ecma

INTERNATIONAL

Standard ECMA-366

3rd Edition / December 2011

WS-Session - Web Services for Application Session Services

Contents Page

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. This Standard (WS-Session) specifies Web services for ECMA-354.

For Service Requester to receive the event notification from the Service Provider and from web services (e.g. ECMA-348) that use this Standard for session management, this Standard introduces WS-Eventing as the mandatory mechanism and WS-BaseNotification as an Option to manage the event channel. This standard uses the approach in A.2 of WS-Eventing to specify the ApplicationSessionTerminated as an operation in the Notification WSDL.

Since WS-Eventing has advanced to a W3C Proposed Recommendation at W3C, the 3rd edition of this Standard incorporates and complies with the latest edition of WS-Eventing.

For interoperability between web services, this Standard follows the WS-I Profiles adopted by WS-Eventing. In particular, this Standard disallows the WSDL 1.1 Notification and Solicit-response operations.

This Ecma Standard has been adopted by the General Assembly of December 2011.

WS-Session - Web Services for Application Session

1 Scope

This Standard specifies Web Services (in WSDL, in Clause 5) and SOAP bindings (in Clause 6) for the Application Session Services defined in ECMA-354. 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) and Service Providers (Servers in ECMA-354) to create and maintain such Application Sessions.

This Standard builds upon and imports the XML schema definitions from ECMA-354. The method of making the WSDL description of the specified services available to Service Provider and Requester is out of the scope of this Standard.

The Notification WSDL specifies the ApplicationSessionTerminated operation. The operation specifies one input message for the event notification that Service Requesters receive from the Service Provider. Service Requesters may also receive the event notifications from web services, e.g. ECMA-348, that use this Standard for session management.

Clause 7 specifies the event subscription and notification model and concepts.

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

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

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 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, using the WSDL definitions, SOAP bindings, and event subscription and notification specified in Clause 5, 6 and 7 respectively.

The Service Provider implements and publishes the operations in the Provider WSDL in 5.1 and the Notification WSDL in 5.2. The Service Provider implements and publishes the required operations from Annex A and it may additionally implement and publish operations from Annex B.

The Service Requester implements the operation in the Notification WSDL in 5.2.

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

3 Normative references

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

Ecma references

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

W3C references

SOAP 1.1   Simple Object Access Protocol 1.1, W3C Note 08 May 2000

WSDL 1.1   Web Service Description Language 1.1, W3C Note 15 March 2001

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

WS-Addressing 1.0   Web Services Addressing 1.0 – Core W3C Recommendation (ISO/IEC 40240:2011)

Web Services Addressing 1.0 - SOAP Binding W3C Recommendation (ISO/IEC 40250:2011)

Web Services Addressing 1.0 – Metadata, W3C (ISO/IEC 40260:2011)

Web Services Eventing (WS-Eventing), W3C Recommendation 13 December 2011, http://www.w3.org/TR/ws-eventing/

OASIS references

WS-BaseNotification 1.3 Web Services Base Notification 1.3 (WS-BaseNotification) OASIS Standard, 1 October 2006

4 Terms and definitions

Consult ECMA-354 for Application Session Services specific terms.

This Standard refers to these Web services terms:

4.1
Service Requester
Web Service equivalent of Application in ECMA-354

4.2
Service Provider
Web Service equivalent of Server in ECMA-354

4.3
Namespaces
This Standard uses these Ecma prefixes and namespaces:

1. aps (http://www.ecma-international.org/standards/ecma-354/appl_session): This Standard imports all XML messages defined in ECMA-354 from the aps namespace.

2. wss (http://www.ecma-international.org/standards/ecma-366/ws-session/ed3): The WSDL target namespace for this Standard.

This Standard refers to these other prefixes and namespaces:

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

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

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

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

5. wse (http://www.w3.org/2011/03/ws-evt): The target namespace for WS-Eventing.

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

5   Abstract WSDL Definitions

This Clause specifies the abstract WSDL definitions to support the services specified in ECMA-354. There are two abstract WSDL definitions and both of them are specified by the Service Provider: 1) "Provider WSDL" that specifies the interface the Service Provider shall implement; 2) "Notification WSDL" that specifies the interface the Service Requester shall implement in order to receive the event in a particular format using Annex A and the Option in Annex B.

5.1 Provider WSDL

```
<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/ed3"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3">

    <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:schema>
    </types>
```

```xml
    <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>

        <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>
        </portType>
</definitions>
```

5.2 Notification WSDL

```
<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/ed3"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3">
    <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="ApplicationSessionSinkPortType">
        <operation name="ApplicationSessionTerminatedOp">
            <input message="wss:applicationSessionTerminated"/>
        </operation>
    </portType>
</definitions>
```

6   SOAP Binding

This Clause specifies the binding templates 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.

6.1 SOAP Binding for Provider WSDL

```
<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/ed3"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3">
    <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3"
        location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3/abstract-provider.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>
    </binding>
</definitions>
```

6.2 SOAP Binding for Notification WSDL

```
<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/ed3"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3">
    <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3"
        location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3/abstract-
notification.wsdl" />
    <binding name="xs:nmtoken" type="wss:ApplicationSessionSinkPortType">
        <soap:binding style="document" transport="xs:anyURI"/>
        <operation name="ApplicationSessionTerminatedOp">
            <input><soap:body use="literal"/></input>
        </operation>
    </binding>
</definitions>
```

6.3 SOAP Binding of sessionID

The aps:sessionID element shall be included as a direct child element of the SOAP header for each application SOAP message, such as event notification message, exchanged over the application session. The recipient (Service Provider or Requester) of the application message shall verify that the sessionID is valid; otherwise it shall ignore the message or send a fault.

6.4 SOAP Fault Messages

The negative responses from Service Providers shall be bound to the SOAP 1.1 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 defined standard error names: invalidApplicationInfo, requestedProtocolVersionNotSupported, serverResourcesBusy, maxNumberSessions, or application error name.
faultstring	For ECMA-354 standard errors, it is the Description of corresponding error in Table 4-3 of ECMA-354. Additonal 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 defined standard error names: invalidSessionID, or application error name.
faultstring	For ECMA-354 standard errors, it is the Description of corresponding error in Table 4-6 of ECMA-354. Additonal 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 defined standard error names: invalidSessionID, serverCannotResetSessionDuration, or application error name.
faultstring	For ECMA-354 standard errors, it is the Description of corresponding error in Table 4-9 of ECMA-354. Additonal 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

A Service Provider's endpoint of the session is an event source that generates the ApplicationSessionTerminated event notification. That session may also contain other event sources, e.g. CSTA monitors, which generate event notifications within the session.

The Service Requester shall subscribe to a particular session in a Service Provider to receive event notifications from the session and its contained event sources. The Service Requester shall use the event subscription mechanism of the Service Provider as defined in Annex A and may optionally use the mechanism specified in Annex B if the Service Provider supports it.

The Service Requester shall subscribe to a session immediately after receiving the positive response of the StartApplicationSession operation.

To associate an event sink endpoint with a session, the event subscription message shall include the unique aps:sessionID obtained from the StartApplicationSession operation (see Clause 6).

The Service Provider shall only send notifications for events from a session and its contained event sources to each of the valid event sink endpoints associated with that session.

Any subscription to an invalid session shall result in a SOAP fault message as defined in Annex A and B.

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

Annex A
(normative)

Event Subscription Using WS-Eventing

A.1 General

The Service Requester and Provider shall conform to WS-Eventing and support the wse:NotifyTo element of WS-Eventing.

For wrapped format event delivery, the Service Provider shall implement the SOAP 1.1 binding to the WSDL for Standard Wrapped Delivery specified in Annex D of WS-Eventing. For unwrapped format event delivery, the Service Provider shall implement the SOAP 1.1 binding to the Notification WSDL specified in Clause 5 of this Standard according to section A.2 of WS-Eventing.

The Service Requester shall subscribe to a session (see Clause 7) for either wrapped or unwrapped event delivery format and implement the WSDL and SOAP binding 1.1 required by the Service Provider for the selected format.

All notifications from event sources within a session shall include sessionID as specified in Clause 6.

A.2 Subscription Fault

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

- [faultcode]="UnknownEventSource"

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

- [detail]=invalidSessionID:[sessionID]

Annex B
(normative)

Subscription Using WS-BaseNotification Option

B.1 General

The Service Requester and Provider shall conform to WS-BaseNotification. They shall support the push-style of WS-BaseNotification to deliver the event notifications. The Service Provider shall implement the wsnt:Subscribe operation defined in the NotificationProducer portType of WS-BaseNotification WSDL and may implement other operations, such as wsnt:Unsubscribe, defined in the SubscriptionManager portType [WS-BaseNotification 1.3].

For Wrapped Delivery mode, the Service Requesters shall implement SOAP 1.1 binding to the Notification Consumer Interface specified in Section 3 and Appedix C of WS-BaseNotification. For unwrapped mode (a.k.a. raw in WS-BaseNotification), the Service Provider shall implement the SOAP 1.1 binding to the Notification WSDL specified in Clause 5 of this Standard according to Section 3 of WS-BaseNotification.

The Service Requester shall subscribe to a session (see Clause 7) for either wrapped or unwrapped event notification form and implement the WSDL and SOAP 1.1 binding required by the Service Provider for the selected format.

All notifications from event sources within a session shall include sessionID as specified in Clause 6.

B.2 Subscription Fault

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

- [faultcode]="wsrf-rw:ResourceUnknownFault"

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

- [detail]=invalidSessionID:[sessionID]

Annex C
(normative)

Asynchronous Response to Subscription Request Option

The Service Provider and Requester shall follow WS-Addressing [WS-Addressing 1.0] to annotate and correlate event subscription messages for asynchronous message exchange. 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].

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>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)

Example WS-Session WSDL binding with SOAP/HTTP

D.1 Service Provider WSDL with SOAP/HTTP Binding

This Annex provides a more specific and complete binding of the SOAP binding specified in 6.1 by adding the HTTP transport and Service Element.

```xml
<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/ed3"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3">
    <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3"
        location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3/abstract-provider.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>
    </binding>
    <service name="ApplicationSessionServices">
        <port name="ApplicationSessionServicesSoapHttpPort" binding="wss:SOAP_HTTP">
            <soap:address location="http://www.example.com/ws-session"/>
        </port>
    </service>
</definitions>
```

D.2 Notification WSDL with SOAP/HTTP Binding

This Annex provides a more specific and complete binding of the SOAP binding specified in 6.2 by adding the HTTP transport.

```xml
<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/ed3"
    targetNamespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3">
    <import namespace="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3"
        location="http://www.ecma-international.org/standards/ecma-366/ws-session/ed3/abstract-
notification.wsdl" />
    <binding name="SOAP_HTTP" type="wss:ApplicationSessionSinkPortType">
        <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <operation name="ApplicationSessionTerminatedOp">
            <input><soap:body use="literal"/></input>
        </operation>
    </binding>
</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/ed3/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:wse="http://www.w3.org/2011/03/ws-evt">

    <S:Header>
        <wsa:Action>http://www.w3.org/2011/03/ws-evt/WrappedSinkPortType/NotifyEvent</wsa:Action>
            xs:any*
    </S:Header>
    <S:Body>
            <wse:Notify actionURI="http://www.ecma-international.org/standards/ecma-366/ws-
session/ed3/ApplicationSessionSinkPortType/ApplicationSessionTerminated">
            aps:ApplicationSessionTerminated
        </wse: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://www.w3.org/2011/03/ws-evt"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session" >
    <S:Header>
        <wsa:To>xs:anyURI</wsa:To>
        <aps:sessionID>xs:string</aps:sessionID>
            <wsa:Action>http://www.w3.org/2011/03/ws-evt/Subscribe</wsa:Action>
        xs:any*
        </S:Header>
    <S:Body>
        <wse:Subscribe>
            <wse:Delivery>
                <wse:NotifyTo>
                    <wsa:Address>xs:anyURI</wsa:Address>
                    <wsa:EndpointReferenceParameters>…
                    </wsa:EndpointReferenceParameters>
                </wse:NotifyTo>
                <wse:Format name="xs:anyURI" />
            </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://www.w3.org/2011/03/ws-evt">
    <S:Header>
            <wsa:Action>http://www.w3.org/2011/03/ws-evt/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://www.w3.org/2011/03/ws-evt">
    <S:Header>
        <wsa:Action>http://www.w3.org/2011/03/ws-evt/fault</wsa:Action>
        xs:any*
    </S:Header>
    <S:Body >
        <S:Fault>
            <faultcode>UnknownEventSource</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://www.w3.org/2011/03/ws-evt"
    xmlns:aps="http://www.ecma-international.org/standards/ecma-354/appl_session">
    <S:Header>
        <wsa:To>xs:anyURI</wsa:To>
                <wsa:Action>http://www.w3.org/2011/03/ws-evt/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://www.w3.org/2011/03/ws-evt">
    <S:Header>
            <wsa:Action>http://www.w3.org/2011/03/ws-evt/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>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>
</S:Envelope>
```

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

1. Modified the Conformance (Clause 2) to mandate WS-Eventing and keep WS-BaseNotification as an option.

2. In Clause 5, WS-Session WSDL was split into two separate WSDLs, Provider WSDL and Notification WSDL. The outbound operation of ApplicationSessionTerminated of the Service Provider is represented by an inbound operation in the Notification WSDL of the Service Requester.

3. In Clause 6, modified aps:sessionID element to be a SOAP header element unrelated to WS-Addressing Endpoint Reference.

4. In Clause 7, simplified and clarified the event subscription and delivery behaviors.

5. In Appendix A, updated references to WS-Eventing to the latest W3C version.

6. In Appendix B, simplified the requirements for WS-BaseNotification following Appendix A.