Diploma Project

Manage Telecommunication equipment using Web Services

Validation of the Web Service
Version V 1.0 (ValWS)

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1.1.1 Verification of the Web Service

The verification task for the Web Service is very important but in this case also quite difficult because the reaction of the MileGate system is predefined. We grouped the verification into two major parties. The first part is the validation which checks if the descriptions follow the standards.
The second part contains some basic tests of the system. Here we have to be aware that for lot of tests the existing software is involved which will not be modified at the moment.

1.1.1.1 Validation

For the validation of the Web Service, the most important point is that the description follows the rules defined for the standard WDSL.

Also the SOAP messages need to be in accordance with the standard. This is difficult to test at the moment because the final SOAP request is generated by the client framework.

The header fields are defined according to the used standards (WS-Management and WS-Addressing) and included automatically into the SOAP message skeleton. The used Namespaces of SOAP and for the two Web Service concepts are also written automatically into the message.
For the body part of the SOAP message, the elements defined in the WSDL are included.

The following example shows the automatic generated SOAP message of the program SOAPui[1] (Web Service Testing Tool) of the operation 'SetLabel__operation' defined in the WSDL file. The addressing parameters are missing because the endpoint reference need to be selected by programming.

```
<soap:Envelope
xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:add="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:man="http://schemas.xmlsoap.org/ws/2005/06/management"
xmlns:mob="http://www.keymile.com/milegate/ws/mob_mainbase_xml">
  <soap:Header>
    <add:MessageID/>
    <add:Action/>
    <add:ReplyTo/>
    <add:To/>
    <man:SelectorSet/>
    <man:ResourceURI/>
  </soap:Header>
  <soap:Body>
    <mob:Label>
```
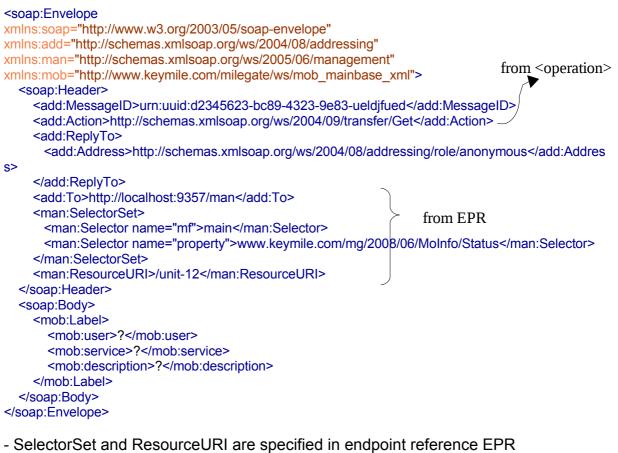
---

1 http://www.soapui.org

```
            <mob:user>?</mob:user>
            <mob:service>?</mob:service>
            <mob:description>?</mob:description>
         </mob:Label>
      </soap:Body>
</soap:Envelope>
```

Defined endpoint reference in the WSDL file:

```
    <wsa:EndpointReference name="labelEPR"
      xmlns:wsaw="http://www.w3.org/2006/02/addressing/wsdl">
    <wsa:Address>http://localhost:9357/wsman/</wsa:Address>
    <wsa:ReferenceParameters>
      <wsman:SelectorSet>
        <wsman:Selector name="mf">main</wsman:Selector>
        <wsman:Selector name="property">/Label</wsman:Selector>
      </wsman:SelectorSet>
      <wsman:ResourceURI>/unit-11</wsman:ResourceURI>
    </wsa:ReferenceParameters>
    </wsa:EndpointReference>
```

With the parameters from the endpoint reference the request looks as followed:

```
<soap:Envelope
xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:add="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:man="http://schemas.xmlsoap.org/ws/2005/06/management"
xmlns:mob="http://www.keymile.com/milegate/ws/mob_mainbase_xml">      from <operation>
  <soap:Header>
    <add:MessageID>urn:uuid:d2345623-bc89-4323-9e83-ueldjfued</add:MessageID>
    <add:Action>http://schemas.xmlsoap.org/ws/2004/09/transfer/Get</add:Action>
    <add:ReplyTo>
      <add:Address>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</add:Address>
    </add:ReplyTo>
    <add:To>http://localhost:9357/man</add:To>
    <man:SelectorSet>                                                  from EPR
      <man:Selector name="mf">main</man:Selector>
      <man:Selector name="property">www.keymile.com/mg/2008/06/MoInfo/Status</man:Selector>
    </man:SelectorSet>
    <man:ResourceURI>/unit-12</man:ResourceURI>
  </soap:Header>
  <soap:Body>
    <mob:Label>
      <mob:user>?</mob:user>
      <mob:service>?</mob:service>
      <mob:description>?</mob:description>
    </mob:Label>
  </soap:Body>
</soap:Envelope>
```

- SelectorSet and ResourceURI are specified in endpoint reference EPR
- Action is specified in the <wsdl:operation>
- MessageID and ReplyTo must be added in framework

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RESPONSE successful ?

1.1.1.2 Testing

The testing does not completely verify if the Web Services is functioning perfectly. Testing of the function has to be verified with a framework. The aim of this part is to document the reactions on certain requests and to suggest some modifications for the actual implementation.

We want to check the reaction on malformed addressing (unit, mf, property), malformed format of the body and of course also the reaction on a well formed request.

- Same MessageID
  → suggested fault: wsa:DuplicateMessageID (predefined)

- No address
  → suggested fault: wsa:MissingAddressInEPR (predefined)

- Malformed ResourceURI (unit):
  → suggested fault: wsa:InvalidEPR (predefined)

- Malformed Selector (mf and property):
  → suggested fault: wsa:InvalidEPR (predefined)

  - unsupported operation for Selector

  - unknown mf and property

- Malformed SOAP body:

- Partial SOAP body:

2 Annexes

2.1 Revision history

Revision			Short description of the modification	Prepared by	Checked by	Approved
Doc ID	Version	Date				
ValWS	1	02/07/09	First Version	DSCHN		