  
162     <bqos:Amount currencyID="  
163     clm54217:CurrencyCodeContentType">cbc:AmountType</bqos:Amount>  
164     </bqos:Price>  
165     ...  
166 </bqos:BQoSPrice>
```

167 The following describes the attributes and elements listed in the schema outlined above:

168 /bqos:BQoS/bqos:BQoSPrice

169 Price aspects of the service, including the price and other optional elements

170 /bqos:BQoS/bqos:BQoSPrice/bqos:Price

171 Price element that represent the single price for BQoSPrice

172 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Unit

173 Number of units is a optional element that includes the unit of measurement using
174 cbc:BaseUnitMeasureType

175 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Unit/@unitCode

176 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute using
177 clm66411:unitCodeContentType,
178 xmlns:clm66411="urn:un:unece:uncefact:codelist:specification:66411:2001"

179 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Amount

180 Amount is a required element in the Price element. It uses cbc:AmountType from UBL that has a
181 required currencyID attribute for currency code.

182 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Amount/@currencyID

183 Currency ID in cbc:AmountType. It is a required attribute using
184 clm54217:CurrencyCodeContentType,
185 xmlns:clm54217="urn:un:unece:uncefact:codelist:specification:54217:2001"

186 /bqos:BQoS/bqos:BQoSPrice/{any}

187 This is an extensibility mechanism to allow different (extensible) price elements to be specified in
188 the future. Unrecognized elements MAY cause a fault or be silently ignore.

189 Example

190 The following example illustrates the use of bQoS price element. It describes 10 units for price of \$171.50
191 US dollar:

```
192 (001) <?xml version="1.0" encoding="utf-8"?>  
193 (002) <BQoSPrice xmlns="..." ...>  
194 (003)   <Price>  
195 (004)     <Unit unitCode="EA">10</Unit>  
196 (005)     <Amount currencyID="USD">171.50</Amount>  
197 (006)   </Price>
```


199

4 BQoSPerformance

200 BQoSPerformance element for bQoS is the quality of service measured in the time to complete, or
201 alternatively as throughput and latency.

202 There MAY be zero or one BQoSPerformance element present in the business quality of service.

203 Syntax

```
204 <bqos:BQoSPerformance xmlns:bqos="..." ...>  
205   <bqos:TimePeriod ... >bqos:TimePeriodType  
206     <bqos:Duration  
207       unitCode="clm66411:UnitCodeContentType">cbc:DurationMeasureType</bqos:Duration  
208     >  
209       <bqos:Latency  
210         unitCode="clm66411:UnitCodeContentType">cbc:DurationMeasureType</bqos:Latency  
211       > ?  
212         <bqos:StartTime>udt:DateTimeType</bqos:StartTime> ?  
213       </bqos:TimePeriod> |  
214       <bqos:Throughput ...>  
215         <bqos:Quantity unitCode="clm66411:UnitCodeContentType"> ...  
216       </bqos:Quantity>  
217         <bqos:Duration unitCode="clm66411:UnitCodeContentType">  
218         cbc:DurationMeasureType</bqos:Duration>  
219         <bqos:Latency unitCode="clm66411:UnitCodeContentType">  
220         cbc:DurationMeasureType</bqos:Latency> ?  
221       </bqos:Throughput> |  
222       ...  
223 </bqos:BQoSPerformance>
```

224 The following describes the attributes and elements listed in the schema outlined above:

225 /bqos:BQoS/bqos:BQoSPerformance

226 Performance aspect of the service that has time period for the time to complete the whole service
227 job, the throughput for duration to complete number of jobs, or an optional elements.

228 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod

229 TimePeriod is the time period to complete the service, including the duration to complete the
230 service, and optional elements for start time and latency.

231 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Duration

232 Duration element is a required element in the TimePeriod element which is the duration to
233 complete the service. It uses cbc:DurationMeasureType from UBL that has a required unitCode
234 attribute for unit of measurement on the time.

235 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Duration/@unitCode

236 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute for the duration time,
237 such as Second, Minute, Hour, Day, Week, etc, using clm66411:unitCodeContentType,
238 xmlns:clm66411="urn:un:unece:unefact:codelist:specification:66411:2001".

239 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:StartTime

240 StartTime is an optional element for the date and time to start the service. It uses
241 udt:DateTimeType which is in UTC time format [ISO8601].

242 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Latency

243 Latency is an optional element that describes the time delay before a service is expected to
244 begin. It uses cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit
245 of measurement on the time.

246 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Latency/@unitCode
 247 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute for the duration time,
 248 such as Second, Minute, Hour, Day, Week, etc, using clm66411:unitCodeContentType,
 249 xmlns:clm66411="urn:un:unece:uncefact:codelist:specification:66411:2001".

250 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput
 251 Throughput of the performance which is measured by is the amount of work that a service can
 252 provide in a given time period. It includes the quantity of the item and the duration to complete the
 253 work.

254 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Duration
 255 Duration element is a required element in the Throughput element. This is the duration to
 256 complete the service. It uses cbc:DurationMeasureType from UBL that has a required unitCode
 257 attribute for unit of measurement on the time.

258 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Duration/@unitCode
 259 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute for the duration time,
 260 such as Second, Minute, Hour, Day, Week, etc, using clm66411:unitCodeContentType,
 261 xmlns:clm66411="urn:un:unece:uncefact:codelist:specification:66411:2001"

262 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Quantity
 263 Quantity is a required element in the Throughput element. It is the numbers for the throughput,
 264 with an attribute of unit of measurement, such as EA, pounds, cubic-feet, etc.

265 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Latency
 266 Latency is an optional element for the time delay for starting the service. It uses
 267 cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of
 268 measurement on the time.

269 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Latency/@unitCode
 270 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute for the duration time,
 271 such as Second, Minute, Hour, Day, Week, etc, using clm66411:unitCodeContentType,
 272 xmlns:clm66411="urn:un:unece:uncefact:codelist:specification:66411:2001".

273 /bqos:BQoS/bqos:BQoSPerformance/{any}
 274 This is an extensibility mechanism to allow different (extensible) performance or time elements to
 275 be specified in the future. Unrecognized elements MAY cause a fault or be silently ignore.

276 **Example**

277 The following example illustrates the use of bQoS Performance element using the Throughput element
 278 instead of TimePeriod element. It describes the throughput of 10 units per day:

279

```

280 (001) <?xml version="1.0" encoding="utf-8"?>
281 (002) <BQoSPerformance xmlns="..." ...>
282 (003)   <Throughput>
283 (004)     <Duration unitCode="DAY">1</Duration>
284 (005)     <Quantity unitCode="EA">10.0</Quantity>
285 (006)   </Throughput>
286 (007) </BQoSPerformance>
  
```

287

288 The following example illustrates the use of bQoS Performance element using the TimePeriod element. It
 289 describes the 8 hours of the duration, and can be started on October 17, 2009, 9:30:47.02 Zulu time:

290

```

291 (001) <?xml version="1.0" encoding="utf-8"?>
292 (002) <BQoSPerformance xmlns="..." ...>
  
```

```
293 (003) <TimePeriod>
294 (004)   <Duration unitCode="HUR">8</Duration>
295 (005)   <StartTime>2009-10-17T09:30:47.0Z</StartTime>
296 (006) </TimePeriod>
297 (007) </BQoSPerformance>
```

298

5 BQoSQualities

299 The BQoSQualities, the Quality elements for bQoS, describes additional properties and attributes for the
300 service.

301 There SHOULD be zero or one BQoSQualities element present in the business quality of service.

302 Syntax

```
303 <bqos:BQoSQualities xmlns:bqos="..." ...>  
304   <bqos:Property>bqos:PropertyType  
305     <bqos:PropertyName ...>bqos:PropertyNameType</bqos:PropertyName>  
306     <bqos:PropertyValue ...>bqos:PropertyValue</bqos:PropertyValue> ?  
307   </bqos:Property> +  
308   ...  
309 </bqos:BQoSQualities>
```

310 The following describes the attributes and elements listed in the schema outlined above:

311 /bqos:BQoS/bqos:BQoSQualities

312 Quality aspect of the service is measured in terms of additional properties and attributes. It has a
313 list of property for BQoSQualities and other optional elements.

314 /bqos:BQoS/bqos:BQoSQualities/bqos:Property

315 Property element is for additional property or attribute for quality measurement of the service in
316 bQoS that has name and value pair to describe the quality of the service.

317 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyName

318 Property name is a required element for the name in the name and value pair in the Property
319 element. It uses bqos:PropertyNameType which is a cbc:NamType from UBL that has a optional
320 languageID attribute for language code.

321 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyName/@languageID

322 Language ID is an optional attribute in the PropertyName element, using xsd:language type. The
323 value can be those defined in urn:un:unece:uncefact:odelist:specification:5639:1988.

324 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyName/@{any}

325 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
326 to the PropertyName element in the future. This can be thy namespace and the format for the
327 Property. Unrecognized attributes MAY cause a fault or be silently ignore.

328 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyValue

329 The property value is an optional element for the value in the name and value pair in the Property
330 element. It uses bqos:PropertyValuetype which is a cbc:NamType from UBL that has a optional
331 languageID attribute for language code.

332 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyValue/@languageID

333 Language ID is an optional attribute in the PriceValue element, using xsd:language type. The
334 value can be those defined in urn:un:unece:uncefact:odelist:specification:5639:1988.

335 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/@{any}

336 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
337 to the Property element in the future. Unrecognized attributes MAY cause a fault or be silently
338 ignore.

339 /bqos:BQoS/bqos:BQoSQualities/{any}

340 This is an extensibility mechanism to allow different (extensible) property or attribute elements to
341 be specified in the future. Unrecognized elements MAY cause a fault or be silently ignore. For
342 example, one or more /bqos:BQoS/bqos:BQoSQualities/Performance:QualityAssertion elements
343 can be placed in here for the Service Provider to assert the specific Qualities of its services.

344 **Example**

345 The following example illustrates the use of bQoS price element. It describes the Class is Golden and it
346 has "Network Connection" as additional property for this service:

```
347 (001) <?xml version="1.0" encoding="utf-8"?>  
348 (002) <BQoSQualities xmlns="..." ...>  
349 (003)   <Property>  
350 (004)     <PropertyName languageID="EN">Class</PropertyName>  
351 (005)     <PropertyValue>Golden</PropertyValue>  
352 (006)   </Property>  
353 (003)   <Property>  
354 (004)     <PropertyName languageID="EN">Network Connection</PropertyName>  
355 (006)   </Property>  
356 (007) </BQoSQualities>
```


357

6 BQoS Examples

358

6.1 Service Price with a Batch of Products Examples

359

This BQoS example will show the following quality indicators:

360

1. The service price is CNY 120000 per service, including 1000 gas-meters for one batch.

361

362

2. The throughput is usually 1 week or 7 days for the service. In another words, it will cost 1 week or 7 days to provide and delivery 1000 gas-meters as one batch of product.

363

364

365

3. The service has additional attributes to provide the IC card gas-meters integrated with iron IC-card box for the quality indicators.

366

367

Example

368

The following example illustrates the whole BQoS document for quality indicators:

369

```
(01) <?xml version="1.0" encoding="UTF-8"?>
(02) <bqos:BQoS xmlns:bqos="..." ... >
(03)   <bqos:BQoSPrice
(04)     <bqos:Price>
(05)       <bqos:Unit unitCode="EA">1000</bqos:Unit>
(06)       <!-- CNY: Chinese Yuan -->
(07)       <bqos:Amount currencyID="CNY">120000</bqos:Amount>
(08)     </bqos:Price>
(09)   </bqos:BQoSPrice>
(10)   <bqos:BQoSPerformance>
(11)     <bqos:Throughput>
(12)       <!-- delivery: 1 week -->
(13)       <bqos:Duration unitCode="DAY">7</bqos:Duration>
(14)       <!-- batch production, generally 1000 sets a batch -->
(15)       <bqos:Quantity>1000</bqos:Quantity>
(16)       <bqos:Latency unitCode="DAY">0</bqos:Latency>
(17)     </bqos:Throughput>
(18)   </bqos:BQoSPerformance>
(19)   <bqos:BQoSQualities>
(20)     <bqos:Property>
(21)       <bqos:PropertyName languageID="zh-cn">外壳</bqos:PropertyName>
(22)       <bqos:PropertyValue languageID="zh-cn">铁壳</bqos:PropertyValue>
(23)     </bqos:Property>
(24)     <bqos:Property>
(25)       <bqos:PropertyName languageID="en">MeterType</bqos:PropertyName>
(26)       <bqos:PropertyValue languageID="en">IC card gas-
(27) meter</bqos:PropertyValue>
(28)     </bqos:Property>
(29)     <bqos:Property>
(30)       <bqos:PropertyName languageID="en">IC-Card-Box</bqos:PropertyName>
(31)       <bqos:PropertyValue
(32) languageID="en">integrated</bqos:PropertyValue>
(33)     </bqos:Property>
(34)   </bqos:BQoSQualities>
(35) </bqos:BQoS>
```

404

6.2 Storage Service Examples

405

This BQoS example will show a storage service with the following quality indicators:

406

1. The storage service price is 600 Euro in total.

- 407 2. The time period for the storage service is 4 day, starting from July 15, 2009, 16:30,
408 UTC time.
- 409 3. The service has additional attributes of internet tracking and temperature from 70 to
410 85 degree Fahrenheit the quality indicators.

411 **Example**

412 The following example illustrates the storage service bQoS for quality indicators:

```
413 (01) <?xml version="1.0" encoding="UTF-8"?>  
414 (02) <bqos:BQoS xmlns:bqos="..." ... >  
415 (03)   <BQoSPrice>  
416 (04)     <Price>  
417 (05)       <Amount currencyID="EUR">600</Amount>  
418 (06)     </Price>  
419 (07)   </BQoSPrice>  
420 (08)   <BQoSPerformance>  
421 (09)     <TimePeriod>  
422 (10)       <Duration unitCode="DAY">4</Duration>  
423 (11)       <StartTime>2009-07-15T16:30:00.0Z</StartTime>  
424 (12)     </TimePeriod>  
425 (13)   </BQoSPerformance>  
426 (14)   <BQoSQualities>  
427 (15)     <Property>  
428 (16)       <PropertyName>Internet Tracking</PropertyName>  
429 (17)     </Property>  
430 (18)     <Property>  
431 (19)       <PropertyName>Temperature</PropertyName>  
432 (20)       <PropertyValue>70F-78F</PropertyValue>  
433 (21)     </Property>  
434 (22)   </BQoSQualities>  
435 (23) </bqos:BQoS>
```

436

7 Conformance

437 An implementation conforms to this specification if it satisfies all of the MUST or REQUIRED level
438 requirements defined within this specification. A SOAP Node MUST NOT use the XML namespace
439 identifier for this specification (listed in Section 1.1) within SOAP Envelopes unless it is compliant with this
440 specification.

441 This specification references a number of other specifications (listed in Section 1.4.2). In order to comply
442 with this specification, an implementation MUST implement the portions of referenced specifications
443 necessary to comply with the required provisions of this specification. Additionally, the implementation of
444 the portions of the referenced specifications that are specifically cited in this specification MUST comply
445 with the rules for those portions as established in the referenced specification.

446 Normative text within this specification takes precedence over normative outlines (as described in section
447 1.4.1), which in turn take precedence over the XML Schema [XML Schema Part 1, Part 2] and WSDL
448 [WSDL 1.1] descriptions. That is, the normative text in this specification further constrains the schemas
449 and/or WSDL that are part of this specification; and this specification contains further constraints on the
450 elements defined in referenced schemas.

451 The minimum set of information exchange for bQoS that would allow conforming
452 applications to exchange information and satisfy the conformance should at least to have
453 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Amount element, like this:

```
454 (001) <?xml version="1.0" encoding="utf-8"?>  
455 (002) <BQoS xmlns="http://docs.oasis-open.org/ns/soa-eerp/bqos/200903">  
456 (003)   <BQoSPrice>  
457 (004)     <Price>  
458 (005)       <Amount currencyID="USD">0.0</Amount>  
459 (006)     </Price>  
460 (007)   </BQoSPrice>  
461 (008) </BQoS>
```

462 This specification defines a number of extensions; compliant services are NOT REQUIRED to implement
463 those extensions defined in this specification. However, if a service implements an aspect of the
464 specification, it MUST comply with the requirements specified (e.g. related "MUST" statements). If an
465 implementation silently ignore unrecognized attributes where any attribute is allowed, or silently ignore
466 unrecognized elements where any element is allowed, should be considered as interoperable
467 implementation.

468 **A. Acknowledgements**

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471 **Participants:**

472		
473	Rex Brooks	Individual
474	Szu Chang	Changfeng Open Standards Platform Software Alliance
475	William Cox,	Individual
476	Andy Lee	Changfeng Open Standards Platform Software Alliance
477	Carl Mattocks	Individual
478	James Zhili Zhang	TIBCO Software Inc.
479	Hong Zhou	Changfeng Open Standards Platform Software Alliance
480		

481 **B. Non-Normative Text**

482 None

C. XML Schema

```

484 <?xml version="1.0" encoding="UTF-8"?>
485 <!--
486 Document Type:      EERP-bQoS CD03
487 Create On:         01/06/2010
488
489 -->
490 <!-- ===== xsd:schema Element With Namespaces Declarations ===== -->
491 <!-- ===== Copyright Notice ===== -->
492 <!--
493 OASIS takes no position regarding the validity or scope of any
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534 EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY
535 WARRANTY THAT THE USE OF THE INFORMATION HEREIN
536 WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED
537 WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A
538 PARTICULAR PURPOSE.
539 -->
540 <xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://docs.oasis-
541 open.org/ns/soa-eerp/bqos/200903" xmlns:bqos="http://docs.oasis-open.org/ns/soa-eerp/bqos/200903"
542 xmlns:cbc="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2"
543 xmlns:udt="urn:un:unece:uncefact:data:specification:UnqualifiedDataTypesSchemaModule:2"
544 xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://docs.oasis-open.org/ns/soa-
545 erp/bqos/200903" elementFormDefault="qualified" attributeFormDefault="unqualified"
546 version="1.0">
547 <!-- ===== Imports ===== -->
548 <xsd:import namespace="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2"
549 schemaLocation="http://docs.oasis-open.org/ubl/os-UBL-2.0/xsd/common/UBL-CommonBasicComponents-
550 2.0.xsd"/>
551 <xsd:import
552 namespace="urn:un:unece:uncefact:data:specification:UnqualifiedDataTypesSchemaModule:2"
553 schemaLocation="http://docs.oasis-open.org/ubl/os-UBL-
554 2.0/xsd/common/UnqualifiedDataTypeSchemaModule-2.0.xsd"/>
555 <!-- ===== Root Element ===== -->
556 <xsd:element name="BQoS" type="BQoSType">
557 <xsd:annotation>
558 <xsd:documentation>Root element of Business Quality of Service (bQoS)</xsd:documentation>
559 </xsd:annotation>

```

```

560 </xsd:element>
561 <!-- ===== Element Declarations ===== -->
562 <xsd:element name="Amount" type="cbc:AmountType">
563   <xsd:annotation>
564     <xsd:documentation>Amount element</xsd:documentation>
565   </xsd:annotation>
566 </xsd:element>
567 <xsd:element name="BQoSPerformance" type="BQoSPerformanceType">
568   <xsd:annotation>
569     <xsd:documentation>Performance aspect of the service that has time period for the time to
570 complete the whole service job, the throughput for duration to complete number of jobs, or an
571 optional elements. </xsd:documentation>
572   </xsd:annotation>
573 </xsd:element>
574 <xsd:element name="BQoSPrice" type="BQoSPriceType">
575   <xsd:annotation>
576     <xsd:documentation>The Price element for bQoS, price aspects of the service, describes the
577 price for the service, including the price and other optional elements. </xsd:documentation>
578   </xsd:annotation>
579 </xsd:element>
580 <xsd:element name="BQoSQualities" type="BQoSQualitiesType">
581   <xsd:annotation>
582     <xsd:documentation>Quality aspect of the service is measured in terms of additional
583 properties and attributes. It has a list of property for BQoSQualities and other optional
584 elements. </xsd:documentation>
585   </xsd:annotation>
586 </xsd:element>
587 <xsd:element name="Duration" type="cbc:DurationMeasureType">
588   <xsd:annotation>
589     <xsd:documentation>Duration element is the duration to complete the service. It uses
590 cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of measurement
591 on the time. </xsd:documentation>
592   </xsd:annotation>
593 </xsd:element>
594 <xsd:element name="Latency" type="cbc:DurationMeasureType">
595   <xsd:annotation>
596     <xsd:documentation>Latency describes the time delay before a service is expected to begin.
597 It uses cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of
598 measurement on the time. </xsd:documentation>
599   </xsd:annotation>
600 </xsd:element>
601 <xsd:element name="Price" type="PriceType">
602   <xsd:annotation>
603     <xsd:documentation>Price element for bQoS that is the single price </xsd:documentation>
604   </xsd:annotation>
605 </xsd:element>
606 <xsd:element name="Property" type="PropertyType">
607   <xsd:annotation>
608     <xsd:documentation>Property element is for additional property or attribute for quality
609 measurement of the service in bQoS that has name and value pair to describe the quality of the
610 service.</xsd:documentation>
611   </xsd:annotation>
612 </xsd:element>
613 <xsd:element name="PropertyName" type="PropertyNameType">
614   <xsd:annotation>
615     <xsd:documentation>Property name is a required element for the name in the name and value
616 pair in the Property element. It uses bqos:PropertyNameType which is a cbc:NamType from UBL that
617 has a optional languageID attribute for language code. </xsd:documentation>
618   </xsd:annotation>
619 </xsd:element>
620 <xsd:element name="PropertyValue" type="PropertyValueType">
621   <xsd:annotation>
622     <xsd:documentation>Value of the Property or Attribute</xsd:documentation>
623   </xsd:annotation>
624 </xsd:element>
625 <xsd:element name="Quantity" type="cbc:BaseQuantityType">
626   <xsd:annotation>
627     <xsd:documentation>Quantity is the numbers for the throughput, with an attribute of unit of
628 measurement, such as EA, pounds, cubic-feet, etc. </xsd:documentation>
629   </xsd:annotation>
630 </xsd:element>
631 <xsd:element name="StartTime" type="udt:DateTimeType">
632   <xsd:annotation>
633     <xsd:documentation>StartTime is the date and time to start the
634 service.</xsd:documentation>
635   </xsd:annotation>
636 </xsd:element>
637 <xsd:element name="TimePeriod" type="TimePeriodType">
638   <xsd:annotation>
639     <xsd:documentation>TimePeriod is the time period to complete the service, including the
640 duration to complete the service, and optional elements for start time and latency
641 </xsd:documentation>

```

```

642     </xsd:annotation>
643 </xsd:element>
644 <xsd:element name="Throughput" type="ThroughputType">
645   <xsd:annotation>
646     <xsd:documentation>The performance is measured by is the amount of work that a service can
647 provide in a given time period. </xsd:documentation>
648   </xsd:annotation>
649 </xsd:element>
650 <xsd:element name="Unit" type="cbc:BaseUnitMeasureType">
651   <xsd:annotation>
652     <xsd:documentation>Number of units with unit of measurement</xsd:documentation>
653   </xsd:annotation>
654 </xsd:element>
655 <!-- Extension -->
656 <xsd:element name="Extension">
657   <xsd:annotation>
658     <xsd:documentation>Additional bQoS elements </xsd:documentation>
659   </xsd:annotation>
660   <xsd:complexType mixed="true">
661     <xsd:choice minOccurs="0" maxOccurs="unbounded">
662       <xsd:any processContents="skip" minOccurs="0" maxOccurs="unbounded"/>
663     </xsd:choice>
664     <xsd:attribute name="optional" type="xsd:boolean" use="optional" default="true"/>
665   </xsd:complexType>
666 </xsd:element>
667 <!-- ===== Type Definitions ===== -->
668 <xsd:complexType name="BQoSPerformanceType">
669   <xsd:annotation>
670     <xsd:documentation>Complex type for the performance aspect of the service
671 bQoS</xsd:documentation>
672   </xsd:annotation>
673   <xsd:choice>
674     <xsd:element ref="TimePeriod">
675       <xsd:annotation>
676         <xsd:documentation>TimePeriod is the time period to complete the service, including the
677 duration to complete the service, and optional elements for start time and
678 latency.</xsd:documentation>
679       </xsd:annotation>
680     </xsd:element>
681     <xsd:element ref="Throughput"/>
682     <xsd:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
683   </xsd:choice>
684   <xsd:anyAttribute namespace="##any" processContents="lax"/>
685 </xsd:complexType>
686 <xsd:complexType name="BQoSPriceType">
687   <xsd:annotation>
688     <xsd:documentation>Complex type for the price/cost aspect of the service
689 bQoS</xsd:documentation>
690   </xsd:annotation>
691   <xsd:sequence>
692     <xsd:element ref="Price">
693       <xsd:annotation>
694         <xsd:documentation>Price element that represent the single price for
695 BQoSPrice.</xsd:documentation>
696       </xsd:annotation>
697     </xsd:element>
698     <xsd:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
699   </xsd:sequence>
700   <xsd:anyAttribute namespace="##any" processContents="lax"/>
701 </xsd:complexType>
702 <xsd:complexType name="BQoSQualitiesType">
703   <xsd:annotation>
704     <xsd:documentation>Complex type for the Quality related aspects of the service BQoS
705 </xsd:documentation>
706   </xsd:annotation>
707   <xsd:sequence>
708     <xsd:element ref="Property" maxOccurs="unbounded">
709       <xsd:annotation>
710         <xsd:documentation>Property element is for additional property or attribute for quality
711 measurement of the service in bQoS that has name and value pair to describe the quality of the
712 service.</xsd:documentation>
713       </xsd:annotation>
714     </xsd:element>
715     <xsd:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
716   </xsd:sequence>
717   <xsd:anyAttribute namespace="##any" processContents="lax"/>
718 </xsd:complexType>
719 <xsd:complexType name="BQoSType">
720   <xsd:annotation>
721     <xsd:documentation>Complex type for the Business QoS</xsd:documentation>
722   </xsd:annotation>
723   <xsd:sequence>

```



```

724     <xsd:element ref="BQoSPrice">
725       <xsd:annotation>
726         <xsd:documentation>The Price element for bQoS that describes the price for the service.
727 Price can be expressed in various ways.</xsd:documentation>
728       </xsd:annotation>
729     </xsd:element>
730     <xsd:element ref="BQoSPerformance" minOccurs="0">
731       <xsd:annotation>
732         <xsd:documentation>BQoSPerformance element for bQoS is the quality of service measured
733 in the time to complete, or alternatively as throughput and latency.</xsd:documentation>
734       </xsd:annotation>
735     </xsd:element>
736     <xsd:element ref="BQoSQualities" minOccurs="0">
737       <xsd:annotation>
738         <xsd:documentation>The Quality elements for bQoS that describes additional properties
739 and attributes for the service. It has a list of property for BQoSQualities and other optional
740 elements.</xsd:documentation>
741       </xsd:annotation>
742     </xsd:element>
743     <xsd:element ref="Extension" minOccurs="0" maxOccurs="unbounded">
744       <xsd:annotation>
745         <xsd:documentation>Other aspects of "quality of business"</xsd:documentation>
746       </xsd:annotation>
747     </xsd:element>
748   </xsd:sequence>
749   <xsd:anyAttribute namespace="##any" processContents="lax"/>
750 </xsd:complexType>
751 <xsd:complexType name="PriceType">
752   <xsd:annotation>
753     <xsd:documentation>Complex type for Pricing or Billing for the service</xsd:documentation>
754   </xsd:annotation>
755   <xsd:sequence>
756     <xsd:element ref="Unit" minOccurs="0">
757       <xsd:annotation>
758         <xsd:documentation>Number of units is a optional element that includes the unit of
759 measurement.</xsd:documentation>
760       </xsd:annotation>
761     </xsd:element>
762     <xsd:element ref="Amount">
763       <xsd:annotation>
764         <xsd:documentation>Amount is a required element in the Price element. It uses
765 cbc:AmountType from UBL that has a required currencyID attribute for currency
766 code.</xsd:documentation>
767       </xsd:annotation>
768     </xsd:element>
769   </xsd:sequence>
770 </xsd:complexType>
771 <xsd:complexType name="PropertyType">
772   <xsd:annotation>
773     <xsd:documentation>Complex type for additional property or attribute for
774 quality</xsd:documentation>
775   </xsd:annotation>
776   <xsd:sequence>
777     <xsd:element ref="PropertyName"/>
778     <xsd:element ref="PropertyValue" minOccurs="0">
779       <xsd:annotation>
780         <xsd:documentation>Value of the Property or Attribute. It uses bqos:PropertyValue
781 which is a cbc:NamType from UBL that has a optional languageID attribute for language code.
782       </xsd:documentation>
783     </xsd:annotation>
784   </xsd:element>
785 </xsd:sequence>
786   <xsd:anyAttribute namespace="##any" processContents="lax"/>
787 </xsd:complexType>
788 <xsd:complexType name="PropertyNameType">
789   <xsd:annotation>
790     <xsd:documentation>Complex type for property or attribute name </xsd:documentation>
791   </xsd:annotation>
792   <xsd:simpleContent>
793     <xsd:extension base="cbc:NameType">
794       <xsd:anyAttribute namespace="##any" processContents="lax"/>
795     </xsd:extension>
796   </xsd:simpleContent>
797 </xsd:complexType>
798 <xsd:complexType name="PropertyValueType">
799   <xsd:annotation>
800     <xsd:documentation>Complex type for property or attribute value. </xsd:documentation>
801   </xsd:annotation>
802   <xsd:simpleContent>
803     <xsd:extension base="cbc:ValueType"/>
804   </xsd:simpleContent>
805 </xsd:complexType>

```

```

806 <xsd:complexType name="QualitiesType">
807 <xsd:annotation>
808 <xsd:documentation>Complex type for Quality elements </xsd:documentation>
809 </xsd:annotation>
810 <xsd:sequence>
811 <xsd:element ref="Property" maxOccurs="unbounded"/>
812 <xsd:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
813 </xsd:sequence>
814 <xsd:anyAttribute namespace="##any" processContents="lax"/>
815 </xsd:complexType>
816 <xsd:complexType name="TimePeriodType">
817 <xsd:annotation>
818 <xsd:documentation>Complex type for Time period </xsd:documentation>
819 </xsd:annotation>
820 <xsd:sequence>
821 <xsd:element ref="Duration">
822 <xsd:annotation>
823 <xsd:documentation>Duration to complete the service. It uses cbc:DurationMeasureType
824 from UBL that has a required unitCode attribute for unit of measurement on the time.
825 </xsd:documentation>
826 </xsd:annotation>
827 </xsd:element>
828 <xsd:element ref="Latency" minOccurs="0">
829 <xsd:annotation>
830 <xsd:documentation>Latency is an optional element that describes the time delay before a
831 service is expected to begin. It uses cbc:DurationMeasureType from UBL that has a required
832 unitCode attribute for unit of measurement on the time. </xsd:documentation>
833 </xsd:annotation>
834 </xsd:element>
835 <xsd:element ref="StartTime" minOccurs="0">
836 <xsd:annotation>
837 <xsd:documentation>StartTime is an optional element for the date and time to start the
838 service. It uses udt:DateTimeType which is in UTC time format .</xsd:documentation>
839 </xsd:annotation>
840 </xsd:element>
841 </xsd:sequence>
842 <xsd:anyAttribute namespace="##any" processContents="lax"/>
843 </xsd:complexType>
844 <xsd:complexType name="ThroughputType">
845 <xsd:annotation>
846 <xsd:documentation>Complex type for the throughput </xsd:documentation>
847 </xsd:annotation>
848 <xsd:sequence>
849 <xsd:element ref="Duration">
850 <xsd:annotation>
851 <xsd:documentation>Duration element is a required element in the Throughput element.
852 This is the duration to complete the service. It uses cbc:DurationMeasureType from UBL that has a
853 required unitCode attribute for unit of measurement on the time. </xsd:documentation>
854 </xsd:annotation>
855 </xsd:element>
856 <xsd:element ref="Quantity">
857 <xsd:annotation>
858 <xsd:documentation>Quantity is the numbers for the throughput, with an attribute of unit
859 of measurement, such as EA, pounds, cubic-feet, etc. The numbers for the throughput, with
860 attribute of Unit of measurement, such as EA, lb, cubic-feet, etc.</xsd:documentation>
861 </xsd:annotation>
862 </xsd:element>
863 <xsd:element ref="Latency" minOccurs="0"/>
864 </xsd:sequence>
865 <xsd:anyAttribute namespace="##any" processContents="lax"/>
866 </xsd:complexType>
867 </xsd:schema>

```

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D. Revision History

869

Revision	Date	Editor	Changes Made
0.8	03/02/2009	Szu Chang	Initial draft
0.9	03/09/2009	Szu Chang	Change the syntax to include the data type
WD01	04/15/2009	Szu Chang	Rename draft 0.9 to working draft 0.1
WD02	04/29/2009	Szu Chang	Added whole example and some minor edits
WD03	05/07/2009	Szu Chang	Added issue list and some minor edits. This is to get ready for CD01
WD04	05/17/2009	Szu Chang	Added conformance section
WD05	06/24/2009	Szu Chang	Fixed issues I022, I026, I029, I032, I036, I039, and I045.
WD06	07/03/2009	Szu Chang	Fixed issues I026, I029, I033, I042, I044, I049 and I053.
CD02	07/11/2009	Szu Chang	Changed WD06 to CD02 after approved by TC
CD03	01/06/2010	Szu Chang	Changed NS and fixed URIs from CD02 to CD03

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