SOA-EERP Business Quality of Service
Version 1.0

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Technical Committee:
OASIS Service-Oriented Architecture End-to-End Resource Planning (SOA-EERP) TC

Chair(s):
Bill Cox, Cox Software Architects LLC
Andy Lee, Changfeng Open Standards Platform Software Alliance

Editor(s):
Szu Chang, Changfeng Open Standards Platform Software Alliance

Related work:
This specification is related to:

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 as a set.
Declared XML Namespace(s):
http://docs.oasis-open.org/soa-eerp/bqos/200903

Abstract:
This document indicates the business quality of service (bQoS) which to be used in end-to-end resource planning (EERP) for describing the quality of the business services.

Status:
This document is a Work in Progress only and has not been extensively reviewed. Comment on this document is encouraged.

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.

Technical Committee members should send comments on this specification to the Technical Committee’s email list. Others should send comments to the Technical Committee by using the “Send A Comment” button on the Technical Committee’s web page at http://www.oasis-open.org/committees/soa-eerp/.

For information on whether any patents have been disclosed that may be essential to implementing this specification, and any offers of patent licensing terms, please refer to the Intellectual Property Rights section of the Technical Committee web page (http://www.oasis-open.org/committees/soa-eerp/ipr.php).

The non-normative errata page for this specification is located at http://www.oasis-open.org/committees/soa-eerp/.
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1 Introduction

This document presents the specification for the Business Quality of Services (bQoS) for End-to-End Resource Planning, a protocol by which business application may present its quality of services electronic documents for resource planning purposes. All text is normative unless otherwise indicated.

1.1 Namespaces

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

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

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

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</table>

1.2 Schema Files

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

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

1.3 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].

1.4 Normative References

1.4.1 Notational Conventions

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.

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.

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

1.4.2 Reference

In this document reference is made to some basic elements and data types in UBL 2.0, in the following schema:

- UBL 2.0 Common Basic Components (UBL-CommonBasicComponents-2.0.xsd)
- UBL 2.0 Unqualified Data Type (UnqualifiedDataTypeSchemaModule-2.0.xsd)

This standard is designed to work with the general Web Services framework including WSDL service descriptions, and SOAP message structure and message processing model, and bQoS should be applicable to any version of SOAP. The current SOAP 1.2 namespace URI is used herein to provide detailed examples, but there is no intention to limit the applicability of this specification to a single version of SOAP.
1.5 Normative References

http://www.w3.org/TR/2000/NOTE-SOAP-20000508/

http://www.w3.org/TR/2003/REC-soap12-part1-20030624/

http://www.ietf.org/rfc/rfc3986.txt

http://docs.oasis-open.org/ubl/UBL-2.0/

http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/

http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/

1.6 Non-Normative References

None.
2 Quality Measurement Indicators

The BQoS is the root element for the bQoS. It can have one or more of the following elements:

- **BQoSPrice** is for the quality aspect of service which is measured in terms of price or cost for the service.
- **BQoSPerformance** is for the quality aspect of service which is measured in terms of time to complete or throughput and latency.
- **BQoSQualities** is for the quality aspect of service which is measured in terms of additional properties and attributes.
- Any additional elements for the quality aspect of service which can be in two aspects: Technical aspect such as service availability, accessibility, integrity, reliability, and security; Business aspects such as regulatory, geo location, operation hours, payment methods, etc.

**Syntax**

```xml
<bqos:BQoS xmlns:bqos="..." ...>
  <bqos:BQoSPrice ...>bqos:BQoSPriceType</bqos:BQoSPrice>
  <bqos:BQoSPerformance ...>bqos:BQoSPerformanceType</bqos:BQoSPerformance> ?
  <bqos:BQoSQualities...>bqos:BQoSQualitiesType</bqos:BQoSQualities> ?
  ...
</bqos:BQoS>
```

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

- `/bqos:BQoS` The root element for BQoS
- `/bqos:BQoS/bqos:BQoSPrice` Price aspect of the service, including the price and other optional elements, see Section 3 for more details.
- `/bqos:BQoS/bqos:BQoSPrice/@{any}` This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the BQoSPrice element in the future. Unrecognized attributes SHOULD cause a fault.
- `/bqos:BQoS/bqos:BQoSPerformance` Performance aspect of the service that has time period for the time to complete the whole service job, the throughput for duration to complete number of jobs, or an optional elements, see Section 4 for more details.
- `/bqos:BQoS/bqos:BQoSPerformance/@{any}` This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the BQoSPerformance element in the future. Unrecognized attributes SHOULD cause a fault.
- `/bqos:BQoS/bqos:BQoSQualities` Quality aspect of the service that has additional properties and attributes to describe the quality of the service, see Section 5 for more details.
- `/bqos:BQoS/bqos:BQoSQualities/@{any}`
This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the BQoSQualities element in the future. Unrecognized attributes SHOULD cause a fault.

This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the BQoS element in the future. Unrecognized attributes SHOULD cause a fault.

This is an extensibility mechanism to allow different (extensible) elements/parameters to be specified in the future. Unrecognized parameters SHOULD cause a fault.
3 BQoS Price

The BQoSPrice, the Price element for bQoS, is your firm’s ability to create profit by capturing and extracting some (or all) the value that your firm delivers to its customers. This element can also represent the billing which is the total amount of business done in a specific period, such as by an advertising agency or a law firm.

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

Syntax

```xml
<bqos:BQoSPrice xmlns:bqos="..." ...
   <bqos:Price>
   <bqos:Unit
   unitCode="clm66411:UnitCodeContentType" >cbc:BaseUnitMeasureType</bqos:Unit> ?
   <bqos:Amount currencyID="clm54217:CurrencyCodeContentType">cbc:AmountType</bqos:Amount>
   </bqos:Price>
   ...</bqos:BQoSPrice>
```

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

```
   /bqos:BQoS/bqos:BQoSPrice
   Price aspect of the service, including the price and other optional elements

   /bqos:BQoS/bqos:BQoSPrice/bqos:Price
   Price element that represent the single price for BQoSPrice

   Number of unit is an optional element that includes an attribute of unit of measurement uses cbc:BaseUnitMeasureType

   Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute using clm66411:unitCodeContentType,

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

   Currency ID in cbc:AmountType. It is a required attribute using clm54217:CurrencyCodeContentType,

   /bqos:BQoS/bqos:BQoSPrice/{any}
   This is an extensibility mechanism to allow different (extensible) price elements/parameters to be specified in the future. Unrecognized parameters SHOULD cause a fault.
```

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

```xml
<?xml version="1.0" encoding="utf-8"?>
<BQoSPrice xmlns="...">
  <Price>
    <Unit unitCode="EA">10</Unit>
    <Amount currencyID="USD">171.50</Amount>
  </Price>
</BQoSPrice>
```
4 BQoS Performance

The BQoSPerformance, Performance element for bQoS, is the quality aspect of service which is measured in terms of time to complete or throughput and latency.

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

Syntax

```xml
<bqos:BQoSPerformance xmlns:bqos="...">...
  <bqos:TimePeriod ...
    <bqos:Duration
      unitCode="clm66411:UnitCodeContentType">
        cbc:DurationMeasureType</bqos:Duration
      >
    <bqos:Latency
      unitCode="clm66411:UnitCodeContentType">
        cbc:DurationMeasureType</bqos:Latency
      > ?
    <bqos:StartTime>
        udt:DateTimeType</bqos:StartTime> ?
  </bqos:TimePeriod>
  ... 
</bqos:BQoSPerformance>
```

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

- `/bqos:BQoS/bqos:BQoSPerformance`:
  Performance aspect of the service that has time period for the time to complete the whole service job, the throughput for duration to complete number of jobs, or an optional elements.

- `/bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod`:
  TimePeriod is the time period to complete the service, including the duration to complete the service, and optional elements for start time and latency.

- `/bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Duration`:
  Duration element is a required element in the TimePeriod element which is the duration to complete the service. It uses cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of measurement on the time.

- `/bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:StartTime`:
  StartTime is an optional element for the date and time to start the service. It uses udt:DateTimeType which is in Zulu time format.

- `/bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Latency`:
  Latency is an optional element for the duration to complete the service. It uses cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of measurement on the time.

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

- `/bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:StartTime`:
  StartTime is an optional element for the date and time to start the service. It uses udt:DateTimeType which is in Zulu time format.
Latency is an optional element for the time delay for starting the service. It uses cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of measurement on the time.

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

Throughput of the performance which is measured by is the amount of work that a service can provide in a given time period. It includes the quantity of the item and the duration to complete the work.

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

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

Quantity is a required element in the Throughput element. It is the numbers for the throughput, with an attribute of unit of measurement, such as EA, pounds, cubic-feet, etc.

Latency is an optional element for the time delay for starting the service. It uses cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of measurement on the time.

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

This is an extensibility mechanism to allow different (extensible) performance or time elements/parameters to be specified in the future. Unrecognized parameters SHOULD cause a fault.

Example

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

```
(001) <?xml version="1.0" encoding="utf-8"?>
(002) <bQoSPerformance xmlns="..." ...>
(003)   <Throughput>
(004)     <Duration unitCode="DAY">1</Duration>
(005)     <Quantity unitCode="EA">10.0</Quantity>
(006)   </Throughput>
(007) </bQoSPerformance>
```
The following example illustrates the use of bQoS Performance element using the TimePeriod element. It describes the 8 hours of the duration, and can be started on October 17, 2009, 9:30:47 Zulu time:

```xml
<?xml version="1.0" encoding="utf-8"?>
<BQoSPerformance xmlns="..." ...>
   <TimePeriod>
      <Duration unitCode="HUR">8</Duration>
      <StartTime>2009-10-17T09:30:47.0Z</StartTime>
   </TimePeriod>
</BQoSPerformance>
```
5 BQoS Qualities

The BQoSQualities, the Quality elements for bQoS, is quality aspect of bQoS for the service, including additional properties and attributes for the indicators.

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

Syntax

```xml
<bqos:BQoSQualities xmlns:bqos="..." ...>
  <bqos:Property>
    <bqos:PropertyName ...>bqos:PropertyNameType</bqos:PropertyName>
    <bqos:PropertyValue ...>bqos:PropertyValue</bqos:PropertyValue> ?
  </bqos:Property> +
...</bqos:BQoSQualities>
```

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

- `/bqos:BQoS/bqos:BQoSQualities`: Quality aspect of the service is measured in terms of additional properties and attributes. It has a list of property for BQoSQualities and other optional elements.
- `/bqos:BQoS/bqos:BQoSQualities/bqos:Property`: Property element is for additional property or attribute for quality measurement of the service in bQoS that has name and value pair to describe the quality of the service.
- `/bqos:BQoS/bqos:BQoSQualities/bqos:PropertyName`: Property name is a required element for the name in the name and value pair in the Property element. It uses bqos:PropertyNameType which is a cbc:NamType from UBL that has an optional languageID attribute for language code.
- `/bqos:BQoS/bqos:BQoSQualities/bqos:Property/@{any}`: This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the PropertyName element in the future. Unrecognized attributes SHOULD cause a fault.
- `/bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyValue`: The property value is an optional element for the value in the name and value pair in the Property element. It uses bqos:PropertyValueType which is a cbc:NamType from UBL that has an optional languageID attribute for language code.
- `/bqos:BQoS/bqos:BQoSQualities/bqos:Property/@{any}`: This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the Property element in the future. Unrecognized attributes SHOULD cause a fault.
This is an extensibility mechanism to allow different (extensible) property or attribute elements/parameters to be specified in the future. Unrecognized parameters SHOULD cause a fault.

**Example**

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

```xml
<?xml version="1.0" encoding="utf-8"?>
<bQoSQualities xmlns="..." ...>
  <Property>
    <PropertyName languageID="EN">Class</PropertyName>
    <PropertyValue>Golden</PropertyValue>
  </Property>
  <Property>
    <PropertyName languageID="EN">Network Connection</PropertyName>
  </Property>
</bQoSQualities>
```
6 BQoS Examples

6.1 Service Price with a Batch of Products Examples

This BQoS example will show the following quality indicators:

1. The service price is CNY 120000 per service, including 1000 gas-meters for one batch.
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.
3. The service has additional attributes to provide the IC card gas-meters integrated with iron IC-card box for the quality indicators.

Example

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

```xml
<?xml version="1.0" encoding="UTF-8"?>
<bqos:BQoS xmlns:bqos="..." ... >
  <bqos:BQoSPrice>
    <bqos:Price>
      <bqos:Unit unitCode="EA">1000</bqos:Unit>
      <bqos:Amount currencyID="CNY">120000</bqos:Amount>
    </bqos:Price>
  </bqos:BQoSPrice>
  <bqos:BQoSPerformance>
    <bqos:Throughput>
      <bqos:Duration unitCode="DAY">7</bqos:Duration>
      <bqos:Quantity>1000</bqos:Quantity>
      <bqos:Latency unitCode="DAY">0</bqos:Latency>
    </bqos:Throughput>
  </bqos:BQoSPerformance>
  <bqos:BQoSQualities>
    <bqos:Property>
      <bqos:PropertyName languageID="zh-cn">外壳</bqos:PropertyName>
      <bqos:PropertyValue languageID="zh-cn">铁壳</bqos:PropertyValue>
    </bqos:Property>
    <bqos:Property>
      <bqos:PropertyName languageID="en">MeterType</bqos:PropertyName>
      <bqos:PropertyValue languageID="en">IC card gas-meter</bqos:PropertyValue>
    </bqos:Property>
    <bqos:Property>
      <bqos:PropertyName languageID="en">IC-Card-Box</bqos:PropertyName>
      <bqos:PropertyValue languageID="en">integrated</bqos:PropertyValue>
    </bqos:Property>
  </bqos:BQoSQualities>
</bqos:BQoS>
```
A. Acknowledgements

The following individuals have participated in the creation of this specification and are gratefully acknowledged:

Participants:

- Rex Brooks, Individual
- Szu Chang, Changfeng Open Standards Platform Software Alliance
- Bill Cox, Cox Software Architects LLC
- Andy Lee, Changfeng Open Standards Platform Software Alliance
- Carl Mattocks, CheckMi
- James Zhili Zhang, TIBCO Software Inc.
- Hong Zhou, Changfeng Open Standards Platform Software Alliance
B. Non-Normative Text

B.1 Open Issue List

- i002 - Other quality indicators for bQoS, http://docs.oasis-open.org/soa-eerp/issues/issues.xml#002
- i003 - How to reference/use the Unit and Currency code, http://docs.oasis-open.org/soa-eerp/issues/issues.xml#003
- i004 - Name Space Names Not Intuitive, http://docs.oasis-open.org/soa-eerp/issues/issues.xml#004
- i005 - Too many units in bQoS schema, http://docs.oasis-open.org/soa-eerp/issues/issues.xml#005
### C. Revision History

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<tr>
<td>0.8</td>
<td>03/02/2009</td>
<td>Szu Chang</td>
<td>Initial draft</td>
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<td>0.9</td>
<td>03/09/2009</td>
<td>Szu Chang</td>
<td>Change the syntax to include the data type</td>
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<td>WD01</td>
<td>04/15/2009</td>
<td>Szu Chang</td>
<td>Rename draft 0.9 to working draft 0.1</td>
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<tr>
<td>WD02</td>
<td>04/29/2009</td>
<td>Szu Chang</td>
<td>Added whole example and some minor edits</td>
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<tr>
<td>WD03</td>
<td>05/07/2009</td>
<td>Szu Chang</td>
<td>Added issue list and some minor edits. This is to get ready for CD01</td>
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<tr>
<td>CD01</td>
<td>05/08/2009</td>
<td>Szu Chang</td>
<td>Fixed some minor typo for Committee drafts.</td>
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