SOA-EERP Business Service Level Agreement Version 1.0

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Related work:
This specification is related to:
- SOA-EERP Business Rating of Service specification, Version 1,
- SOA-EERP Business Quality of Service, Version 1,

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

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

Abstract:

This document specifies the XML vocabulary for business service level agreement (bSLA), one of three Specifications for end-to-end resource planning (EERP). Business service level agreement describes the agreement between two parties, service requestor and service provider, on business-related characteristics or attributes of a service.

Status:

This document was last revised or approved 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/.

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1 Introduction

This document is the specification for the Business Service Level Agreement for (bSLA) for End-to-End Resource Planning (EERP), an XML vocabulary for information exchange by which a business application can manage and evaluate services with agreed business quality of service, obligations and terms.

According to OASIS Reference Model for Service Oriented Architecture [SOA-RM], the Service Oriented Architecture (SOA) is a paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains. The service within SOA is a mechanism to enable access to one or more capabilities, where the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description. This specification further defines the bSLA between the service requester and the service provider for the service which is defined in SOA-RM, within the EERP technology. The applications of this specification are any kind of business services, and they are not limited to only Web Services.

EERP applies the well-known technique for service discovery and optimization in a novel way to improve business results. It models the business process and the range of potential services, and then guides the selection and deployment of services based on the end-to-end business value.

Modeling the business service-level agreements to manage and evaluate services and establishing agreements about the business service is essential to long-term value chain improvement. The details of the business service level agreement defined in this bSLA specification will enable EERP to determine the varieties of optimization to be supported, and to manage the end-to-end business process.

The bSLA defined in this specification is the agreement between the service requestor and the service provider, and primary address the bQoS content defined in "SOA-EERP Business Quality of Service Version 1.0" [EERP-bQoS], and bRating defined in the "SOA-EERP Business Rating of Service Version 1.0" [EERP-bRating]. These contents are all business related.

The bSLA is different than the SLA (Service Level Agreement) in the software/IT world. The bSLA in this specification is the contact between the service requester and the service provider, and the SLA is network/system oriented agreement that deals with network performance and system availability. The bSLA is a business oriented agreement that deals with price, time to deliver, and the quality/rating of the service.

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 1) 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.

### 1.2 Normative References

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-20-cbc], UBL-CommonBasicComponents-2.0.xsd
- UBL 2.0 Unqualified Data Type [UBL-20-udt], UnqualifiedDataTypeSchemaModule-2.0.xsd

This specification is designed to work with the general Web Services framework including WSDL service descriptions, and SOAP message structure and message processing model. The XML vocabulary defined in bSLA should be applicable to any version of SOAP.

None.
2 Business Services Level Agreement Contents

The Business Service Level Agreement (bSLA) of the XML vocabulary is defined in XML Schema format that has information on both requester and service provider and their agreement on the service level.

2.1 Namespaces

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

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

Table 1 lists XML namespaces that are used in this specification. The choice of any namespace prefix is arbitrary and not semantically significant.

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

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Namespace</th>
<th>Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td><a href="http://schemas.xmlsoap.org/soap/envelope/">http://schemas.xmlsoap.org/soap/envelope/</a></td>
<td>[SOAP]</td>
</tr>
<tr>
<td>S12</td>
<td><a href="http://www.w3.org/2003/05/soap-envelope">http://www.w3.org/2003/05/soap-envelope</a></td>
<td>[SOAP12]</td>
</tr>
<tr>
<td>xsd</td>
<td><a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a></td>
<td>[XML-Schema1], [XML-Schema2]</td>
</tr>
<tr>
<td>ccts</td>
<td>urn:un:unece:unfact:documentation:2</td>
<td>[UBL-20]</td>
</tr>
<tr>
<td>bqos</td>
<td><a href="http://docs.oasis-open.org/ns/soa-eerp/bqos/200903">http://docs.oasis-open.org/ns/soa-eerp/bqos/200903</a></td>
<td>[EERP-bQoS]</td>
</tr>
<tr>
<td>sla</td>
<td><a href="http://docs.oasis-open.org/ns/soa-eerp/sla/200903">http://docs.oasis-open.org/ns/soa-eerp/sla/200903</a></td>
<td>This specification</td>
</tr>
</tbody>
</table>

2.2 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/sla/v1.0/EERP-bSLA-cd04.xsd

2.3 bSLA Contents

The BSLA is the root element for EERP- Business Service-level agreement (bSLA). The bSLA is a formal contract between a service provider and a client guaranteeing quantifiable business quality of service (bQoS) at defined levels. It can have one or more of the following elements:

- SLAParties describes the parties invoked in the bSLA for the service
- SLAParameters describes the parameters for the service, which are defined ways of monitoring bQoS metrics.
- SLAObligations describes the agreed bSLA obligations for the service.
- SLATerms describes the agreed bSLA Terms for the service.
• Any additional elements for the agreement of the service

Syntax

```xml
<sla:BSLA xmlns:sla="..." xmlns:bqos="..." ...>
  <sla:SLAParties ...>sla:SLAPartiesTypeType</sla:SLAParties>
  <sla:SLAParameters ...>sla:SLAParametersType</sla:SLAParameters>
  <sla:SLAObligations ...>sla:SLAObligationsType</sla:SLAObligations> ?
  <sla:SLATerms ...>sla:SLATermsType</sla:SLATerms> ?
...
</sla:BSLA>
```

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

/sla:BSLA

Root element of Business Service-level agreement (bSLA) for EERP

/sla:BSLA/sla:SLAParties

SLAParties is a required element in bSLA that defines parties invoked in this bSLA for the service. SLAParties element has both the service provider and services requester elements, see Section 3 for more details.

/sla:BSLA/sla:SLAParties/@{any}

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

/sla:BSLA/sla:SLAParameters

SLAParameters element, bSLA parameters aspect of the service, is defined monitoring of bQoS metrics, including service profile uri, operations and other optional elements. It is a required element that uses sla:SLAParametersType, see Section 4 for more details.

/sla:BSLA/sla:SLAParameters/@{any}

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

/sla:BSLA/sla:SLAObligations

Agreed bSLA obligations aspect of the service, including obligations, action guarantees. It is a optional element that uses sla:SLAObligationsType, see Section 5 for more details.

/sla:BSLA/sla:SLAObligations/@{any}

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

/sla:BSLA/sla:SLATerms

Agreed bSLA terms aspect of the service, including bSLA term elements. It is optional, see Section 6 for more details.

/sla:BSLA/sla:SLATerms/@{any}

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

/sla:BSLA/@{any}

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

/sla:BSLA/sla:BSLEXTENSION
BSLAE_extension element is an optional element that keeps different (extensible) elements to be specified in the future.

/sla:BSLA/sla:BSLAE_extension/\{any\}

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

The SLAParties describes the list of parties invoked in the bSLA for the service.

There SHOULD be one SLAParties element present in the bSLA of service.

Syntax

```
<sla:SLAParties xmlns:sla="..." ...>
  <sla:ServiceProvider type="sla:ServiceProviderType"/>
  <sla:ServiceUri type="sla:SlaUriType"/>
  <sla:ServiceProviderName languageID="..."/>
  <sla:ServiceRequester type="sla:ServiceRequesterType"/>
  <sla:ServiceRequesterUri type="sla:SlaUriType"/>
  <sla:ServiceRequesterName languageID="..."/>
</sla:SLAParties>
```

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

```
/sla:SLAParties

SLAParties element, bSLA Parties aspect of the service, is for parties invoked in the bSLA for the service, including both service provider and service requesters elements.

/sla:SLAParties/sla:ServiceProvider

Service Provider element represents the provider for parties. It is a required element for bSLA Parties.

/sla:SLAParties/sla:ServiceProvider/sla:ServiceUri

Service identifier in URI format, such as a service URL, is a required element for Service Provider.

/sla:SLAParties/sla:ServiceProvider/sla:ServiceProviderName

Service Provider Name is the name of the service provider. It is also a required element for Service Provider.

/sla:SLAParties/sla:ServiceProvider/sla:ServiceProviderName/languageID


/sla:SLAParties/sla:ServiceProvider/@{any}

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

/sla:SLAParties/sla:ServiceRequester

ServiceRequester element represents requester for the service, including requester's name and the URI that represents the requester. It is a required element for bSLA Parties.

/sla:SLAParties/sla:ServiceRequester/sla:ServiceRequesterUri

ServiceRequesterUri element represents the requester’s identifier in URI format for the service requester. It is a required element for Service Requester.

/sla:SLAParties/sla:ServiceRequester/sla:ServiceRequesterName

```
374 Requester’s name for the service requestor. It is a required element for Service Requester.
375 /sla:SLAParties/sla:ServiceRequester/sla:ServiceRequesterName/@languageID
376 Language ID is an optional attribute in the ServiceRequesterName element, using
377 xsd:language type. The value can be those defined in
379 /sla:SLAParties/sla:ServiceRequester/@{any}
380 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
381 to the ServiceRequester element in the future. Unrecognized attributes MAY cause a fault or be
382 silently ignored.
383 /sla:SLAParties/{any}
384 This is an extensibility mechanism to allow different (extensible) elements to be specified in the
385 future. Unrecognized elements MAY cause a fault or be silently ignored.
386
387 Example
388 The following non-normative example illustrates the use of the bSLA Parties element. The Service
389 Provider is a fictitious Hangzhou Innover Co. Ltd. in China; the Service Requester is a fictitious Mianyang
390 Gas Corp. in China.

(001) <?xml version="1.0" encoding="utf-8"?>
(002) <SLAParties xmlns="..." ...>
(003)   <ServiceProvider>
(004)     <ServiceUri>http://www.innover.com.cn</ServiceUri>
(005)     <ServiceProviderName>Hangzhou Innover Co. Ltd</ServiceProviderName>
(006)   </ServiceProvider>
(007)   <ServiceRequester>
(008)     <ServiceRequesterUri>http://www.scmyng.com</ServiceRequesterUri>
(009)     <ServiceRequesterName>Mianyang Gas Corp.</ServiceRequesterName>
(010)   </ServiceRequester>
(011) </SLAParties>
4 SLAParameters

The SLAParameters element for EERP-bSLA describes the parameters of the service used to define monitoring of bQoS metrics, including the service profile URI, operations and other optional elements.

There SHOULD be one SLAParameters element present in the bSLA of service.

Syntax

```
<sla:SLAParameters xmlns:sla="..." ...>
  <sla:ServiceProfileUri ...>sla:SlaUriType</sla:ServiceProfileUri>
  <sla:ServiceOperations ...>sla:ServiceOperationsType
    <sla:hasCommittedCost>xsd:boolean</sla:hasCommittedCost>
    <sla:hasCommittedTime>xsd:boolean</sla:hasCommittedTime>
    <sla:hasAvailabilities>xsd:boolean</sla:hasAvailabilities>
    <sla:hasCommittedThroughput>xsd:boolean</sla:hasCommittedThroughput>
    <sla:hasOtherTerms>xsd:boolean</sla:hasOtherTerms>
    ...
  </sla:ServiceOperations>
</sla:SLAParameters>
```

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

/\sla:SLAParameters
  \n  bSLA parameters element defines aspect of the service which are defined monitoring of bQoS metrics, including service uri, operations and other optional elements.

/\sla:SLAParameters/\sla:ServiceProfileUri
  \n  ServiceProfileUri element represents web page URL or other URI for the service profile that defines the details of the services. Different service providers will share the same profile. It is a required element for bSLA Parameters.

/\sla:SLAParameters/\sla:ServiceProfileUri/@{any}
  \n  This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the ServiceProfileUri element in the future. Unrecognized attributes MAY cause a fault or be silently ignored.

/\sla:SLAParameters/\sla:ServiceOperations
  \n  Describes available operations and bQoS. It is an optional element for bSLA Parameters.

/\sla:SLAParameters/\sla:ServiceOperations/\sla:hasCommittedCost
  \n  Describes if there is committed cost or not. It is a required element for bSLA Parameters.

/\sla:SLAParameters/\sla:ServiceOperations/\sla:hasCommittedTime
  \n  Describes if there is committed time or not. It is a required element for bSLA Parameters.

/\sla:SLAParameters/\sla:ServiceOperations/\sla:hasAvailabilities
  \n  Describes if there is availability or not. It is a required element for bSLA Parameters.

/\sla:SLAParameters/\sla:ServiceOperations/\sla:hasCommittedThroughput
  \n  Describes if there is committed throughput or not. It is a required element for bSLA Parameters.

/\sla:SLAParameters/\sla:ServiceOperations/\sla:hasOtherTerms
  \n  Describes if there are other terms or not. It is a required element for bSLA Parameters.
This is an extensibility mechanism to allow different (extensible) property or attribute elements to be specified in the future. Unrecognized elements MAY cause a fault or be silently ignored.

/sla:SLAParameters /sla:ServiceOperations/@{any}

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

/sla:SLAParameters /{any}

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

Example

The following non-normative example illustrates the use of bSLA Parameters element. It describes the bSLA parameters:

```xml
<?xml version="1.0" encoding="utf-8"?>
<SLAParameters xmlns="..." ...>
    <ServiceProfileUri>http://www.innover.com.cn</ServiceProfileUri>
    <ServiceOperations>
        <hasCommittedCost>true</hasCommittedCost>
        <hasCommittedTime>true</hasCommittedTime>
        <hasAvailabilities>true</hasAvailabilities>
        <hasCommittedTroughput>true</hasCommittedTroughput>
        <hasOtherTerms>true</hasOtherTerms>
    </ServiceOperations>
</SLAParameters>
```
5 SLAObligations

The SLAObligations element describes the agreed bSLA obligations of the service, including obligations and action guarantees. There MAY be zero or one bSLA Obligations element present in the bSLA of service.

Note: There is a case for zero Obligation elements on bSLA. Section 7.2 is an example illustrates the bSLA document without Obligation element. It has some additional bSLA terms instead.

Syntax

```
<sla:SLAObligations xmlns:sla="..." xmlns:bqos="..." ...>
  <sla:Obligation ...>sla:ObligationType</sla:Obligation> +
  <sla:ActionGuarantee ...>sla:ActionGuaranteeType</sla:ActionGuarantee> ?
  ...
</sla:SLAObligations>
```

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

/sla:SLAObligations
bSLA obligations aspect of the service, including obligations, action guarantees.

/sla:SLAObligations/sla:Obligation
Obligation element is agreed bSLA obligation, including Service Level Objective (SLO) and the Action Guarantee that associates with that SLO. There MAY be one or more obligation elements in the SLAObligations element. See Section 5.1 for more details.

/sla:SLAObligations/sla:Obligation/@{any}
This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the Obligation element in the future. Unrecognized attributes MAY cause a fault or be silently ignored.

/sla:SLAObligations/sla:ActionGuarantee
Specify what happens if the Service Level Objective (SLO) is met or not met. This guarantee will be associated to all Obligations within the SLAObligations element. It is an optional element for the SLAObligations element. See Section 5.2 for more details.

/sla:SLAObligations/sla:ActionGuarantee/@{any}
This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the ActionGuarantee element in the future. Unrecognized attributes MAY cause a fault or be silently ignored.

/sla:SLAObligations/@{any}
This is an extensibility mechanism to allow different (extensible) property or attribute elements to be specified in the future. Unrecognized elements MAY cause a fault or be silently ignored.

5.1 Obligation

The Obligation, obligation element for bSLA Obligations in EERP-bSLA, is the agreed bSLA obligation, including Service Level Objective (SLO) and the Action Guarantee that associates with that SLO.

There MAY be one or more Obligation elements present in the bSLA Obligations.

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

/sla:SLAObligations/sla:Obligation
Obligation element is agreed bSLA obligation, including Service Level Objective (SLO) and the Action Guarantee that associates with this Obligation.

/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective
Service Level Objective (SLO) for QoS guarantee. It is a required element for Obligation. See Section 5.1.1 for more details.

/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/@{any}
This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the ServiceLevelObjective element in the future. Unrecognized attributes MAY cause a fault or be silently ignored.

/sla:SLAObligations/sla:Obligation/sla:ActionGuarantee
Service Level Objective (SLO) for QoS guarantee. This guarantee will be associated to all ServiceLevelObjective within this Obligation element. It is an optional element for Obligation. See Section 5.1.2 for more details.

/sla:SLAObligations/sla:Obligation/sla:ActionGuarantee/@{any}
This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the ActionGuarantee element in the future. Unrecognized attributes MAY cause a fault or be silently ignored.

5.1.1 ServiceLevelObjective
The Service Level Objective element for Obligation in bSLA Obligations in EERP-bSLA is the Service Level Objective (SLO) for the QoS guarantee, including Committed Cost, Committed Time, Availabilities, Committed Throughput and SLATerm.

There SHOULD be one Service Level Objective element present in the Obligation, and it can have one and more element within this Service Level Objective element.

Syntax

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

/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective
Service Level Objective (SLO) for QoS guarantee. It is a required element for Obligation.

/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:CommittedCost
Cost element in bSLA. It is an optional element for ServiceLevelObjective. See Section 5.1.1.1 for more details.
Committed time period element in bSLA is an optional element for ServiceLevelObjective. see Section 5.1.1.2 for more details.

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

The services availability indicators element, including a list of availabilities, is an optional element for ServiceLevelObjective, see Section 5.1.1.3 for more details.

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

Committed performance throughput is an optional element for ServiceLevelObjective. See Section 5.1.1.4 for more details.

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

bSLA Term. It is an optional element for ServiceLevelObjective, see /sla:SLATerms/sla:SLATerm in Section 6 for more details.

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

### 5.1.1.1 CommittedCost

The Committed Cost element describes the cost element in bSLA, including Unit and Amount.

There MAY be zero or one Committed Cost element present in the Service Level Objective.

**Syntax**

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

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

CommittedCost element is the cost element in bSLA. It is an optional element for Service Level Objective.

Number of unit is a optional element that includes a attribute of unit of measurement uses cbc:BaseUnitMeasureType. See /bqos:BQoSPrice/bqos:Price/bqos:Unit in Section 3: BQoS Price in EERP-bQoS Specification for more details.
596 /sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:CommittedCost/bqos:Amount
597 Amount element is a required element for the Committed Cost element. It uses cbc:AmountType
598 from UBL that has a required currencyID attribute for currency code. See
600 Specification for more details.

5.1.1.2 CommittedTime

601 The Committed Time, Committed Time element of Service Level Objective for Obligation in bSLA
602 Obligations in EERP-bSLA, is the committed time period in bSLA, including Duration, Latency and
603 Committed Completion Time.

605 There MAY be zero or one Committed Time element present in the Service Level Objective.

Syntax

607 <sla:CommittedTime xmlns:sla="..." xmlns:bqos="..." ...>
608 <bqos:Duration unitCode="clm66411:UnitCodeContentType">
609  cbc:DurationMeasureType </bqos:Duration>
610 <bqos:Latency unitCode="clm66411:UnitCodeContentType">
611  cbc:DurationMeasureType </bqos:Latency> ?
612 <bqos:StartTime> udt:DateTimeType </bqos:StartTime> ?
613 <sla:CommittedCompletionTime>
614  udt:DateTimeType </sla:CommittedCompletionTime> ?
615 </sla:CommittedTime>

616 The following describes the attributes and elements listed in the schema outlined above:
617 /sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:CommittedTime
618 CommittedTime element is an optional element for Service Level Objective which is the
619 committed time period element in bSLA.
620 /sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:CommittedTime/bqos:Duration
621 Duration element is a required element in the CommittedTime element which is the duration to
622 complete the service. It uses cbc:DurationMeasureType from UBL that has a required unitCode
623 attribute for unit of measurement on the time. See
624 /bqos:BQoSPerformance/bqos:TimePeriod/bqos:Duration in Section 4: bQoS Performance in
625 EERP-bQoS Specification for more details.
626 /sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:CommittedTime/bqos:Latency
627 Latency is an optional element for the time delay for starting the service. It uses
628 cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of
629 measurement on the time. See /bqos:BQoSPerformance/bqos:TimePeriod/bqos:Latency in
630 Section 4: bQoS Performance in EERP-bQoS Specification for more details.
632 StartTime is an optional element for the date and time to start the service. It uses
633 udt:DateTimeType which is in UTC time format [ISO8601]. See
634 /bqos:BQoSPerformance/bqos:TimePeriod/bqos:StartTime in Section 4: bQoS Performance in
635 EERP-bQoS Specification for more details.
636 /sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:CommittedTime/sla:CommittedCompletionTime
638 CommittedCompletionTime is an optional element for the date and time for committed completion
time. It uses udt:DateTimeType which is UTC time format [ISO8601].
5.1.1.3 Availabilities

The Availability, Availability of Service Level Objective for Obligation in bSLA Obligations in EERP-bSLA, is services availability indicators including a list of availabilities, including a list of Availability elements.

There MAY be zero or one Availability element present in the Service Level Objective.

Syntax

```
<sla:Availabilities xmlns:sla="..." xmlns:bqos="..." ...>
  <sla:Availability isAvailable="xs:boolean" ...>sla:AvailabilityType
    <sla:From>xs:dateTime</sla:From>
    <sla:To>xs:dateTime</sla:To>
  </sla:Availability> +
</sla:Availabilities>
```

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

- `/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:Availabilities` Availability is an optional element for Service Level Objective which is the services availability indicators including a list of availabilities.
- `/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:Availabilities/sla:Availability` Availability is a required element for the quality aspect of whether the service is present or ready for immediate use.
- `/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:Availabilities/sla:Availability/sla:From` From is a required element for the date and time for availability starting time. It uses udt:DateTimeType which is UTC time format [ISO8601].
- `/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:Availabilities/sla:Availability/sla:To` To is a required element for the date and time for availability ending time. It uses udt:DateTimeType which UTC time format [ISO8601].
- `/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:Availabilities/sla:Availability/isAvailable` isAvailable is an optional attribute to illustrate whether the Availability is available or not. It uses xs:boolean type.
- `/sla:SLAObligations/sla:Obligation/sla:ServiceLevelObjective/sla:Availabilities/@{any}` This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the Availability element in the future. Unrecognized attributes MAY cause a fault or be silently ignored.

5.1.1.4 Committed Throughput

The Committed Throughput, Committed Throughput element of Service Level Objective for Obligation in bSLA Obligations in EERP-bSLA, is the committed performance throughput, including Duration, Quantity and Latency.

There MAY be zero or one Committed Throughput element present in the Service Level Objective.

Syntax

```
<sla:CommittedThroughput xmlns:sla="..." xmlns:bqos="..." ...>
  <bqos:Duration unitCode="clm66411:UnitCodeContentType">
    <cbc:DurationMeasureType></bqos:Duration>
  </bqos:Duration>
  <bqos:Quantity unitCode="clm66411:UnitCodeContentType">
    <cbc:BaseQuantityType></bqos:Quantity>
  </bqos:Quantity>
  <bqos:Latency unitCode="clm66411:UnitCodeContentType">
    <cbc:DurationMeasureType></bqos:Latency> ?
</sla:CommittedThroughput>
```
The following describes the attributes and elements listed in the schema outlined above:

CommittedThroughput is an optional element for ServiceLevelObjective element. This is the committed performance throughput.

Duration element is a required element in the CommittedThroughput 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. See /bqos:BQoSPerformance/bqos:Throughput/bqos:Duration in Section 4: bQoS Performance in EERP-bQoS Specification for more details.

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. See /bqos:BQoSPerformance/bqos:Throughput/bqos:Quantity in Section 4: bQoS Performance in EERP-bQoS Specification for more details.

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. See /bqos:BQoSPerformance/bqos:Throughput/bqos:Latency in Section 4: bQoS Performance in EERP-bQoS Specification for more details.

5.1.1.5 bSLA Term

The bSLATerm, bSLA Term element of Service Level Objective for Obligation in bSLA Obligations in EERP-bSLA, is the bSLA term element in bSLA.

There MAY be zero or one bSLA Term element present in the Service Level Objective. See /sla:SLATerms in Section 6 for more details.

5.1.2 Action Guarantee

The Action Guarantee, action guarantee element for bSLA Obligations in EERP-bSLA, is to specify what happens if the SLO is met or not met, including Reserve Fee and Penalty element.

There MAY be zero or one Action Guarantee element present in the Obligation element. See Section 5.2 for the detail of ActionGuaranteeType.

5.2 ActionGuarantee

The Action Guarantee, action guarantee element for bSLA Obligations in EERP-bSLA, is to specify what happens if the Service Level Objective (SLO) is met or not met, including Reserve Fee and Penalty element.

There MAY be zero or one bSLA Obligations element present in the bSLA Obligations.

Syntax

```xml
<sla:ActionGuarantee xmlns:sla="..." xmlns:bqos="..." ...>
  <sla:ReserveFee ...>bqos:PriceType
    <bqos:Unit unitCode="clm66411:UnitCodeContentType">cbc:BaseUnitMeasureType</bqos:Unit> ?
  </sla:ReserveFee ...
```
The following describes the attributes and elements listed in the schema outlined above:

/sla:SLAObligations/sla:ActionGuarantee/sla:ReserveFee

ReserveFee element is the reservation fee or money amount when Service Level Objective (SLO) is met. It is an optional element for Action Guarantee.

/sla:SLAObligations/sla:ActionGuarantee/sla:ReserveFee/bqos:Unit

Number of unit is an optional element that includes a attribute of unit of measurement uses cbc:BaseUnitMeasureType. See /bqos:BQoSPrice/bqos:Price/bqos:Unit in Section 3: bQoS Price in EERP-bQoS Specification for more details.


Amount element is a required element for the Reserve Fee element. It uses cbc:AmountType from UBL that has a required currencyID attribute for currency code. See /bqos:BQoSPrice/bqos:Price/bqos:Amount in Section 3: bQoS Price in EERP-bQoS Specification for more details.

/sla:SLAObligations/sla:ActionGuarantee/sla:ReserveFee/@{any}

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

/sla:SLAObligations/sla:ActionGuarantee/sla:Penalty

Penalty element is the money amount when Service Level Objective (SLO) is not met. It is a required element for Action Guarantee.


Number of unit is an optional element that includes a attribute of unit of measurement uses cbc:BaseUnitMeasureType. See /bqos:BQoSPrice/bqos:Price/bqos:Unit in Section 3: bQoS Price in EERP-bQoS Specification for more details.


Amount element is a required element for the Penalty element. It uses cbc:AmountType from UBL that has a required currencyID attribute for currency code. See /bqos:BQoSPrice/bqos:Price/bqos:Amount in Section 3: bQoS Price in EERP-bQoS Specification for more details.

/sla:SLAObligations/sla:ActionGuarantee/sla:Penalty/@{any}

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

Example

The following example illustrates the use of Action Guarantee element. It describes the penalty:

```xml
<?xml version="1.0" encoding="utf-8"?>
<ActionGuarantee xmlns="..." xmlns:bqos="...">
  <Penalty>
    <bqos:Unit unitCode="EA">10</bqos:Unit>
  </Penalty>
</ActionGuarantee>
```
<bqos:Amount currencyID="USD">17.15</bqos:Amount>
6 SLATerms

The SLATerms, bSLA terms element for EERP-bSLA, is the agreed bSLA terms aspect of the service, including bSLA term elements.

There MAY be zero or one bSLA Terms element present in the bSLA of service.

Syntax

```
<sla:SLATerms xmlns:bqos="..." ...>
  <sla:SLATerm ...>sla:SLATermType
  ...
  </sla:SLATerm> +
</sla:SLATerms>
```

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

/sla:SLATerms
The agreed bSLA terms aspect of the service, including bSLA term elements. It has a list of bSLA terms for SLATerms.

/sla:SLATerms/sla:SLATerm
SLATerm element is an any type element to describe additional term for this bSLA.

/sla:SLATerms/sla:SLATerm /@{any}
This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the SLATerm element in the future. Unrecognized attributes MAY cause a fault or be silently ignored.

/sla:SLATerms/sla:SLATerm/{any}
This is an extensibility mechanism to allow different (extensible) property or attribute elements to be specified in the future. Unrecognized elements MAY cause a fault or be silently ignored.

/sla:SLATerms/@{any}
This is an extensibility mechanism to allow additional attributes, based on schemas, to be added to the SLATerms element in the future. Unrecognized attributes MAY cause a fault or be silently ignored.

Example

The following non-normative example illustrates the use of bSLA Terms element. It describes the term of the bSLA:

```
(001) <?xml version="1.0" encoding="utf-8"?>
(002) <SLATerms xmlns="..." ...>
(003)   <SLATerm xmlns:t="..." >
(004)     <t:ServiceLocation>
(005)       <t:Lat>37.7749295</t:Lat>
(006)       <t:Lng>-122.4194155</t:Lng>
(007)     </t:ServiceLocation>
(008)   </SLATerm>
(009) </SLATerms>
```
7 bSLA Examples

The examples in this section are non-normative.

7.1 Committed Throughput with Penalty Example

This bSLA example will show the following agreement between EERP Sample Service and EERP Service Requester:

1. The service is based on the Service profile defined on http://www.serviceprovider.com/eerp/service/profile
2. It will charge $17.15 per service.
3. Starting from January 1st, 2009, the agreement last for one whole year.
4. The committed throughput is 10 services per day.
5. If the provider cannot meet the bSLA for #3 and #4, the penalty will be $17.15 per 10 services.

Example

The following example illustrates the whole bSLA document for above agreements:

```xml
<?xml version="1.0" encoding="utf-8"?>
<BSLA xmlns="..." xmlns:bqos="..." ... >
  <SLAParties>
    <ServiceProvider>
      <ServiceUri>http://www.serviceprovider.com/eerp/service</ServiceUri>
      <ServiceProviderName languageID="EN">EERP Sample Service</ServiceProviderName>
    </ServiceProvider>
    <ServiceRequester>
      <ServiceRequesterUri>http://www.servicerequester.com</ServiceRequesterUri>
      <ServiceRequesterName languageID="EN">EERP Service Requester</ServiceRequesterName>
    </ServiceRequester>
  </SLAParties>
  <SLAParameters>
    <ServiceProfileUri>http://www.serviceprovider.com/eerp/service/profile</ServiceProfileUri>
    <ServiceOperations>
      <CommittedCost>true</CommittedCost>
      <CommittedTime>true</CommittedTime>
      <Availabilities>false</Availabilities>
      <CommittedThroughput>true</CommittedThroughput>
      <OtherTerms>false</OtherTerms>
    </ServiceOperations>
    <SLAObligations>
      <Obligation>
        <ServiceLevelObjective>
          <CommittedCost>
            <bqos:Unit unitCode="EA">1</bqos:Unit>
            <bqos:Amount currencyID="USD">17.15</bqos:Amount>
          </CommittedCost>
        </ServiceLevelObjective>
      </Obligation>
    </SLAObligations>
  </SLAParameters>
</BSLA>
```
7.2 bSLA without Obligation Example

This bSLA example will show the following agreement between EERP Sample Service and EERP Service Requester:

1. The service is based on the Service profile defined on
   http://www.serviceprovider.com/eerp/service/profile

2. There is no obligation

3. Additional bSLA terms include service location and service hours:
   a. Service location is near San Francisco, CA with geocoding of 37.7749295 and -122.4194155
   b. Service hours will be 7 x 24, that is 7 days per week and 24 hours per day.

Example

The following example illustrates the whole bSLA document for above agreements:

```xml
<?xml version="1.0" encoding="utf-8"?>
<BSLA xmlns="..." xmlns:bqos="..." ... >
  <SLAParties>
    <ServiceProvider>
      <ServiceUri>http://www.serviceprovider.com/eerp/service</ServiceUri>
      <ServiceProviderName languageID="EN">EERP Sample Service</ServiceProviderName>
    </ServiceProvider>
    <ServiceRequester>
      <ServiceRequesterUri>http://www.servicerequester.com</ServiceRequesterUri>
      <ServiceRequesterName languageID="EN">EERP Service Requester</ServiceRequesterName>
    </ServiceRequester>
  </SLAParties>
  <SLAParameters>
    <ServiceProfileUri>http://www.serviceprovider.com/eerp/service/profile2</ServiceProfileUri>
  </SLAParameters>
  <SLATerms xmlns:t="...">
    <t:ServiceLocation>
      <t:Lat>37.7749295</t:Lat>
      <t:Lng>-122.4194155</t:Lng>
    </t:ServiceLocation>
  </SLATerm>
</BSLA>
```
(84)  </SLATerm>
(85)  <SLATerm t:serviceHours="7x24" >
(86)  </SLATerms>
(87)  </BSLA>
8 Conformance

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

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

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

The minimum set of information exchange for bSLA that would allow conforming applications to exchange information and satisfy the conformance should at least to have the following elements:

- /sla:SLAParties/sla:ServiceProvider/sla:ServiceUri
- /sla:SLAParties/sla:ServiceProvider/sla:ServiceProviderName
- /sla:SLAParties/sla:ServiceRequester/sla:ServiceRequesterUri
- /sla:SLAParties/sla:ServiceRequester/sla:ServiceRequesterName
- /sla:SLAParameters/sla:ServiceProfileUri

Example of such minimum set of information could like this:

```xml
<BSLA xmlns="http://docs.oasis-open.org/ns/soa-eerp/sla/200903">
  <SLAParties>
    <ServiceProvider>
      <ServiceUri>http://www.sample-eerp.com/myservice</ServiceUri>
      <ServiceProviderName>My Service Provider</ServiceProviderName>
    </ServiceProvider>
    <ServiceRequester>
      <ServiceRequesterUri>http://www.u-service.com</ServiceRequesterUri>
      <ServiceRequesterName>Your Service Requester</ServiceRequesterName>
    </ServiceRequester>
  </SLAParties>
  <SLAParameters>
    <ServiceProfileUri>http://www.sample-eerp.com/myservice/profile</ServiceProfileUri>
  </SLAParameters>
</BSLA>
```

The following nearly empty artifact does not conform to this specification:

```xml
<BSLA xmlns="http://docs.oasis-open.org/ns/soa-eerp/sla/200903">
  <ServiceProvider>
  </ServiceProvider>
</BSLA>
```
This specification defines a number of extensions; compliant services are **NOT REQUIRED** to implement those extensions defined in this specification. However, if a service implements an aspect of the specification, it **MUST** comply with the requirements specified (e.g. related "MUST" statements). If an implementation silently ignores unrecognized attributes where any attribute is allowed, or silently ignores unrecognized elements where any element is allowed, should be considered as an interoperable implementation.
## A. Acknowledgements

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

### Participants:

<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>Rex Brooks</td>
<td>Individual</td>
</tr>
<tr>
<td>1001</td>
<td>Szu Chang</td>
<td>Changfeng Open Standards Platform Software Alliance</td>
</tr>
<tr>
<td>1002</td>
<td>William Cox</td>
<td>Individual</td>
</tr>
<tr>
<td>1003</td>
<td>Andy Lee</td>
<td>Changfeng Open Standards Platform Software Alliance</td>
</tr>
<tr>
<td>1004</td>
<td>Carl Mattocks</td>
<td>Individual</td>
</tr>
<tr>
<td>1005</td>
<td>Yulin Xu</td>
<td>Changfeng Open Standards Platform Software Alliance</td>
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<tr>
<td>1006</td>
<td>Paul Yang</td>
<td>Changfeng Open Standards Platform Software Alliance</td>
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<td>1007</td>
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<tr>
<td>1008</td>
<td>Hong Zhou</td>
<td>Changfeng Open Standards Platform Software Alliance</td>
</tr>
</tbody>
</table>
B. XML Schema for Business Service Level Agreement

Note: The separate machine readable schema document, listed on Section 2.2, is normative. The text included here is non-normative.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<![--
Document Type: EERP Business SLA Schema CD04
Create On: 09/12/2010
-->

<!------ xsd:schema Element With Namespaces Declarations ------ -->
<!------ Copyright Notice ------ -->
<!--
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OASIS Executive Director.

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-->
</xsd:schema>
```
Agreed bSLA obligation, including Service Level Objective (SLO) and the Action Guarantee that associates with that SLO.

The bSLA is the root element for EERP- Service-level agreement (bSLA). Business SLA is a formal contract between a service provider and a client guaranteeing quantifiable business quality of service (bQoS) at defined levels.

### Obligations in EERP-bSLA

The Action Guarantee, action guarantee element for bSLA

Obligations in EERP-bSLA, is to specify what happens if the Service Level Objective (SLO) is met or not met, including Reserve Fee and Penalty element.

### Indicator Elements

Availability is the quality aspect of whether the service is present or ready for immediate use.

Availability Type

**Availability**

Committed completion time

Committed time period

Committed performance throughput

Availability starting time

Obligation Type

**Obligation**

Agreed bSLA obligation, including Service Level Objective (SLO) and the Action Guarantee that associates with that SLO

**Penalty**
Penalty element is the money amount when Service Level Objective (SLO) is not met. 

ReserveFee element is the reservation fee or money amount when Service Level Objective (SLO) is met. It is an optional element for Action Guarantee.

Service Requester Identifier in Uri

Service Requester element represents requester for the service, including requester's name and the URI that represents the requester.

Service Provider element represents the provider for other URI for the service profile that defines the details of the services. Different service providers will share the same profile. It is a required element for bSLA Parameters.

Service Profile Uri element represents web page URL or other URI for the service profile that defines the details of the services. Different service providers will share the same profile. It is a required element for bSLA Parameters.

The name of service provider

Service Requester element represents requester for the service, including requester's name and the URI that represents the requester.
Action Guarantee.

fee or money amount when Service Level Objective (SLO) is met. It is an optional element for
default obligations of the service, including obligations and action guarantees.

parameters of the service used to define monitoring of bQoS metrics, including the service profile URI, operations and other optional elements.

agreed bSLA terms aspect of the service, including bSLA term elements.

additional term for this bSLA.

The bSLA Terms, Terms element for EERP-bSLA, is the agreed bSLA terms aspect of the service, including bSLA term elements.

The SLAParties element describes the bSLA Parties aspect of the service, including both service provider and service requester elements.

The SLAParameters element for EERP-bSLA describes the parameters of the service used to define monitoring of bQoS metrics, including the service profile URI, operations and other optional elements.

The SLAObligations element describes the agreed bSLA obligations of the service, including obligations and action guarantees.
Service Level Objective (SLO) is not met. It is a required element for Action Guarantee.

Availability elements:

Availability starting

Availability ending

Complex type for committed completion

Complex type for obligation

Complex type for provider ID
<xsd:simpleContent>
  <xsd:extension base="cbc:IDType"/>
</xsd:simpleContent>
</xsd:complexType>
</xsd:complexType>
<xsd:complexType name="ServiceLevelObjectiveType">
  <xsd:annotation>
    <xsd:documentation>Complex type for SLO</xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:element ref="CommittedCost" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>Committed cost element in bSLA</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element ref="CommittedTime" minOccurs="0"/>
    <xsd:element ref="Availabilities" minOccurs="0"/>
    <xsd:annotation>
      <xsd:documentation>Whether the service is present or ready for immediate use</xsd:documentation>
    </xsd:annotation>
    <xsd:element ref="CommittedThroughput" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>Committed performance throughput</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element ref="SLATerm" minOccurs="0"/>
    <xsd:sequence>
      <xsd:anyAttribute namespace="##any" processContents="lax"/>
    </xsd:sequence>
  </xsd:sequence>
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<xsd:complexType name="ServiceNameType">
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    <xsd:documentation>Complex type for the name of the service</xsd:documentation>
  </xsd:annotation>
  <xsd:extension base="cbc:NameType"/>
</xsd:complexType>
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  </xsd:annotation>
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      <xsd:annotation>
        <xsd:documentation>has committed cost or not</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="hasCommittedTime" type="xsd:boolean">
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        <xsd:documentation>has committed time or not</xsd:documentation>
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    <xsd:element name="hasCommittedThroughput" type="xsd:boolean">
      <xsd:annotation>
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    <xsd:element name="hasOtherTerms" type="xsd:boolean">
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        <xsd:documentation>has other terms or not</xsd:documentation>
      </xsd:annotation>
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  </xsd:sequence>
</xsd:complexType>
</xsd:complexType>
<xsd:documentation>

has other SLA terms or not</xsd:documentation>
</xsd:annotation>
</xsd:element>
</xsd:complexType>

maxOccurs="unbounded"/>
</xsd:sequence>
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<xsd:complexType name="SlaUriType">
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    <xsd:documentation>Complex type for the service URI or service profile</xsd:documentation>
  </xsd:annotation>
  <xsd:complexType>
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      <xsd:anyAttribute namespace="##any" processContents="lax"/>
    </xsd:extension>
  </xsd:complexType>
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<xsd:complexType name="ServiceProviderType">
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    <xsd:documentation>Complex type for the service provider</xsd:documentation>
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    <xsd:extension base="cbc:NameType"/>
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    <xsd:documentation>Complex type for the service requester</xsd:documentation>
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  <xsd:complexType>
    <xsd:extension base="cbc:NameType"/>
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  <xsd:complexType>
    <xsd:extension base="cbc:IDType"/>
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<xsd:complexType name="SlaNameType">
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<xsd:complexType name="SlaManagedServiceNameType">
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<xsd:complexType name="SlaAnyAnyAnyAnyAnyIdType">
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    <xsd:extension base="cbc:IDType"/>
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<xsd:complexType name="SlaAnyAnyAnyAnyAnyAnyAnyNameType">
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    <xsd:documentation>Complex type for the service any any any any any any any name</xsd:documentation>
  </xsd:annotation>
  <xsd:complexType>
    <xsd:extension base="cbc:NameType"/>
Different service providers will share the same profile. It is a required element for bSLA web page URL or other URI for the service profile that defines the details of the services. bSLA Obligations in EERP-bSLA, is to specify what happens if the Service Level Objective (SLO) is met or not met, including Reserve Fee and Penalty element.

Service Profile Uri element represents web page URL or other URI for the service profile that defines the details of the services. Different service providers will share the same profile. It is a required element for bSLA Parameters.

Provider for parties. Service Provider element represents the requester for the service, including requester's name and the URI that represents the requester.
The definition of the bSLA Terms

```xml
<xsd:annotation>
  <xsd:documentation>The definition of the bSLA Terms</xsd:documentation>
</xsd:annotation>
</xsd:sequence>
</xsd:complexType>

Complex type for bSLA which is a formal contract between a service provider and a client guaranteeing quantifiable business quality of service (bQoS) at defined levels.

```xml
<xsd:documentation>
Complex type for bSLA which is a formal contract between a service provider and a client guaranteeing quantifiable business quality of service (bQoS) at defined levels.
</xsd:documentation>
</xsd:complexType>

SLAParties element, bSLA Parties aspect of the service, is for parties invoked in the bSLA for the service, including both service provider and service requester elements.

```xml
<xsd:documentation>
SLAParties element, bSLA Parties aspect of the service, is for parties invoked in the bSLA for the service, including both service provider and service requester elements.
</xsd:documentation>
</xsd:complexType>

The SLAParameters element for EERP-bSLA describes the parameters of the service used to define monitoring of bQoS metrics, including the service profile URI, operations and other optional elements.

```xml
<xsd:documentation>
The SLAParameters element for EERP-bSLA describes the parameters of the service used to define monitoring of bQoS metrics, including the service profile URI, operations and other optional elements.
</xsd:documentation>
</xsd:complexType>

The SLAObligations element describes the agreed bSLA obligations of the service, including obligations and action guarantees.

```xml
<xsd:documentation>
The SLAObligations element describes the agreed bSLA obligations of the service, including obligations and action guarantees.
</xsd:documentation>
</xsd:complexType>

The bSLA Terms, Terms element for EERP-bSLA, is the agreed bSLA terms aspect of the service, including bSLA term elements.

```xml
<xsd:documentation>
The bSLA Terms, Terms element for EERP-bSLA, is the agreed bSLA terms aspect of the service, including bSLA term elements.
</xsd:documentation>
</xsd:complexType>
```
C. Non-Normative Text

None
## D. Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Editor</th>
<th>Changes Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.9</td>
<td>03/10/2009</td>
<td>Szu Chang</td>
<td>Initial draft</td>
</tr>
<tr>
<td>WD01</td>
<td>04/24/2009</td>
<td>Szu Chang</td>
<td>Renamed draft 0.9 to working draft 01</td>
</tr>
<tr>
<td>WD02</td>
<td>05/12/2009</td>
<td>Szu Chang</td>
<td>Fixed issue # I011, I012, and I014</td>
</tr>
<tr>
<td>WD03</td>
<td>05/17/2009</td>
<td>Szu Chang</td>
<td>Added conformance section</td>
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<tr>
<td>WD04</td>
<td>06/08/2009</td>
<td>Szu Chang</td>
<td>Fixed issue # I017, I018, and I020</td>
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<tr>
<td>WD05</td>
<td>06/24/2009</td>
<td>Szu Chang</td>
<td>Fixed issue # I028, I031, and I038, I041, I047, and I056</td>
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<tr>
<td>WD06</td>
<td>07/05/2009</td>
<td>Szu Chang</td>
<td>Fixed issue # I028, I035, I038, I043, I051, and I055</td>
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<tr>
<td>CD02</td>
<td>07/11/2009</td>
<td>Szu Chang</td>
<td>Changed WD06 to CD02 after approved by TC</td>
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<tr>
<td>CD03</td>
<td>01/06/2010</td>
<td>Szu Chang</td>
<td>Changed NS and fixed URIs from CD02 to CD03</td>
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<tr>
<td>WD08</td>
<td>05/10/2010</td>
<td>Szu Chang</td>
<td>Changed after the public review comments</td>
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<tr>
<td>WD09</td>
<td>06/23/2010</td>
<td>Szu Chang</td>
<td>Changed after the first round of review PR comments</td>
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<tr>
<td>CD04</td>
<td>09/12/2010</td>
<td>Szu Chang</td>
<td>TC approved, changed from WS09 to CD04</td>
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</table>