



NextGRID Registry Profile

Editors:	Peer Hasselmeyer	NEC
	Mike Surrige	IT Innovation
	Philipp Wieder	FZJ

Date	Author	Comments	Version	Status
18/08/2006	Peer Hasselmeyer	first draft	0.1	draft
07/11/2006	Peer Hasselmeyer	update after discussions	0.2	draft
09/03/2007	Peer Hasselmeyer	first release	0.3	release
09/01/2008	David Snelling	some corrections	0.4	release
04/02/2008	Peer Hasselmeyer	added XQuery	0.5	release
05/02/2008	David Snelling	Final QA	1.0	Final



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1 Introduction

This document defines the NextGRID Registry Profile 1.0 (hereafter, “the Profile”), consisting of a set of de facto, institutional or evolving institutional Web Services specifications, along with clarifications, refinements, interpretations and amplifications of those specifications that promote interoperability among implementations of those specifications.

Section 1 introduces the Profile, and explains its relationships to other profiles.

Section 2, “Profile Conformance,” explains what it means to be conformant to this Profile.

Each subsequent section addresses a component of the Profile, and consists of two parts: an overview detailing the component specifications and their extensibility points, followed by subsections that address individual parts of the component specifications. Note that there is no relationship between the section numbers in this document and those in the referenced specifications.

The NextGRID Generalized Specifications aim at capturing NextGRID architectural concepts in a set of composable profiles. These profiles are specified in such a way that they could be implemented in terms of other well known specifications. While overall consistency is achieved at the conceptual level, and captured through the motivating use cases accompanying each specification, the implementation in terms of other specifications may not be consistent between different profiles. Thus each profile 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 Profile Overview

This Profile is intended for use when implementing registry services that are in line with the concepts of NextGRID [1]. It mandates the adherence to a certain set of specifications and clarifies their use. A service implementation that uses those specifications in a manner conformant with the Profile may be said to be an “implementation of the NextGRID Registry Profile 1.0” or, informally, to be a “NextGRID Registry.”

The primary issues addressed in the profile are as follows:

- *NextGRID Basic Profile*. This Profile mandates the use of aspects of the NextGRID Basic Profile [2].
- *OGSA WSRF Basic Profile*. This Profile mandates the use of aspects of the OGSA WSRF Basic Profile [4].
- *WS-ServiceGroup*. This Profile mandates the use of aspects of the WS-ServiceGroup specification [9].
- *WS-ResourceLifetime*. This Profile mandates the use of aspects of the WS-ResourceLifetime specification [10].

1.2 Relationships to Other Profiles

The Profile extends the NextGRID Basic Profile Version 1.0 [2].

1.3 Relationship to Use Cases

This Profile represents a mapping from the use cases described in the NextGRID Registry Use Cases document [3] to the Web Services Resource Framework (WSRF) technology [11]. The registry is realised as a Web Services Service Group. NextGRID Registry implementations therefore need to adhere to the WS-ServiceGroup specification [9] as well as the other specifications and profiles listed in section 1.1. Particular modifications of those specifications and profiles as well as requirements on implementations are described in this Profile.

Each service registration is modelled as a ServiceGroupEntry WS-Resource of the Registry service group. The service endpoint mentioned in the use cases document is modelled as a WS-Addressing [12] Endpoint Reference (EPR) and is stored in the MemberServiceEPR resource property of the registration's service group entry. The service description is represented as arbitrary XML data and is stored in the Content resource property of the registration's service group entry.

The mapping from the use cases to message exchanges of the WS Resource Framework is as follows:

- register: WS-ServiceGroup Add message exchange.
- query: WS-ResourceProperties QueryResourceProperties message exchange.
- remove: WS-ResourceLifetime Destroy message exchange.
- update: WS-ResourceProperties UpdateResourceProperties message exchange. The update is performed on the ServiceGroupEntry WS-Resource representing the registration to be changed. Depending on the data to be updated, the affected resource property (RP) is either the Content RP or the MemberServiceEPR RP.

1.4 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 [5].

Normative statements of requirements in the Profile are presented in the manner detailed in the WS-I Basic Profile 1.1 [6], section 2.1, "Conformance Requirements".

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 Basic Profile 1.0

Prefix	Namespace
ogsa-bp10	http://www.ggf.org/namespaces/OGSABasicProfile-1.0



soap	http://schemas.xmlsoap.org/soap/wSDL/soap
wSDL	http://schemas.xmlsoap.org/wSDL
wsrf-rp	http://docs.oasis-open.org/wsrp/rp-2
wsrf-rpw	http://docs.oasis-open.org/wsrp/rpw-2
wsrf-rl	http://docs.oasis-open.org/wsrp/rl-2
wsrf-rlw	http://docs.oasis-open.org/wsrp/rlw-2
wsrf-sg	http://docs.oasis-open.org/wsrp/sg-2
wsrf-sgw	http://docs.oasis-open.org/wsrp/sgw-2
xsd	http://www.w3.org/2001/XMLSchema

1.5 Profile Identification, Versioning, and Status

Profile identification and versioning use the style described in the WS-I Basic Profile 1.1 [6] and abides by the normative descriptions contained therein. The name of this Profile is “NextGRID Registry Profile” and the version number is “1.0.” The status of this specification is “experimental”.

2 Profile Conformance

Conformance to the Profile is defined normatively in the WS-I Basic Profile 1.1 [6], section 2, “Profile Conformance”. This Profile abides by those definitions.

2.1 Conformance Targets

Since the Profile is an extension of the WS-I Basic Profile 1.1 [6], the OGSA WSRF Basic Profile 1.0 [4], and the NextGRID Basic Profile 1.0 [2], it may place further restrictions on conformance targets defined therein.

The following conformance targets are used in this Profile:

- **DESCRIPTION** – descriptions of types, messages, interfaces and their concrete protocol and data format bindings, and the network access points associated with Web services (e.g., WSDL descriptions) (from WS-I Basic Profile 1.1) .

- **INSTANCE** – software that implements a wsdl:port (from WS-I Basic Profile 1.1, without “bindingTemplate” from the namespace urn:uddi-org:api_v2) .
- **RECEIVER** – software that consumes a message according to the protocol(s) associated with that message (e.g., SOAP processors) (from WS-I Basic Profile 1.1).
- **MESSAGE** – protocol elements that transport the serialization of the soap:Envelope element and its content (e.g., SOAP/HTTP messages).

2.2 Claiming Conformance

Claims of conformance to the Profile and the attachments mechanisms are the same as normatively described in the WS-I Basic Profile 1.1 [6].

The conformance claim URI for this Profile is <http://www.nextgrid.org/registryprofile/v-1>.

3 NextGRID Basic Profile

This section of the Profile incorporates the following specification by reference:

- NextGRID Basic Profile 1.0 [2].

All requirements stated in the NextGRID Basic Profile 1.0 must be observed by implementations that claim conformance to this Profile with the exception of the mandatory use of the scheduled resource termination pattern.

There are no directly stated extensibility points in the NextGRID Basic Profile 1.0. However, there are extensibility points in other specifications referenced by the NextGRID Basic Profile 1.0. Implementers of this Profile should take note of these.

3.1 Query Resource Properties

The NextGRID Basic Profile 1.0 mandates or recommends the inclusion of several operations in the description and implementation of services claiming compliance to that profile. Implementations claiming compliance with this Profile must abide by those requirements. The NextGRID Basic Profile 1.0 recommends the use of the QueryResourceProperties message exchange. This Profile requires its support. In addition to the mandatory support of the XPath query language, this Profile recommends the support of XQuery 1.0 [13].

R0311 A Registry DESCRIPTION MUST include the wsrf-rpw:QueryResourceProperties wsdl:operation as defined in the WS-ResourceProperties 1.2 specification [8], section 5.4, “QueryResourceProperties”.

R0312 A Registry INSTANCE MUST implement the wsrf-rpw:QueryResourceProperties message exchange as defined in the OGSA WSRF Basic Profile 1.0 [4], section 4.3, “Query Resource Properties”. In particular, the INSTANCE MUST conform to requirements og-sa-bp10:R0427, og-sa-bp10:R0428, and og-sa-bp10:R0429.

R0313 A Registry INSTANCE SHOULD support the XQuery 1.0 language [13] as query expression dialect in wsrf-rpw:QueryResourceProperties message exchanges.

R0314 A Registry INSTANCE that supports the XQuery 1.0 language as query expression dialect MUST contain the URI “<http://www.w3.org/TR/2007/REC-xquery-20070123/>” in its `wsrf-rp:QueryExpressionDialect` resource property as defined in the WS-ResourceProperties 1.2 specification [8], section 5.4.1, “QueryExpressionDialect Resource Property”.

4 WS-ResourceProperties

This section of the Profile incorporates the following specification by reference:

- Web Services Resource Properties 1.2 [8].

All requirements stated in the WS-ResourceProperties 1.2 specification must be met by implementations that claim conformance to this Profile. The UpdateResourceProperties message exchange is optional in WS-ResourceProperties. This Profile mandates the use of this operation.

R0411 A Registry DESCRIPTION MUST include the `wsrf-rpw:UpdateResourceProperties` `wsdl:operation` as defined in the WS-ResourceProperties 1.2 specification [8], section 5.8, “UpdateResourceProperties”.

R0412 A Registry INSTANCE MUST implement the `wsrf-rpw:UpdateResourceProperties` message exchange as defined in the WS-ResourceProperties 1.2 specification [8], section 5.8, “UpdateResourceProperties”.

5 WS-ServiceGroup

This section of the Profile incorporates the following specification by reference:

- Web Services Service Group 1.2 [9].
Extensibility point:
 - **E0001** – **Service Description Data Extensibility** – Service description data (stored in the `wsrf-sg:Content` WS-ResourceProperty) is defined as open content (`xsd:any`).

All requirements stated in the WS-ServiceGroup 1.2 specification must be met by implementations that claim conformance to this Profile.

5.1 Service Group Registration

WS-ServiceGroup defines the ServiceGroupRegistration portType for adding entries to a service group. The Profile mandates the use of this portType, and places the following constraints on its use.

R0511 A Registry *DESCRIPTION* **MUST** include the *wsrf-sgw:Add* *wSDL:operation* as defined in the *WS-ServiceGroup 1.2* specification [9], section 7.2, “Add”.

R0512 A Registry *INSTANCE* **MUST** support the *wsrf-sgw:Add* message exchange as defined in the *WS-ServiceGroup 1.2* specification [9], section 7.2, “Add”.

5.2 Resource Properties

WS-ServiceGroup defines a number of resource properties and associated data structures. The Profile constrains their use in the following ways.

5.2.1 Entry Resource Property

WS-ServiceGroup defines the Content field of Entry resource properties as optional. This Profile mandates the use of the Content field.

R0531 When a *MESSAGE* contains a *wsrf-sg:EntryType* element, the content of that element **MUST** contain the *wsrf-sg:Content* element.

5.2.2 Content Resource Property

WS-ServiceGroup defines the Content resource property of the *ServiceGroupEntry* WS-Resources as optional. This Profile mandates the use of the Content resource property.

R0532 The *DESCRIPTION* of the *wsrf-sgw:ServiceGroupEntry* WS-Resource **MUST** contain the *wsrf-sg:Content* WS-ResourceProperty.

R0533 A *wsrf-sgw:ServiceGroupEntry* *INSTANCE* **MUST** support the *wsrf-sg:Content* WS-ResourceProperty.

6 WS-ResourceLifetime

This section of the Profile incorporates the following specification by reference:

- Web Services Resource Lifetime 1.2 [10].

6.1 Immediate Resource Termination

WS-ResourceLifetime defines a portType for immediate termination of a WS-Resource. This Profile mandates the use of this portType for explicit destruction of service registrations, i.e.

ServiceGroupEntries. This requirement is conformant with the rules defined in the OGSA Basic Profile 1.0, section 5.1, “Immediate Resource Termination”.

R0611 *The Service Group Entry DESCRIPTION MUST include the wsrf-rlw:Destroy wsdl:operation as defined in the WS-ResourceLifetime specification 1.2 [10], section 4, “Immediate Destruction”.*

R0612 *The Service Group Entry INSTANCE that is created as a result of an wsrf-sgw:Add message exchange MUST support the wsrf-rlw:Destroy message exchange as defined in the WS-ResourceLifetime specification 1.2 [10], section 4, “Immediate Destruction”.*

6.2 Scheduled Resource Termination

WS-ResourceLifetime defines a portType (including resource properties and message exchanges) for scheduled termination of a WS-Resource. In case scheduled destruction of service registrations, i.e. ServiceGroupEntries, is supported, the Profile mandates the use of this portType. This requirement is weaker than the requirements stated in section 5.2 of the OGSA Basic Profile 1.0 that mandate the use of this portType for all WS-Resources created as a consequence of a message exchange.

R0621 *If a Registry INSTANCE supports scheduled resource termination, the Registry INSTANCE MUST conform to the requirements ogsa-bp10:R0513, ogsa-bp10:R0514, and ogsa-bp10:R0515 as described in the OGSA WSRF Basic Profile 1.0 [4], section 5.2, “Scheduled Resource Termination”.*

7 References

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