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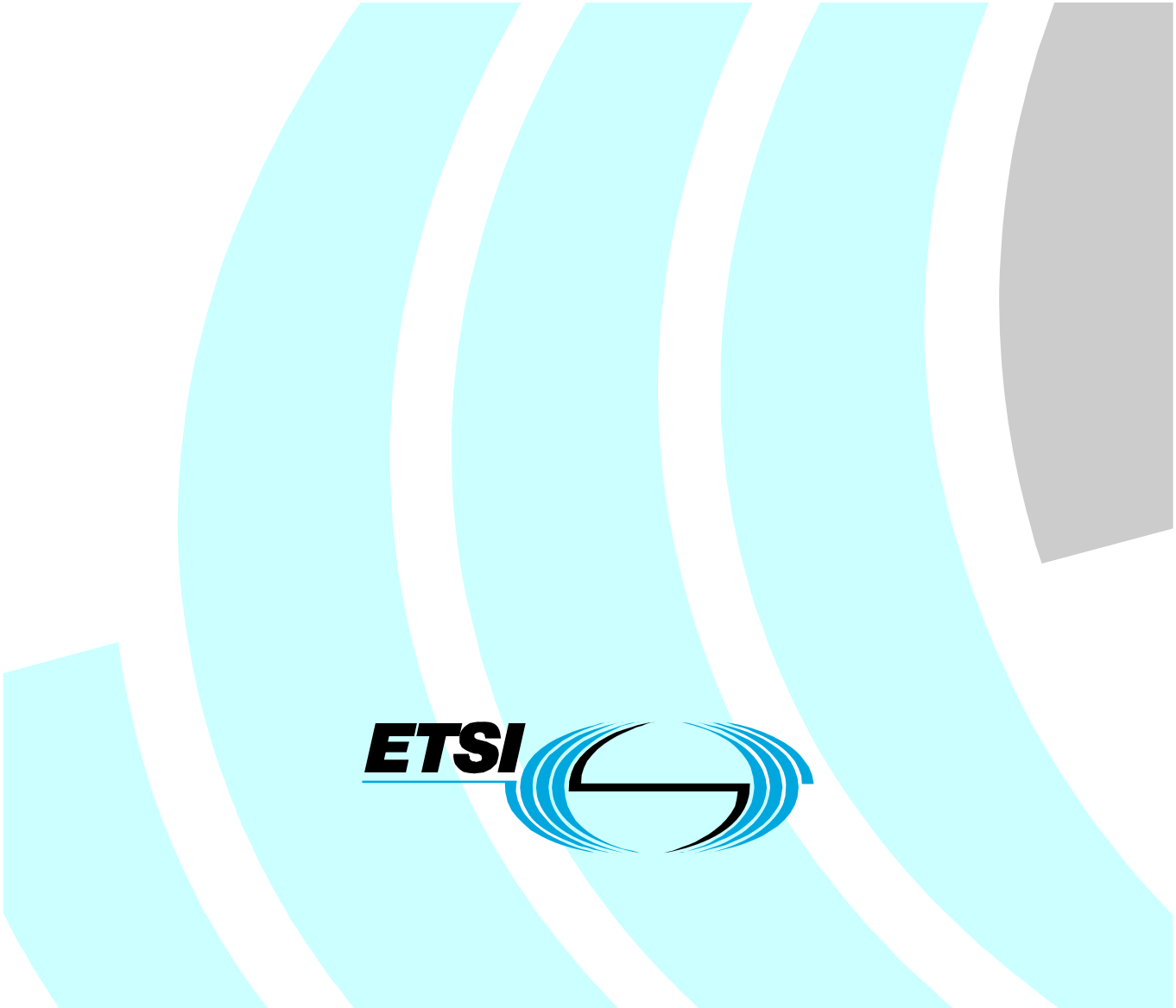
Technical Specification

WS-Session:
Web Services for Application Session Services



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Contents

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Foreword

This Technical Specification (TS) has been produced by ECMA on behalf of its members and those of the European Telecommunications Standards Institute (ETSI).

Introduction

ECMA-354, Application Session Services, specifies XML protocols that can be used to create and manage application sessions that are independent of the transport layer protocols. The present document (WS-Session) specifies Web services for ECMA-354 [1].

The ApplicationSessionTerminated operation of the present document is an outbound asynchronous event notification. For Service Requester to receive the event notification from the Service Provider and from web services (e.g. ECMA-348) that use the present document for session management, it standardized WS-Eventing and WS-BaseNotification as two Options.

1 Scope

The present document specifies Web Services (in WSDL, in clause 5) and a SOAP binding (in clause 6) for the Application Session Services defined in ECMA-354 [1]. The Application Session Services allow Applications to create and maintain a relationship with Servers termed Application Session. The Web services specified herein, allow Service Requesters (Applications in ECMA-354 [1]) and Service Providers (Servers in ECMA-354 [1]) to create and maintain such Application Sessions.

The present document builds upon and imports the XML schema definitions from ECMA-354 [1]. The method of making the WSDL description of the specified services available to Service Provider and Requester is out of the scope of the present document.

The ApplicationSessionTerminated operation of the present document is an outbound asynchronous event notification that Service Requesters receive from the Service Provider. Service Requester may also receive the event notification from web services, e.g. ECMA-348, that use the present document for session management.

Clause 7 specifies the event subscription and notification behaviours supported by the two options defined in annex A and B.

Annex A specifies the event subscription mechanism using WS-Eventing.

Annex B specifies the event subscription mechanism using WS-BaseNotification.

Annex C specifies the asynchronous subscription response Option for the two event subscription mechanisms.

Annex D shows an example WS-Session WSDL binding with SOAP/HTTP.

Annex E lists SOAP XML Templates for ECMA-354 [1] messages.

Annex F lists some SOAP XML Templates for WS-Eventing messages.

Annex G lists some SOAP XML Templates for WS-BaseNotification messages.

Annex H provides a summary of changes.

2 Conformance

The Service Requester and Service Provider conform to the Application and Server conformance specified in ECMA-354 [1], using the WSDL definitions, SOAP bindings, and event subscription and notification specified in clauses 5, 6 and 7 respectively.

The Service Provider implements at least one of the WS-Eventing and WS-BaseNotification event subscription options as specified in annexes A and B.

Service Provider's WSDL for the present document shall include the implemented operations from annex A, annex B and the WSDL specified in clause 5.

The Service Requester shall itself initiate or delegate event subscription as specified in annexes A and B.

The Service Provider supports synchronous responses to Event Subscriptions and may implement the asynchronous response Option specified in annex C.

3 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

For online referenced documents, information sufficient to identify and locate the source shall be provided. Preferably, the primary source of the referenced document should be cited, in order to ensure traceability. Furthermore, the reference should, as far as possible, remain valid for the expected life of the document. The reference shall include the method of access to the referenced document and the full network address, with the same punctuation and use of upper case and lower case letters.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

3.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

Ecma references

[1] ECMA-354: "Application Session Services, June 2004":.http://www.ecma-international.org/publications/standards/Ecma-354.htm.

W3C references

[2] SOAP 1.1: "Simple Object Access Protocol 1.1", W3C Note 08 May 2000.

[3] WSDL 1.1 "Web Service Description Language 1.1", W3C Note 15 March 2001.

[4] XML Schema 1.0: "XML Schema Language Part 1: Structure", W3C Recommendation 28 October 2004.

"XML Schema Language Part 2: Data Types", W3C Recommendation 28 October 2004.

[5] WS-Addressing 1.0: "Web Services Addressing 1.0" - Core W3C Recommendation 9 May 2006.

Web Services Addressing 1.0 - "SOAP Binding" W3C Recommendation 9 May 2006.

Web Services Addressing 1.0 - "Metadata", W3C Recommendation 4 September 2007.

[6] WS-Eventing "Web Services Eventing (WS-Eventing)" W3C Member Submission 15 March 2006.

[7] WS-BaseNotification 1.3: "Web Services Base Notification 1.3" (WS-BaseNotification) OASIS Standard, 1 October 2006.

3.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area**.** For non-specific references, the latest version of the referenced document (including any amendments) applies.

Not applciable.

4 Definitions

Consult ECMA-354 [1] for Application Session Services specific terms.

The present document refers to these Web services terms:

4.1 Service Requester

Web Service equivalent of Application in ECMA-354 [1]

4.2 Service Provider

Web Service equivalent of Server in ECMA-354 [1]

4.3 Namespaces

The present document uses these Ecma prefixes and namespaces:

1) aps (http://www.ecma-international.org/standards/ecma-354/appl_session): The present document imports all XML messages defined in ECMA-354 [1] from the aps namespace.

2) wss (http://www.ecma-international.org/standards/ecma-366/ws-session/ed2): The WSDL target namespace for the present document.

3) gsk (http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink): The target namespace of the wrapped sink WSDL.

The present document refers to these other prefixes and namespaces:

1) wsdl (http://schemas.xmlsoap.org/wsdl): This contains the W3C WSDL 1.1 schema[3].

2) xs (http://www.w3.org/2001/XMLSchema): This contains the W3C XML Schema definition [4].

3) S (http://schemas.xmlsoap.org/wsdl/soap): This contains the W3C SOAP bindings for WSDL 1.1 [3].

4) wsa (http://www.w3.org/2005/08/addressing): The namespace for WS-Addressing 1.0 [5]

5) wse (http://schemas.xmlsoap.org/ws/2004/08/eventing): The target namespace for WS-Eventing Web Service [6]

6) wsnt (http://docs.oasis-open.org/wsn/b-2.xsd): The target namespace for WS-BaseNotfication 1.3 [7]

5 Service Provider WSDL Abstract Definitions

This clause specifies the abstract WSDL definitions to support the services specified in ECMA-354 [1].

```
<definitions
    xmlns="http://schemas.xmlsoap.org/wsdl/"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
    xmlns:wss="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2">
    <types>
        <xs:schema>
            <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/start-application-session.xsd"/>
            <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/stop-application-session.xsd"/>
            <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/reset-application-session-timer.xsd"/>
            <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/application-session-terminated.xsd"/>
        </xs:schema>
    </types>
    <message name="startApplicationSession">
        <part name="parameter" element="aps:StartApplicationSession"/>
    </message>
    <message name="startApplicationSessionPosResponse">
        <part name="parameter" element="aps:StartApplicationSessionPosResponse"/>
    </message>
    <message name="startApplicationSessionNegResponse">
        <part name="parameter" element="aps:StartApplicationSessionNegResponse"/>
    </message>
    <message name="stopApplicationSession">
        <part name="parameter" element="aps:StopApplicationSession"/>
    </message>
    <message name="stopApplicationSessionPosResponse">
        <part name="parameter" element="aps:StopApplicationSessionPosResponse"/>
    </message>
    <message name="stopApplicationSessionNegResponse">
        <part name="parameter" element="aps:StopApplicationSessionNegResponse"/>
    </message>
    <message name="resetApplicationSessionTimer">
        <part name="parameter" element="aps:ResetApplicationSessionTimer"/>
    </message>
    <message name="resetApplicationSessionTimerPosResponse">
        <part name="parameter" element="aps:ResetApplicationSessionTimerPosResponse"/>
    </message>
    <message name="resetApplicationSessionTimerNegResponse">
        <part name="parameter" element="aps:ResetApplicationSessionTimerNegResponse"/>
    </message>
    <message name="applicationSessionTerminated">
        <part name="parameter" element="aps:ApplicationSessionTerminated"/>
    </message>
```

```
    <portType name="ApplicationSessionServicesPortType">
        <operation name="StartApplicationSessionOp">
            <input message="wss:startApplicationSession"/>
            <output message="wss:startApplicationSessionPosResponse"/>
            <fault name="StartFault" message="wss:startApplicationSessionNegResponse"/>
        </operation>
        <operation name="StopApplicationSessionOp">
            <input message="wss:stopApplicationSession"/>
            <output message="wss:stopApplicationSessionPosResponse"/>
            <fault name="StopFault" message="wss:stopApplicationSessionNegResponse"/>
        </operation>
        <operation name="ResetApplicationSessionTimerOp">
            <input message="wss:resetApplicationSessionTimer"/>
            <output message="wss:resetApplicationSessionTimerPosResponse"/>
            <fault name="ResetFault" message="wss:resetApplicationSessionTimerNegResponse"/>
        </operation>
        <operation name="ApplicationSessionTerminatedOp">
            <output message="wss:applicationSessionTerminated"/>
        </operation>
    </portType>
</definitions>
```

6 Service Provider WSDL SOAP Binding

This clause specifies the binding template of the abstract WSDL definitions in clause 5 with SOAP Messages without a specific transport protocol. Any SOAP binding to transport shall contain elements and attributes in this binding template.

```
<definitions
    xmlns="http://schemas.xmlsoap.org/wsdl/"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
    xmlns:wss="http://www.ecma-international.org/standards/ecma-354/ws-session/ed2"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2">
    <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2"
        location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/ws-session-wsdl-abstract-
definitions.wsdl" />
    <binding name="xs:nmtoken" type="wss:ApplicationSessionServicesPortType">
        <soap:binding style="document" transport="xs:anyURI"/>
        <operation name="StartApplicationSessionOp">
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="StartFault">
                <soap:fault name="StartFault" use="literal"/>
                        </fault>
        </operation>
        <operation name="StopApplicationSessionOp">
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="StopFault">
                <soap:fault name="StopFault " use="literal"/>
                        </fault>
        </operation>
        <operation name="ResetApplicationSessionTimerOp">
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="ResetFault">
                <soap:fault name="ResetFault " use="literal"/>
                        </fault>
        </operation>
        <operation name="ApplicationSessionTerminatedOp">
            <output>
                <soap:body use="literal"/>
            </output>
        </operation>
    </binding>
</definitions>
```

ECMA-354 [1] requires Applications to include the aps:sessionID in the service requests that address the established session. To standardize this requirement in Web services that exchange SOAP messages, the placement of aps:sessionID shall follow these rules.

1) The SOAP subscription message for WS-Eventing [6] and WS-BaseNotification [7] subscriptions shall include the aps:sessionID as a SOAP header block annotated with attribute: wsa:IsReferenceParameter="true".

2) Other SOAP messages within a session shall include the aps:sessionID as a header block.

The negative responses from Service Providers shall be bound to the SOAP 1.1 [2] fault properties: faultcode, faultstring and detail, using the following template.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>
        <S:Fault>
            <faultcode>[faultcode]</faultcode>
            <faultstring>[faultstring]</faultstring>
            <detail>[detail]</detail>
        </S:Fault>
    </S:Body>
</S:Envelope>
```

The contents of fault properties are defined by the following table for each type of negative response.

Table 1 — Fault names and properties for WS-Session services

Fault Name	**StartFault**
Faultcode	ECMA-354 [1] defined standard error names: invalidApplicationInfo, requestedProtocolVersionNotSupported, serverResourcesBusy, maxNumberSessions, or application error name.
Faultstring	For ECMA-354 [1] standard errors, it is the Description of corresponding error in table 4-3 of ECMA-354 [1]. Additional text can be provided to elaborate the error message, for example, the maximal session number allowed by the service provider. For application errors, a proper English description shall be provided.
Detail	Element aps:StartApplicationSessionNegResponse.
Fault Name	**StopFault**
Faultcode	ECMA-354 [1] defined standard error names: invalidSessionID, or application error name.
Faultstring	For ECMA-354 [1] standard errors, it is the Description of corresponding error in table 4-6 of ECMA-354 [1]. Additional text can be provided to elaborate the error message, for example, the valid session ID format allowed by the service provider. For application errors, a proper English description shall be provided.
Detail	Element aps:StopApplicationSessionNegResponse.
Fault Name	**ResetFault**
Faultcode	ECMA-354 [1] defined standard error names: invalidSessionID, serverCannotResetSessionDuration, or application error name.
Faultstring	For ECMA-354 [1] standard errors, it is the Description of corresponding error in table 4-9 of ECMA-354 [1]. Additional text can be provided to elaborate the error message, for example, the duration allowed by the service provider. For application errors, a proper English description shall be provided.
Detail	Element aps:ResetApplicationSessionTimerNegResponse.

7 Event Subscription and Notification

The ApplicationSessionTerminated operation is an outbound asynchronous event notification.

The Service Requester shall subscribe to receive the event notification from the Service Provider according to the event subscription mechanism of the Service Provider. It shall provide the event sink URI as defined in annexes A and B, and shall make the said event sink WSDL available to the Service Provider.

The Service Requester shall subscribe to receive the ApplicationSessionTerminated event immediately after the successful completion of the StartApplicationSession operation.

The Service Provider and Requester shall implement WS-Addressing defined by (WS-Addressing 1.0 [5]).

The subscription message shall include the unique aps:sessionID obtained from the StartApplicationSession operation. The aps:sessionID element shall be the first level child element of the subscription endpoint reference parameters **(**WS-Addressing 1.0 [5]) , and the element is bound to the SOAP message as a header block as defined in clause 6.

The Service Requester and Provider shall support the push mode of WS-Eventing [6] or push-style of WS-BaseNotification [7] to deliver the event notification. The Service Provider shall send event notifications to each of the valid event sink endpoints declared in the event subscription message.

The event notification message from the Service Provider shall include the sink endpoint reference parameters, if any, so that the Service Requester can correlate the event notification obtained from the Service Provider using those parameters.

If the application session terminates abnormally, before the ApplicationSessionTerminated event can be subscribed to, the subsequent subscription of ApplicationSessionTerminated event by the Service Requester shall result in a SOAP fault message as defined by the subscription protocol specified in annexes A and B.

When a session terminates, any subscription associated with the session is deemed invalid.

Annex A (normative): Event Subscription Using WS-Eventing Option

The Service Provider shall implement the wse:SubscribeOp operation defined in the EventSource portType of WS-Eventing WSDL and may implement other operations, such as wse:UnsubscribeOp, defined in the SubscriptionManager portType.

The Service Requester shall use wse:SubscribeOp operation to subscribe to the events. The subscription message from the Service Requester shall conform to the requirements of WS-Eventing [6].

To request wrapped event delivery mode, the Service Requester shall use the following URI in its event subscription request according to WS-Eventing [6]:

http://schemas.xmlsoap.org/ws/2004/08/eventing/DeliveryModes/Wrap.

To request unwrapped event delivery mode, the Service Requester shall use the following URI in its event subscription request according to WS-Eventing [6]:

http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink.

If the Service Provider does not support the requested event delivery mode, it shall return the fault message wse:DeliveryModeRequestedUnavailable as specified by WS-Eventing [6].

If the aps:sessionID [sessionID] in the request is invalid, the Service Provider shall return a SOAP 1.1 [2] fault message with these properties:

[faultcode]="wse:EventSourceUnableToProcess"

[faultstring]="The session [sessionID] is invalid"

[detail]=invalidSessionID:[sessionID]

Service Requesters shall implement the event sink WSDL to receive events from the Service Provider. For wrapped event delivery mode, the event sink WSDL for Service Requester is specified in clause A.1. For unwrapped event delivery mode, the event sink WSDL for Service Requester is specified in clause A.2.

A.1 Wrapped Delivery Mode Event Sink WSDL for Service Requester and Its SOAP Binding

Service Requesters shall implement the following event sink interface to support wrapped event delivery mode.

```
<definitions
xmlns="http://schemas.xmlsoap.org/wsdl/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:gsk="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink"
targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink">
        <types>
            <xs:schema targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-
session/ed2/generic_sink">
                <xs:complexType name="EventType" mixed="true">
                    <xs:sequence>
                        <xs:any namespace="##any" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
                    </xs:sequence>
                    <xs:element name="Notify" type="gsk:EventType" />
                </xs:complexType>
            </xs:schema>
    </types>
    <message name="notifyEvent">
        <part name="parameter" element="gsk:Notify"/>
    </message>
    <portType name="GenericSinkPortType">
        <operation name="NotifyEvent">
            <input message="gsk:notifyEvent"/>
        </operation>
    </portType>
</definitions>
```

Any binding of wrapped event sink interface to SOAP shall contain elements and attributes in the following binding template.

```
<definitions
xmlns="http://schemas.xmlsoap.org/wsdl/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:gsk="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink"
targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink">
<import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink"
location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink/generic-sink-
abstract.wsdl" />
    <binding name="xs:nmtoken" type="gsk:GenericSinkPortType">
        <soap:binding style="document" transport="xs:anyURI" />
        <operation name="NotifyEvent">
            <input>
                <soap:body use="literal"/>
            </input>
        </operation>
    </binding>
</definitions>
```

A.2 Unwrapped Delivery Mode Event Sink WSDL Specification and Its SOAP Binding

Service Requesters shall implement the following event sink interface to support unwrapped event delivery mode.

The unwrapped event sink interface contains an operation derived from the Service Provider's WSDL which is a "reversal" of the outbound operation of ApplicationSessionTerminated event operation of the Service Provider. The WSDL for the unwrapped event sink interface is specified as follows.

```
<definitions
    xmlns="http://schemas.xmlsoap.org/wsdl/"      xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
        xmlns:tns="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink">
    <types>
                <xs:schema>
        <xs:import namespace="http://www.ecma-international.org/standards/ecma-354/appl_session"
            schemaLocation="http://www.ecma-international.org/standards/ecma-354/appl_session/application-session-terminated.xsd"/>
                </xs:schema>
    </types>
    <message name="applicationSessionTerminated">
        <part name="parameter" element="aps:ApplicationSessionTerminated"/>
    </message>
    <portType name="ApplicationSessionTerminatedSinkPortType">
        <operation name="ApplicationSessionTerminatedOp">
            <input message="tns:applicationSessionTerminated"/>
        </operation>
    </portType>
</definitions>
```

Any binding of unwrapped event sink interface to SOAP shall contain elements and attributes in the following binding template.

```
<definitions
    xmlns="http://schemas.xmlsoap.org/wsdl/"      xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
    xmlns:tns="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink">
    <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink"
    location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/typed_sink/typed-sink-abstract.wsdl" />
    <binding name="xs:nmtoken" type="tns:ApplicationSessionTerminatedSinkPortType">
        <soap:binding style="document" transport="xs:anyURI"/>
        <soap:operation name="ApplicationSessionTerminatedOp">
            <input>
                <soap:body use="literal"/>
            </input>
        </soap:operation>
    </binding>
</definitions>
```

Annex B (normative): Subscription Using WS-BaseNotification Option

The Service Provider shall implement the wsnt:Subscribe operation defined in the NotificationProducer portType of WS-BaseNotification [7] WSDL and may implement other operations, such as wsnt:Unsubscribe, defined in the SubscriptionManager portType (WS-BaseNotification 1.3 [7]).

The Service Requester shall use wsnt:Subscribe operation to subscribe to the events of Service Provider. The subscription request for wrapped or unwrapped (a.k.a. raw in WS-BaseNotification [7]) event delivery mode shall follow WS-BaseNotification specification [7].

If the Service Provider does not support the requested event delivery mode, it shall return the fault message wsnt:UnsupportedPolicyRequestFault as specified by WS-BaseNotification [7].

If the aps:sessionID (sessionID) in the request is invalid, the Service Provider shall return a SOAP 1.1 [2] fault message with these properties:

[faultcode]="wsrf-rw:ResourceUnknownFault"

[faultstring]="The session [sessionID] is invalid"

[detail]=invalidSessionID:[sessionID]

B.1 Wrapped Delivery Mode Event Sink WSDL for Service Requester and Its SOAP Binding

Service Requesters shall implement WS-BaseNotification [7] wrapped Notification Consumer WSDL and its SOAP binding to specify its wrapped event sink interface.

B.2 Unwrapped Delivery Mode Event Sink WSDL for Service Requester and Its SOAP Binding

Service Requesters shall implement unwrapped event sink WSDL and its SOAP binding specified in clause A.2 to specify its unwrapped event sink interface.

Annex C (normative): Asynchronous Response to Subscription Request Option

The Service Provider and Requester shall follow WS-Addressing (WS-Addressing 1.0 [5]) to annotate and correlate event subscription messages for asynchronous message exchange. The request SOAP message from Service Requester intended for an asynchronous response shall include at least the following WS-Addressing headers: wsa:To, wsa:Action, wsa:MessageID, and wsa:ReplyTo (wsa:FaultTo) whose value is defined by the Service Requester. In particular, the Service Requester shall provide a valid non-anonymous URI in wsa:ReplyTo field in its service request messages.

The asynchronous response or fault SOAP message shall include at least the following WS-Addressing headers: wsa:To, wsa:Action, and wsa:RelatesTo, whose values shall be formulated according to WS-Addressing specification (WS-Addressing 1.0 Core [5]). If the Service Provider only supports synchronous response, it shall return a SOAP fault message with faultcode set to wsa:OnlyAnonymousAddressSupported (WS-Addressing 1.0 SOAP Binding [5]).

An asynchronous event subscription SOAP message template, applicable to both WS-Eventing and WS-BaseNotification, is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Header>
        <wsa:To>xs:anyURI</wsa:To>
        <aps:sessionID wsa:IsReferenceParameter='true'>xs:string</aps:sessionID>
        <wsa:MessageID>[message_id]</wsa:MessageID>
        <wsa:ReplyTo>[reply_address]</wsa:ReplyTo>
            <wsa:Action>xs:anyURI</wsa:Action>

        xs:any*
    </S:Header>
    <S:Body>…</S:Body>
</S:Envelope>
```

The template for the reply message (response or fault) is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Header>
        <wsa:To>[reply_address]</wsa:To>
        <wsa:RelatesTo>[message_id]</wsa:RelatesTo>
            <wsa:Action>xs:anyURI</wsa:Action>

        xs:any*
    </S:Header>
    <S:Body>…</S:Body>
</S:Envelope>
```

Annex D (informative): Service Provider WSDL with SOAP/HTTP Binding

This annex provides a more specific and complete binding of the SOAP binding specified in clause 6 by adding the HTTP transport and Service Element.

```
<definitions xmlns="http://schemas.xmlsoap.org/wsdl/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
    xmlns:wss="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2">
    <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2"
        location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/ws-session-wsdl-abstract-
definitions.wsdl" />
    <binding name="SOAP_HTTP" type="wss:ApplicationSessionServicesPortType">
        <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <operation name="StartApplicationSessionOp">
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="StartFault">
                <soap:fault name="StartFault" use="literal"/>
                        </fault>
        </operation>
        <operation name="StopApplicationSessionOp">
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="StopFault">
                <soap:fault name="StopFault" use="literal"/>
                        </fault>
        </operation>
        <operation name="ResetApplicationSessionTimerOp">
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="ResetFault">
                <soap:fault name="ResetFault" use="literal"/>
                        </fault>
        </operation>
        <operation name="ApplicationSessionTerminatedOp">
            <output>
                <soap:body use="literal"/>
            </output>
        </operation>
    </binding>
    <service name="ApplicationSessionServices">
        <port name="ApplicationSessionServicesSoapHttpPort" binding="wss:SOAP_HTTP">
            <soap:address location="http://www.example.com/ws-session"/>
        </port>
    </service>
</definitions>
```

Annex E (informative): SOAP XML Templates for ECMA-354 Messages

E.1 StartApplicationSession request message template

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>aps:StartApplicationSession</S:Body>
</S:Envelope>
```

E.1.1 StartApplicationSession Positive response message template

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>aps:StartApplicationSessionPosResponse</S:Body>
</S:Envelope>
```

E.1.2 StartApplicationSession negative response message template

An example of negative response due to maximum session limit.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>
        <S:Fault>
            <faultcode>maxNumberSessions</faultcode>
            <faultstring>
                the server cannot create an application session because
                it has reached the maximum number of allowed application sessions
            </faultstring>
            <detail>
                                    <aps:StartApplicationSessionNegResponse>
                                        <aps:errorCode>
                                            <aps:definedError>maxNumberSessions</aps:definedError>
                </aps:errorCode>
                                    </aps:StartApplicationSessionNegResponse>
            </detail>
        </S:Fault>
    </S:Body>
</S:Envelope>
```

E.2 StopApplicationSession request message template

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>aps:StopApplicationSession</S:Body>
</S:Envelope>
```

E.2.1 StopApplicationSession positive response message template

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>aps:StopApplicationSessionPosResponse</S:Body>
</S:Envelope>
```

E.2.2 StopApplicationSession negative response message template

An example negative response due to invalid session reference.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>
        <S:Fault>
            <faultcode>invalidSessionID</faultcode>
            <faultstring>the sessionID is not valid or known by the server</faultstring>
            <detail>
                                    <aps:StopApplicationSessionNegResponse>
                                        <aps:errorCode>
                                            <aps:definedError>invalidSessionID</aps:definedError>
                </aps:errorCode>
                                    </aps:StopApplicationSessionNegResponse>
            </detail>
        </S:Fault>
    </S:Body>
</S:Envelope>
```

E.3 ResetApplicationSessionTimer request message template

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>aps:ResetApplicationSessionTimer</S:Body>
</S:Envelope>
```

E.3.1 ResetApplicationSessionTimer positive response message template

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>aps:ResetApplicationSessionTimerPosResponse</S:Body>
</S:Envelope>
```

E.3.2 Reset Application Session Timer negative response message template

An example negative response due to invalid session reference.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Body>
        <S:Fault>
            <faultcode>invalidSessionID</faultcode>
            <faultstring>the sessionID is not valid or known by the server</faultstring>
            <detail>
                                    <aps:ResetApplicationSessionTimerNegResponse>
                                        <aps:errorCode>
                                            <aps:definedError>invalidSessionID</aps:definedError>
                </aps:errorCode>
                                    </aps:ResetApplicationSessionTimerNegResponse>
            </detail>
        </S:Fault>
    </S:Body>
</S:Envelope>
```

E.4 ApplicationSessionTerminated

E.4.1 Template of ApplicationSessionTerminated event notification for unwrapped event sink which applies to both WS-Eventing and WS-BaseNotification options

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Header>
        <wsa:Action>http://www.ecma-international.org/standards/ecma-366/ws-
session/ed2/typed_sink/ApplicationSessionSinkPortType/ApplicationSessionTerminated</wsa:Action>
                    xs:any*
    </S:Header>
    <S:Body>aps:ApplicationSessionTerminated</S:Body>
</S:Envelope>
```

E.4.2 Template of ApplicationSessionTerminated event notification to wrapped event sink of WS-Eventing

```
<S:Envelope
xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:wsa="http://www.w3.org/2005/08/addressing"
xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session"
xmlns:gsk="http://www.ecma-international.org/standards/ecma-366/ws-session/ed2/generic_sink">
    <S:Header>
        <wsa:Action>http://www.ecma-international.org/standards/ecma-366/ws-
session/ed2/generic_sink/GenericSinkPortType/NotifyEvent</wsa:Action>
                    xs:any*
    </S:Header>
    <S:Body>
                <gsk:Notify>
                    aps:ApplicationSessionTerminated
                </gsk:Notify>
          </S:Body>
</S:Envelope>
```

E.4.3 Template of ApplicationSessionTerminated event notification to wrapped event sink of WS-BaseNotification

```
<S:Envelope
xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:wsa="http://www.w3.org/2005/08/addressing"
xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2"
xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Header>
        <wsa:Action>http://docs.oasis-open.org/wsn/bw-2/NotificationConsumer/Notify</wsa:Action>
                xs:any*
    </S:Header>
    <S:Body>
            <wsnt:Notify>
                <wsnt:NotificationMessage>
                    <wsnt:Message>
                       aps:ApplicationSessionTerminated
                    </wsnt:Message>
                </wsnt:NotificationMessage>
            </wsnt:Notify>
        </S:Body>
</S:Envelope>
```

Annex F (informative): WS-Eventing SOAP XML Message Templates

F.1 ApplicationSessionTerminated Event Subscription SOAP message template

The subscription to the ApplicationSessionTerminated event is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session" >
    <S:Header>
        <wsa:To>xs:anyURI</wsa:To>
        <aps:sessionID wsa:IsReferenceParameter='true'>xs:string</aps:sessionID>
        <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/Subscribe</wsa:Action>
        xs:any*
    </S:Header>
    <S:Body>
        <wse:Subscribe>
            <wse:Delivery Mode="xs:anyURI" >
                <wse:NotifyTo>
                    <wsa:Address>xs:anyURI</wsa:Address>
                    <wsa:EndpointReferenceParameters>…
                    </wsa:EndpointReferenceParameters>
                </wse:NotifyTo>
            </wse:Delivery>
        </wse:Subscribe>
    </S:Body>
</S:Envelope>
```

F.2 Template of positive response to the event subscription

The positive response to the ApplicationSessionTerminated event subscription is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
    <S:Header>
            <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/SubscribeResponse</wsa:Action> xs:any*
    </S:Header>
    <S:Body>
        <wse:SubscribeResponse>
            <wse:SubscriptionManager>
                wsa:EndpointReferenceType
            </wse:SubscriptionManager>
        </wse:SubscribeResponse>
    </S:Body>
</S:Envelope>
```

F.3 Template of negative response (fault) to event subscription

The negative response to the ApplicationSessionTerminated event subscription is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing">
    <S:Header>
        <wsa:Action>http://www.w3.org/2005/08/addressing/fault</wsa:Action>
        xs:any*
    </S:Header>
    <S:Body >
        <S:Fault>
            <faultcode>wse:EventSouceUnableToProcess</faultcode>
            <faultstring>The session [sessionID] is invalid</faultstring>
            <detail>invalidSessionID:[sessionID]</detail>
        </S:Fault>
    </S:Body>
</S:Envelope>
```

F.4 Template of Unsubscribe message

The request to unsubscribe an existing subscription is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Header>
        <wsa:To>xs:anyURI</wsa:To>
        <wse:Identifier>xs:anyURI</wse:Identifier>
                <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/Unsubscribe</wsa:Action>
                xs:any*
    </S:Header>
    <S:Body>
        <wse:Unsubscribe />
    </S:Body>
</S:Envelope>
```

F.5 Template of positive response to Unsubscribe message

The positive response to unsubscribing an existing subscription is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wse="http://schemas.xmlsoap.org/ws/2004/08/eventing"     >
    <S:Header>
            <wsa:Action>http://schemas.xmlsoap.org/ws/2004/08/eventing/UnsubscribeResponse</wsa:Action>
            xs:any*
    </S:Header>
    <S:Body></S:Body>
</S:Envelope>
```

Annex G (informative): WS-BaseNotification SOAP XML Message Templates

G.1 ApplicationSessionTerminated Event Subscription SOAP message template

The subscription to the ApplicationSessionTerminated event is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session" >
    <S:Header>
        <wsa:To>xs:anyURI</wsa:To>
        <aps:sessionID wsa:IsReferenceParameter='true'>xs:string</aps:sessionID>
            <wsa:Action>http://docs.oasis-open.org/wsn/bw-2/NotificationProducer/SubscribeRequest</wsa:Action>

        xs:any*
    </S:Header>
    <S:Body>
        <wsnt:Subscribe>
                <wsnt:ConsumerReference>

                <wsa:Address>xs:anyURI</wsa:Address>
                <wsa:EndpointReferenceParameters>…
                </wsa:EndpointReferenceParameters>
                </wsnt:ConsumerReference>

            <wsnt:SubscriptionPolicy><wsnt:UseRaw />  </wsnt:SubscriptionPolicy> ?
        </wsnt:Subscribe>
    </S:Body>
```

G.2 Template of positive response to the event subscription

The positive response to the ApplicationSessionTerminated event subscription is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2" >
    <S:Header>
            <wsa:Action>http://docs.oasis-open.org/wsn/bw-2/NotificationProducer/SubscribeResponse</wsa:Action>
        xs:any*
    </S:Header>
    <S:Body>
        <wsnt:SubscribeResponse>
                <wsnt:SubscriptionReference>
                wsa:EndpointReferenceType
                </wsnt:SubscriptionReference>
        </wsnt:SubscribeResponse>
    </S:Body>
</S:Envelope>
```

G.3 Template of negative response to the event subscription

The negative response to the ApplicationSessionTerminated event subscription is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2"
    xmlns:wsrf-rw="http://docs.oasis-open.org/wsrf/rw-2">
    <S:Header>
            <wsa:Action>http://docs.oasis-open.org/wsn/fault</wsa:Action>

        xs:any*
    </S:Header>
    <S:Body>
        <S:Fault>
            <faultcode>wsrf-rw:ResourceUnknownFault</faultcode>
            <faultstring>The session [sessionID] is invalid</faultstring>
            <detail>invalidSessionID:[sessionID]</detail>
        </S:Fault>
    </S:Body>
</S:Envelope>
```

G.4 Template of Unsubscribe message

The request to unsubscribe an existing subscription is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2">
    <S:Header>
        <wsa:To>xs:anyURI</wsa:To>
            <wsa:Action>http://docs.oasis-open.org/wsn/bw-
      2/SubscriptionManager/UnsubscribeRequest</wsa:Action>

        xs:any*
    </S:Header>
    <S:Body>
        <wsnt:Unsubscribe />
    </S:Body>
</S:Envelope>
```

G.5 Template of positive response to Unsubscribe message

The positive response to unsubscribing an existing subscription is shown below.

```
<S:Envelope
    xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:wsa="http://www.w3.org/2005/08/addressing"
    xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2">
    <S:Header>
            <wsa:Action>http://docs.oasis-open.org/wsn/bw-
      2/SubscriptionManager/UnsubscribeResponse</wsa:Action>

        xs:any*
    </S:Header>
    <S:Body>
        <wsnt:UnsubscribeResponse />
    </S:Body>
</S:Envelope>
```

Annex H (informative): Summary of Changes

Standardized WS-Eventing and WS-BaseNotification as two Options for subscribing to the ApplicationSessionTerminated event.

Added an Option for asynchronous response to subscription request.

Removed original option "typed+generic". The term "wrapped" and "unwrapped" are used in place of "generic" and "typed".

Added the XML templates for event subscription request, response and notification using WS-BaseNotification Option.

Updated the XML templates for event subscription request, response and notification using WS-Eventing Option.

Changed WS-Session WSDL operations from tns:xxx to xxxOp.

Added SOAP fault definitions for WS-Session fault messages.

Modified WS-Session target namespace to include edition number (ed2).

Rename namespace prefix for WS-Session to wss.

Added namespaces for sink interface and wrapped sink services.

Clarified aps:sessionID usage for Service Requester and Provider.

History

Document history		
V1.1.1	August 2005	Publication
V1.2.1	November 2008	Publication