

WSDL for SPMLv2

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1. Introduction

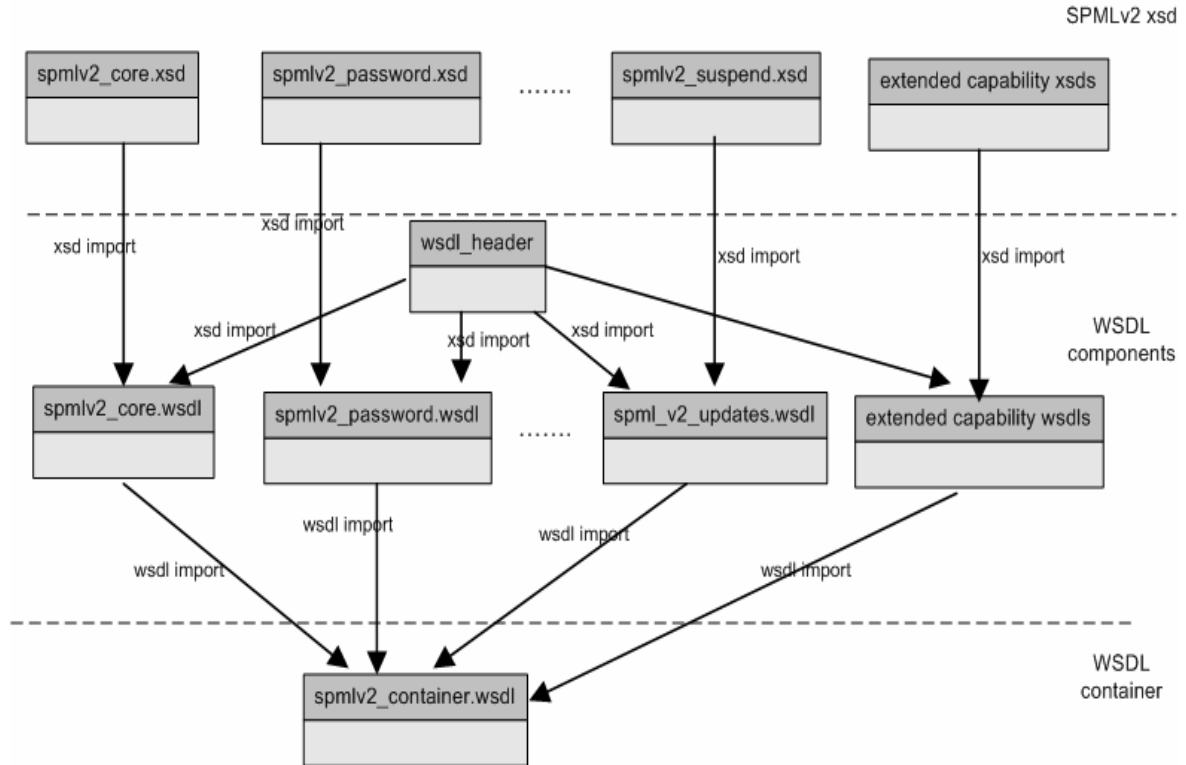
SPMLv20 provides a specification that defines concept and operations of version 2 of service provisioning markup language. SPML is an XML-based provisioning operation protocol, and defines request-and-response message structure in a set of xsd schema files. It provides a core operation xsd schema to define a set of core operation messages. It also provides a set of capability xsd schemas, each of which defines optional operations. Provisioning service providers must support all the operations in the core xsd schema and may support part of operations defined in optional capability xsd schemas.

SPML service providers typically host SPML service requests through Web service SOAP protocol, and use WSDL to describe the supported SPML operations. The service clients can use the published WSDL along with ListTarget operation to introspect meta data for the supported service operations to construct and send request messages. The SPMLv2 specification does not include WSDL interface. In SPMLv1, a SPML/WSDL white paper document was published to demonstrate how to map operations in SPML schema to WSDL interface.

This document provides a container based SPMLv2/WSDL component model and a set of SPMLv2/WSDL components that can be possibly standardized in the SPML space.

2. SPML/WSDL component model

The model is shown in the following WSDL model diagram.



This model consists of a set of document style WSDL files. Each WSDL file in the model exposes operations defined in a corresponding SPML 2.0 capability xsd schema. For example, SPMLv2_core.wSDL exposes operations defined in spmlv2_core.xsd and so on. As a result, the model provides nine capability WSDL files and a container WSDL file.

WSDL	XSD	Capability	Required
spmlv2_core.wSDL	spmlv2_core.xsd	Core operations	Yes
spmlv2_password.wSDL	spmlv2_password.xsd	Password capability	No
spmlv2_suspend.wSDL	spmlv2_suspend.xsd	Suspend capability	No
spmlv2_async.wSDL	spmlv2_async.xsd	Asynchronous capability	No
spmlv2_batch.wSDL	spmlv2_batch.xsd	Batch capability	No
spmlv2_bulk.wSDL	spmlv2_bulk.xsd	Bulk capability	No
spmlv2_search.wSDL	spmlv2_search.xsd	Search capability	No
spmlv2_reference.wSDL	spmlv2_reference.xsd	Reference capability	No
spmlv2_updates.wSDL	spmlv2_updates.xsd	Updates capability	No

2.1 WSDL components

WSDL components consist of a core operation WSDL and a set of capability WSDLs. Each WSDL is mapped from corresponding SPML core schema. Each WSDL operation is mapped

from a SPML operation defined in the imported xsd schema. The WSDL operation messages directly reference the request and response types defined in the imported xsd schema.

2.2 Header

In addition to WSDL files, the model also provides a header schema that is imported into core and capability WSDL files. The model leaves the header an open content by including `<any>` as the root of the header since service providers most likely want to define their own meta information in the header,

2.3 Container WSDL

The container WSDL (`spmlv2container.wsdl`) in the model is an entry WSDL. It contains all the published WSDLs through import mechanism. All the supported operations defined in core operations and individual capability WSDL files are exposed through the container WSDL. A service requestor uses the URL pointing to container WSDL to download the WSDL to introspect all the supported SPML operations. The container WSDL must import core operation WSDL (`spmlv2_core.wsdl`), and it may import other optional capability WSDL files. The container WSDL also defines a set of service ports. Each port is bound to a port type defined in the imported WSDL.

If a WSDL is contained by the container, all the operations defined in the WSDL are thus exposed to service requestors. To expose parts of operations in a WSDL, service providers need to create a separate WSDL file containing the partially published operations and import this WSDL to the container.

3. SPML/WSDL Example

The following is an example of how to expose SPML operations through WSDL. In this example, we want to publish operations in Password capability in addition to the required core operations. To expose these operations, a container WSDL is used and it imports core and password WSDL documents as shown below. It also defines core and password service ports to bind to the porttype operations defined in core and password WSDL documents respectively.

```

<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:wscs="urn:names:spml20:ws:core"
  xmlns:wspw="urn:names:spml20:ws:password"
  xmlns:wsh="urn:names:spml:ws:header"
  targetNamespace="urn:names:spml20:ws:container">
  <wsdl:import namespace="urn:names:spml20:ws:core"
    location="@wsdlLocation@/spml20Core.wsdl"></wsdl:import>
  <wsdl:import namespace="urn:names:spml20:ws:password"
    location="@wsdlLocation@/spml20Password.wsdl"></wsdl:import>
  <wsdl:service name="SPMLService">
    <wsdl:port name="SPMLCoreServiceProviderSoap" binding="wscs:SPMLCoreSoapBinding">
      <soap:address location="http://....."></soap:address>
    </wsdl:port>
    <wsdl:port name="SPMLPasswordServiceProviderSoap" binding="wspw:SPMLPasswordSoapBinding">
      <soap:address location="http://....."></soap:address>
    </wsdl:port>
  </wsdl:service>
</wsdl:definitions>

```

4. WSDL for SPMLv2 Standardization considerations

All the WSDL documents listed in SPML/WSDL model except the container WSDL may be published as non-normative standard. The container WSDL file with spmlv2_core.wsdl import tag can be published as a template as part of standard. Service providers can add additional WSDL import tags to the container WSDL.

5. SOAP/HTTP Binding

The provided WSDLs are based on SOAP HTTP binding. This binding is limited to SOAP/HTTP and SOAP/HTTPS.

6. Security

Message authentication, integrity and confidentiality should be accomplished through other standard or provided by service provider. The possible methods of security enforcements are

1. HTTP over SSL 3.0 or TLS 1.0
2. WS-Security implementation in service header.

7. Error Reporting

In the SPML/WSDL model, SOAP fault message enclosed by <wsdl:fault> must be returned to the requestor in the case of an SPML processing error.

8. Namespaces

This document uses the namespaces shown in the following table

Prefix	Namespace	Document type
wsc	urn:names:spml20:ws:core	WSDL for SPML core
wspw	urn:names:spml20:ws:password	WSDL for SPML password capability
wsh	urn:names:spml:ws:header	WSDL header
spml	urn:oasis:names:tc:SPML:2:0	SPML v2
XS	http://www.w3.org/2001/XMLSchema	XSD
soap	http://schemas.xmlsoap.org/wsdl/soap/	SOAP
wsdl	http://schemas.xmlsoap.org/wsdl	WSDL v1

Appendix

Container WSDL

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:wsc="urn:names:spml20:ws:core" xmlns:wspw="urn:names:spml20:ws:password"
  xmlns:spml="urn:oasis:names:tc:SPML:2:0" targetNamespace="urn:names:spml20:ws:container">
  <wsdl:import namespace="urn:names:spml20:ws:core"
    location="@wsdlLocation@/spml20Core.wsdl"></wsdl:import>
  <wsdl:import namespace="urn:names:spml20:ws:password"
    location="@wsdlLocation@/spml20Password.wsdl"></wsdl:import>
  <wsdl:service name="SPMLService">
    <wsdl:port name="SPMLCoreServiceProviderSoap" binding="wsc:SPMLCoreSoapBinding">
      <soap:address location="http://....."></soap:address>
    </wsdl:port>
    <wsdl:port name="SPMLPasswordServiceProviderSoap" binding="wspw:SPMLPasswordSoapBinding">
      <soap:address location="http://....."></soap:address>
    </wsdl:port>
  </wsdl:service>
</wsdl:definitions>
```

Core WSDL

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:soap-env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:wsc="urn:names:spml20:ws:core" xmlns:spml="urn:oasis:names:tc:SPML:2:0"
  xmlns:wsh="urn:names:spml:ws:header" targetNamespace="urn:names:spml20:ws:core">
  <wsdl:types>
    <xs:schema
      <xs:import namespace="urn:oasis:names:tc:SPML:2:0" schemaLocation="@schemaLocation@\spmlv2.xsd"/>
      <xs:import namespace="urn:names:spml:ws:header"
        schemaLocation="@schemaLocation@\spmlHeader.xsd"/>
    </xs:schema>
  </wsdl:types>
  <wsdl:message name="SPMLAddRequestMessage">
    <wsdl:part name="body" element="spml:addRequest"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLAddResponseMessage">
    <wsdl:part name="body" element="spml:addResponse"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLModifyRequestMessage">
    <wsdl:part name="body" element="spml:modifyRequest"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLModifyResponseMessage">
    <wsdl:part name="body" element="spml:modifyResponse"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLDeleteRequestMessage">
    <wsdl:part name="body" element="spml:deleteRequest"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLDeleteResponseMessage">
    <wsdl:part name="body" element="spml:deleteResponse"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLLookupRequestMessage">
    <wsdl:part name="body" element="spml:lookupRequest"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLLookupResponseMessage">
    <wsdl:part name="body" element="spml:lookupResponse"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLListTargetsRequestMessage">
    <wsdl:part name="body" element="spml:listTargetsRequest"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLListTargetsResponseMessage">
    <wsdl:part name="body" element="spml:listTargetsResponse"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="ServiceHeader">
    <wsdl:part name="ServiceHeader" element="wsh:ServiceHeader"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLFault">
    <wsdl:part name="SPMLFault" element="soap-env:Fault"></wsdl:part>
  </wsdl:message>

  <wsdl:portType name="SPMLCoreRequestPortType">
    <wsdl:operation name="SPMLAddRequest">
      <wsdl:input name="SPMLAddRequestInput"
        message="wsc:SPMLAddRequestMessage"></wsdl:input>
      <wsdl:output name="SPMLAddRequestOutput"
        message="wsc:SPMLAddResponseMessage"></wsdl:output>
      <wsdl:fault name="Fault" message="wsc:SPMLFault"></wsdl:fault>
    </wsdl:operation>
  </wsdl:portType>
</wsdl:definitions>
```



```

</wsdl:operation>
<wsdl:operation name="SPMLModifyRequest">
  <wsdl:input name="SPMLModifyRequestInput"
    message="wsc:SPMLModifyRequestMessage"></wsdl:input>
  <wsdl:output name="SPMLModifyRequestOutput"
    message="wsc:SPMLModifyResponseMessage"></wsdl:output>
  <wsdl:fault name="Fault" message="wsc:SPMLFault"></wsdl:fault>
</wsdl:operation>
<wsdl:operation name="SPMLDeleteRequest">
  <wsdl:input name="SPMLDeleteRequestInput"
    message="wsc:SPMLDeleteRequestMessage"></wsdl:input>
  <wsdl:output name="SPMLDeleteRequestOutput"
    message="wsc:SPMLDeleteResponseMessage"></wsdl:output>
  <wsdl:fault name="Fault" message="wsc:SPMLFault"></wsdl:fault>
</wsdl:operation>
<wsdl:operation name="SPMLListTargetsRequest">
  <wsdl:input name="SPMLListTargetsRequestInput"
    message="wsc:SPMLListTargetsRequestMessage"></wsdl:input>
  <wsdl:output name="SPMLListTargetsRequestOutput"
    message="wsc:SPMLListTargetsResponseMessage"></wsdl:output>
  <wsdl:fault name="Fault" message="wsc:SPMLFault"></wsdl:fault>
</wsdl:operation>
</wsdl:portType>
<wsdl:binding name="SPMLCoreSoapBinding" type="wsc:SPMLCoreRequestPortType">
  <soap:binding style="document"
    transport="http://schemas.xmlsoap.org/soap/http"></soap:binding>
  <wsdl:operation name="SPMLAddRequest">
    <soap:operation style="document"></soap:operation>
    <wsdl:input name="SPMLAddRequestInput">
      <soap:header message="wsc:ServiceHeader"
        part="ServiceHeader" use="literal"></soap:header>
      <soap:body use="literal"></soap:body>
    </wsdl:input>
    <wsdl:output name="SPMLAddRequestOutput">
      <soap:body use="literal"></soap:body>
    </wsdl:output>
    <wsdl:fault name="RequestFault">
      <soap:fault name="RequestFault" use="literal"></soap:fault>
    </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="SPMLModifyRequest">
    <soap:operation style="document"></soap:operation>
    <wsdl:input name="SPMLModifyRequestInput">
      <soap:header message="wsc:ServiceHeader"
        part="ServiceHeader" use="literal"></soap:header>
      <soap:body use="literal"></soap:body>
    </wsdl:input>
    <wsdl:output name="SPMLModifyRequestOutput">
      <soap:body use="literal"></soap:body>
    </wsdl:output>
    <wsdl:fault name="RequestFault">
      <soap:fault name="RequestFault" use="literal"></soap:fault>
    </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="SPMLDeleteRequest">
    <soap:operation style="document"></soap:operation>
    <wsdl:input name="SPMLDeleteRequestInput">
      <soap:header message="wsc:ServiceHeader"

```

```

        part="ServiceHeader" use="literal"></soap:header>
      <soap:body use="literal"></soap:body>
    </wsdl:input>
    <wsdl:output name="SPMLDeleteRequestOutput">
      <soap:body use="literal"></soap:body>
    </wsdl:output>
    <wsdl:fault name="RequestFault">
      <soap:fault name="RequestFault" use="literal"></soap:fault>
    </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="SPMLListTargetsRequest">
    <soap:operation style="document"></soap:operation>
    <wsdl:input name="SPMLListTargetsRequestInput">
      <soap:header message="wsc:ServiceHeader"
        part="ServiceHeader" use="literal"></soap:header>
      <soap:body use="literal"></soap:body>
    </wsdl:input>
    <wsdl:output name="SPMLListTargetsRequestOutput">
      <soap:body use="literal"></soap:body>
    </wsdl:output>
    <wsdl:fault name="RequestFault">
      <soap:fault name="RequestFault" use="literal"></soap:fault>
    </wsdl:fault>
  </wsdl:operation>
</wsdl:binding>
<wsdl:service name="SPMLPasswordService">
  <wsdl:port name="SPMLCoreServiceProviderSoap"
    binding="wsc:SPMLCoreSoapBinding">
    <soap:address location="http://..."></soap:address>
  </wsdl:port>
</wsdl:service>
</wsdl:definitions>

```

Password Capability WSDL

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:wspw="urn:oasis:names:tc:spml20:ws:password" xmlns:wh="urn:names:spml:ws:header"
  xmlns:pwns="urn:oasis:names:tc:SPML:2:0:password" targetNamespace="urn:names:spml20:ws:password">
  <wsdl:types>
    <xs:schema>
      <xs:import namespace="urn:oasis:names:tc:SPML:2:0:password"
        schemaLocation="c:\tmp\spmlv2_password.xsd"></xs:import>
      <xs:import namespace="urn:names:spml:ws:header" schemaLocation="c:\tmp\spmlHeader.xsd"
        ></xs:import>
    </xs:schema>
  </wsdl:types>
  <wsdl:message name="SPMLResetPasswordRequestMessage">
    <wsdl:part name="body" element="pwns:ResetPasswordRequest"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLResetPasswordResponseMessage">
    <wsdl:part name="body" element="pwns:ResetPasswordResponse"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLSetPasswordRequestMessage">
    <wsdl:part name="body" element="pwns:SetPasswordRequest"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLExpirePasswordRequestMessage">
    <wsdl:part name="body" element="pwns:ExpirePasswordRequest"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLExpirePasswordResponseMessage">
    <wsdl:part name="body" element="pwns:ExpirePasswordResponse"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLValidatePasswordRequestMessage">
    <wsdl:part name="body" element="pwns:ValidatePasswordRequest"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="SPMLValidatePasswordResponseMessage">
    <wsdl:part name="body" element="pwns:ValidatePasswordResponse"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="ServiceHeader">
    <wsdl:part name="ServiceHeader" element="wh:ServiceHeader"></wsdl:part>
  </wsdl:message>
  <wsdl:portType name="SPMLPasswordRequestPortType">
    <wsdl:operation name="SPMLResetPasswordRequest">
      <wsdl:input name="SPMLResetPasswordRequestInput"
        message="wspw:SPMLResetPasswordRequestMessage"></wsdl:input>
      <wsdl:output name="SPMLResetPasswordRequestOutput"
        message="wspw:SPMLResetPasswordResponseMessage"></wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SPMLSetPasswordRequest">
      <wsdl:input name="SPMLSetPasswordRequestInput"
        message="wspw:SPMLSetPasswordRequestMessage"></wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="SPMLExpirePasswordRequest">
      <wsdl:input name="SPMLExpirePasswordRequestInput"
        message="wspw:SPMLExpirePasswordRequestMessage"></wsdl:input>
      <wsdl:output name="SPMLExpirePasswordRequestOutput"
        message="wspw:SPMLExpirePasswordResponseMessage"></wsdl:output>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:binding name="SPMLPasswordSoapBinding" type="wspw:SPMLPasswordRequestPortType">
    <wsdl:operation name="SPMLResetPasswordRequest">
```

```
<soap:operation style="document" /></soap:operation>
<wsdl:input name="SPMLResetPasswordRequestInput">
  <soap:header message="wspw:ServiceHeader"
    part="ServiceHeader" use="literal" /></soap:header>
  <soap:body use="literal" /></soap:body>
</wsdl:input>
<wsdl:output name="SPMLResetPasswordRequestOutput">
  <soap:body use="literal" /></soap:body>
</wsdl:output>
</wsdl:operation>
<wsdl:operation name="SPMLSetPasswordRequest">
  <soap:operation style="document" /></soap:operation>
  <wsdl:input name="SPMLSetPasswordRequestInput">
    <soap:header message="wspw:ServiceHeader"
      part="ServiceHeader" use="literal" /></soap:header>
    <soap:body use="literal" /></soap:body>
  </wsdl:input>
</wsdl:operation>
<wsdl:operation name="SPMLExpirePasswordRequest">
  <soap:operation style="document" /></soap:operation>
  <wsdl:input name="SPMLExpirePasswordRequestInput">
    <soap:header message="wspw:ServiceHeader"
      part="ServiceHeader" use="literal" /></soap:header>
    <soap:body use="literal" /></soap:body>
  </wsdl:input>
</wsdl:operation>
<wsdl:operation name="SPMLValidatePasswordRequest">
  <soap:operation style="document" /></soap:operation>
  <wsdl:input name="SPMLValidatePasswordRequestInput">
    <soap:header message="wspw:ServiceHeader"
      part="ServiceHeader" use="literal" /></soap:header>
    <soap:body use="literal" /></soap:body>
  </wsdl:input>
</wsdl:operation>
</wsdl:binding>
<wsdl:service name="SPMLPasswordService">
  <wsdl:port name="SPMLPasswordServiceProviderSoap" binding="wspw:SPMLPasswordSoapBinding">
    <soap:address location="http://localhost:7001/lmz/ws" /></soap:address>
  </wsdl:port>
</wsdl:service>
</wsdl:definitions>
```

Header xsd (spmlv2_wsheder.xsd)

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:wsh="urn:names:spml:ws:header" targetNamespace="urn:names:spml:ws:header">
  <xs:complexType name="serviceHeaderType">
    <xs:sequence>
      <xs:element ref="wsse:Security"></xs:element>
      <xs:element name="serviceId" type="xs:string"></xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ServiceHeader" type="wsh:serviceHeaderType"></xs:element>
</xs:schema>
```