



NextGRID SLA Template Evaluation Specification

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1 Introduction

This document defines the NextGRID SLA Template Evaluation Schema 1.0 (hereafter, “the Schema”), consisting of Web Service data and interface specifications.

Section 1 introduces the Schema, and explains its relationship to the use cases.

Each subsection in section 2 addresses a component of the Schema, including port types, operations, input, output and fault messages.

The NextGRID Generalized Specifications aim at capturing NextGRID architectural concepts in a set of composable specifications. While overall consistency is achieved at the conceptual level and captured through the motivating use cases accompanying each specification, the implementation may not be consistent between different specifications. Thus each profile and schema defines an implementable realisation of the underlying concept, but implementers of the full NextGRID architecture may need to support multiple competing underlying specifications.

1.1 Relationship to Use Cases

This Schema represents a realisation of one of the use cases described in the NextGRID SLA Management Use Cases document [1]. The use case addressed is the evaluation step in the SLA lifecycle. A Web Services interface is defined that provides the functionality described in the Evaluate use case. As the interface describes a NextGRID compatible service, implementations of the interface need to adhere to all relevant NextGRID Generalized Specifications.

The Evaluate use case is modelled as a single function called `evaluateSLATemplate()`. The function is invoked by the initiator on a responder. Every responder therefore **MUST** implement the interface described here. The function takes as parameter the WS-Addressing endpoint reference (EPR) [4] of the SLA Template. The `evaluateSLATemplate()` function returns a number that depicts the recommendation rating of the specific SLA Template. If the SLA Template gets a high recommendation then the SLA Template is qualified in order to construct the respective SLA. If the Responder doesn't have a historic record for a specific SLA Template, it returns a `NotApplicable` message instead of the rating.

1.2 Notational Conventions

The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC2119 [2].

Both requirement statements and extensibility statements can be considered namespace-qualified. This specification uses a number of namespace prefixes throughout; their associated URIs are listed below. Note that the choice of any namespace prefix is arbitrary and not semantically significant.

Table 1 Namespaces used by NextGRID SLA Template Evaluation Schema 1.0

Prefix	Namespace
ngev	http://nextgrid.org/2008/01/sla-template-evaluation
soap	http://schemas.xmlsoap.org/soap/envelope
wsa	http://www.w3.org/2005/08/addressing
wSDL	http://schemas.xmlsoap.org/wSDL
xsd	http://www.w3.org/2001/XMLSchema

1.3 Schema Identification, Versioning, and Status

Schema identification and versioning use the style described in the WS-I Basic Profile 1.1 [3] and abides by the normative descriptions contained therein. The name of this Schema is “NextGRID SLA Template Evaluation Schema” and the version number is “1.0.”

2 NextGRID SLA Template Evaluation Schema

2.1 Port Type EvaluateSLATemplatePort

The EvaluateSLATemplatePort provides only one function: the evaluateSLATemplate function.

2.1.1 Operation evaluateSLATemplate

The evaluateSLATemplate function evaluates the terms of an SLA Template. The evaluation results are then used for selection.

2.1.1.1 Input

The input message to the evaluateSLATemplate() function is defined as:

```
<ngev:EvaluateSLATemplateInput>
  <ngev:SLATemplateEPR>
    wsa:EndpointReferenceType
  </ngev:SLATemplateEPR >
</ngev:EvaluateSLATemplateInput>
```

ngev:EvaluateSLATemplateInput / ngev:SLATemplateEPR

This element contains the SLA Template that is to be evaluated against the SLAs historic behaviour. The type of this element is EndpointReferenceType as defined in the WS-Agreement

specification. The SLA Template EPR MUST point to the same SLA Template for both the parties. Also, there MUST be only one SLA Template EPR from which an SLA can be derived.

2.1.1.2 Output

The output message to the `evaluateSLATemplate()` function is defined as:

```
<ngev:EvaluateSLATemplateOutput>
  <ngev:SLATemplateRating>
    float
  </ngev:SLATemplateRating>
</ngev:EvaluateSLATemplateOutput>
```

ngev: EvaluateSLATemplateOutput / ngev:SLATemplateRating

This element contains the number in a floating point operation format that represents the ranking of the SLA Template. The larger the rating is the most likely it is to result in violations and in turn, the higher it gets to the ranking list.

2.1.1.3 Faults

The recipient of the `evaluateSLATemplate()` function call may fail to find a record for a newly created SLA Template. Therefore, instead of returning a rating (number) to the function call initiator, the responder answers with a fault message. The fault message MUST be a NonEvaluable fault message. That message looks as follows:

```
<ngev:NonEvaluable>
  <ngev:Reason>
    String
  </ngev:Reason>
</ngev:NonEvaluable>
```

ngev: NonEvaluable / ngev:Reason

This element details why the SLA Template cannot be evaluated. The string is supposed to be for human consumption. Its form and contents is therefore not restricted.

3 Schema

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions name="SLATemplateEvaluationService"
  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:ngev="http://nextgrid.org/2008/01/sla-template-evaluation"
  targetNamespace="http://nextgrid.org/2008/01/sla-template-evaluation">

  <wsdl:types>
    <xs:schema
      targetNamespace=" http://nextgrid.org/2008/01/sla-template-
evaluation"
      xmlns:wsa="http://www.w3.org/2005/08/addressing">

      <xs:import namespace="http://www.w3.org/2005/08/addressing"
```

```

    schemaLocation="Referenced%20Documents/ws-addr.xsd" />

<xs:import namespace="http://www.nextgrid.org/sla/2006/08"
    schemaLocation="SLA-070707-DS-v4-5-1.xsd" />

<xs:element name="EvaluateSLATemplateInput"
    type="ngev:EvaluateSLATemplateInputType" />

<xs:element name="EvaluateSLATemplateOutput"
    type="ngev:EvaluateSLATemplateOutputType" />

<xs:element name="EvaluateSLATemplateFault"
    type="ngev:EvaluateSLATemplateFaultType" />

<xs:complexType name="EvaluateSLATemplateInputType">
    <xs:sequence>
        <xs:element name="SLATemplateEPR" type="wsa:
EndpointReferenceType" />
    </xs:sequence>
</xs:complexType>

<xs:complexType name="EvaluateSLATemplateOutputType">
    <xs:sequence>
        <xs:element name="SLATemplateRating" type="float" />
    </xs:sequence>
</xs:complexType>

<xs:complexType name="EvaluateSLATemplateFaultType">
    <xs:sequence>
        <xs:element name="Reason" type="xs:string" />
    </xs:sequence>
</xs:complexType>

</xs:schema>
</wsdl:types>

<wsdl:message name="EvaluateSLATemplateInputMessage">
    <wsdl:part name="parameters"
        element="ngev:EvaluateSLATemplateInput" />
</wsdl:message>

<wsdl:message name="EvaluateSLATemplateOutputMessage">
    <wsdl:part name="parameters"
        element="ngev: EvaluateSLATemplateOutput" />
</wsdl:message>

<wsdl:message name="EvaluateSLATemplateFaultMessage">
    <wsdl:part name="fault"
        element="ngag: EvaluateSLATemplateFault" />
</wsdl:message>

```

```
<wsdl:portType name="EvaluateSLATemplatePort">
  <wsdl:operation name="EvaluateSLATemplate">
    <wsdl:input message="ngev:EvaluateSLATemplateInputMessage" />
    <wsdl:output message="ngev:EvaluateSLATemplateOutputMessage" />
    <wsdl:fault name="NonEvaluable" message="ngev:
EvaluateSLATemplateFaultMessage"/>
  </wsdl:operation>
</wsdl:portType>

</wsdl:definitions>
```

4 References

- [1] B. Koller, D. Snelling, P. Hasselmeyer and K. Tserpes, NextGRID SLA Management Use Cases, V0.7, February 2008, available from: http://www.nextgrid.org/GS/management_systems/SLA_management/NextGRID_SLA_management_usecases.pdf
- [2] S. Bradner (ed.): Key words for use in RFCs to Indicate Requirement Levels, The Internet Engineering Task Force Best Current Practice, March 1997. <http://www.ietf.org/rfc/rfc2119>
- [3] K. Ballinger, D. Ehnebuske, C. Ferris, M. Gudgin, C.K. Liu, M. Nottingham, and P. Yendluri (eds.): Basic Profile Version 1.1, Web Services Interoperability Organization Final Material, 24 August 2004. <http://www.wsi.org/Profiles/BasicProfile-1.1.html>
- [4] D. Box and F. Curbera (eds.): Web Services Addressing 1.0 – Core (WS-Addressing), W3C Last Call, 31 March 2005. <http://www.w3.org/TR/2005/WD-ws-addr-core-20050331>