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OGSA Profile Definition
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Status of This Memo

This memo provides information to the Grid community on how to write normative Profiles for describing collections of specifications and their interactions. This document does not define any standards or technical recommendations. Distribution is unlimited.

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Abstract

The Global Grid Forum (GGF) has embraced the Open Grid Services Architecture (OGSA) as the industry blueprint for standards-based grid computing. A normative definition of OGSA will be provided as a number of OGSA Profiles, modeled along the lines of WS-I Profiles. This informational document outlines how to write normative OGSA Profiles for describing collections of specifications and their interactions. Two types of Profile are defined: a "Recommended Profile" and an "Informational Profile." Both types of Profile are normative in nature and provide the same level of detail about the specifications they contain. The Profile type is determined by the maturity of the specifications referenced by a Profile—the status type and adoption level of each specification. This document provides objective definitions for the classification of referenced specifications and for determining the Profile type.

Contents

1. Introduction

The growing number of Web service specifications makes it important to understand and define the interaction and use of these specifications to ensure interoperability. Within the context of basic Web services, it has proved useful to define a collection of normative "profiles" that provide guidance on issues of interoperability: the WS-I Basic Profile v1.1 [**WS-I BP 1.1**] and the WS-I Basic Security Profile v1.0 [**WS-I BSP 1.0**]. A similar approach, defining interoperation through conformance specification, is also useful in the wider technical domain of distributed system management and grid computing. The grid community can benefit from the definition of a similar set of profiles that address grid-specific functionality. OGSA, for example, is expected to be defined normatively by a number of such Profiles. Therefore there is a need within GGF to define what is meant by an OGSA Profile (hereafter "Profile").

This Informational Document outlines how to write normative Profiles for describing collections of specifications and their interactions. The intention of these Profiles is to describe precisely the requirements placed on implementations to ensure interoperability.

Two types of Profile are defined: a "Recommended Profile" and an "Informational Profile." The expectation is that both are normative in nature and provide the same level of detail about the specifications they contain. However, the maturity of the referenced specifications and their implementations determine whether a particular Profile should be a GGF Informational Document ("Informational Profile") or if it should be put into the Recommendations track ("Recommended Profile"). Section 5 provides guidelines to help distinguish these two types of Profile document.

2. Terminology

The following terminology is used in this document:

- The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

- For simplicity, and only in situations where the use is clear from the context, the word "document" is occasionally used to mean "specification or profile."

3. Profile Conformance

Conformance to the Profile is defined normatively in WS-I Basic Profile 1.1. This document abides by those definitions. Please refer to section 2 of the WS-I Basic Profile 1.1.

3.1   Claiming Conformance

Claims of conformance to a Profile SHOULD use mechanisms described in "Conformance Claim Attachment Mechanisms [**Conformance Claim**], when the applicable Profile requirements associated with a target have been met. The specifics of the conformance claim attachment is related to the specific conformance target(s) and their related artifact(s).

A Profile MUST define a conformance claim URI for the Profile. For example: "http://example.com/profiles/basic/1.0".

4. Profile Content and Structure

The contents and structure of a Profile document is independent of its type (Informational or Recommended). See Section 5 for a discussion of the distinction between the two different types of Profile.

A Profile consists of references to a number of other specifications or profiles that constitute the given Profile. For each referenced specification or profile, the information described in the following subsections MUST be included.

4.1   References

In order to allow implementers (and eventually compliance-validation teams) to identify a referenced specification or profile, the reference MUST be exact and stable. It MUST include complete bibliographic reference information, including date and version numbers. Where an online schema or other documentation is required, there MUST be a complete and *persistent* URL. A persistent URL SHOULD refer to a document on an institutional web site where there is every expectation that the site will remain supported for the lifetime of the institution and possibly longer. The area of the institution's web site SHOULD be persistent, which means that once placed on the web site the document's name and location will remain unchanged indefinitely.

In some cases, only a sub-section or part of a specification or profile will apply. In such cases, complete subsection references MUST be provided. These references MUST include section numbers and titles, and SHOULD include page numbers where possible.

4.2   Status Type and Adoption Level: Classification of Referenced Documents

Specifications or other profiles that are referenced in a Profile may continue to evolve in parallel with the Profile itself, and thus for each reference it is necessary to indicate the current **status type** and **adoption level**. The Profile MUST also indicate when the authors expect the status type or adoption level to change, and to which state it is expected to move. The distinction between an Informational Profile and a Recommended Profile is based on these states—see Section 5 for more information.

The following are the **status types** to be used. These definitions MAY be repeated as appropriate in the Profile document; otherwise a reference to this document MUST be provided.

- **De Facto Standard**. A specification that is used widely and where there are no competing specifications in the same technology area. Multiple implementations must be available and at least one open and freely available implementation should exist.

  For example, WSDL 1.1.

- **Institutional Standard**. An *approved* specification from a generally recognized standards development organization with open membership. "Approved" is defined by the processes of the institution in question. The specification is not expected to change without a repeat of the standardization process and this change is expected not to occur for a significant time.

  GGF Recommendations (GFD-R), Draft Recommendations (GFD-R.D) and Proposed Recommendations (GFD-R.P) [**GFD.1**], as well as OASIS Standards, all satisfy this condition.

  For example, WS-Security 1.0.

- **Evolving Institutional Standard**. A specification that is evolving toward an Institutional Standard. An active community within a recognized standards development organization is working on the specification. The referenced draft has been approved by a formal process of that organization and satisfies the intellectual property considerations of the organization.

OASIS TC Committee Drafts (CD) [**OASIS TCP**] and GGF recommendation-track Grid Working Drafts (GWD-R.P) [**GFD.1**] that have been posted for public comment by the GGF Editor satisfy this condition.

For example, the WSRF 1.2 Committee Drafts.

- **Draft Institutional Standard**. A specification that is evolving towards an Institutional Standard. An active community within a recognized standards development organization is working on the specification. There are working drafts available but they have not been approved by any formal process of the organization.

  OASIS TC Working Drafts [**OASIS TCP**] and GGF WG drafts that have not yet been submitted to the GGF Editor satisfy this condition.

  For example, the first draft of the Basic Execution Services (BES) WG specification, discussed at GGF14, and WS-BaseNotification 1.2, Working Draft 03 satisfy this condition.

- **Consortium Specification**. An *approved* specification developed and promoted by a consortium of multiple companies or organizations, with a possible closed membership. "Approved" is defined by the processes of the consortium in question. The specification is not expected to change without a repeat of the approval process within the consortium, and this change is expected not to occur for a significant time.

  For example, Glue Schema 1.1.

- **Evolving Consortium Specification**. A specification that is evolving toward a Consortium Specification. An active community within the consortium is working on the specification.

  For example, Glue Schema 1.2.

- **Draft Specification**. Any specification that is arguably implementable in its current state, but still evolving and not yet part of a standards or consortium process.

  For example, WS-Policy (September 2004) and WS-AtomicTransaction (November 2004).

The following are the **adoption levels** to be used. These definitions MAY be repeated in the Profile document; otherwise a reference to this document MUST be provided. The characterizations of each of the following adoption levels are with respect to the conformance targets as specified by the referencing Profile. In other words, the adoption level may not apply to the whole of a referenced specification but only to that portion of the specification that is *in scope* of the Profile, as defined in section 2 of the WS-I Basic Profile 1.1 [**WS-I BP 1.1**].

- **Unimplemented**. Although the specification exists and may be viewed as stable, no implementation exists. There may be prototypes under development within various organizations, but they are not available outside those organizations.

- **Implemented**. There exists at least one implementation that is generally available for testing or deployment that, according to the authors (or third parties), implements the specification.

- **Interoperable**. There exist at least two implementations, as defined above, which interoperate. There must be a report detailing at least one interoperability workshop.

- **Community**. At least one of the interoperable implementations, as defined above, is deployed and used on a regular basis by a specific community. The limited use may be due either to a lack of acceptance of the specification by the community at large or to the specialist nature of a particular specification.

- **Adopted**. There exist two or more interoperable implementations, as defined above, and they are both (or all) used across several communities. Commercially supported implementations are available, either as a product or as support for an open source implementation. There may be some restriction on which platforms support the implementations or other aspects that restrict the availability of the implementations.

- **Ubiquitous**. Interoperable implementations exist for virtually all platforms. Commercial support is available, but provided transparently as part of the supporting infrastructure.

With the exception of "unimplemented" each of the adoption levels builds on the preceding level. For example, an "interoperable" specification is also an "implemented" specification.

Note that we do not assign adoption levels to profiles because a profile only defines a target for compliance, and is not directly implementable in the same way as a specification.

4.2.1   Referenced Document Status and Adoption Level Classification

Each Profile MUST include an appendix that classifies the referenced specifications or profiles according to their status types and adoption levels as defined in section 3.2 of this document. The appendix MUST include a table of the form illustrated by Table 1. Note: These examples are for illustrative purposes only; they do not represent the current status of the documents.

Referenced Specifications or Profiles	Status							Adoption					
	De Facto	Institutional	Evolving Institutional	Draft Institutional	Consortium	Evolving Consortium	Draft	Ubiquitous	Adopted	Community	Interoperable	Implemented	Unimplemented
Specifications													
WSDL 1.1	X							X					
WS-Security 1.0		X									X		
WS-BaseNotification			<	X								<	X
WS-Topics			<	X								<	X
WS-ResourceLifetime		<	X									<	X
WS-ResourceProperties		<	X									<	X
WS-ServiceGroups		<	X									<	X
Glue Schema 1.1					X							X	
Glue Schema 1.2						X							X
WS-AtomicTransactions							X				X		
WS-Policy							X				X		
Profiles													
None													

Legend:　**X**　Specification or profile is currently at this status or adoption level
　　　　　<　Specification or profile is approaching this status or adoption level

Table 1: Status Type and Adoption Level Classification

Note:
- Each of the referenced specifications or profiles should appear as either a cross-reference or a hyperlink to the referenced document.
- Use of footnotes is recommended if further clarifications are necessary on any of the classifications.

4.3   Required Features

For each specification or profile (or part thereof if appropriate) the level of support required by Profile-compliant implementations MUST be indicated. In particular it MUST be stated

- if support for the entire specification or profile is required; or
- if only the mandatory parts of the specification or profile are required; or
- if the mandatory parts and *some* of the optional parts of the specification or profile are required.

4.4   Restrictions

In some cases, a specification or profile allows multiple interpretations of aspects of itself. Where this variability in interpretation is likely to affect interoperability, the Profile SHOULD restrict the interpretation. The nature of these restrictions may range from a simple clarification of meaning in a specification or profile to the inclusion of "mini" specifications for missing content in the referenced document. Note that if such a "mini" specification becomes significant in size or relevance outside the given Profile, it SHOULD be spun out as a separate normative specification and referenced externally.

4.5   Extensions

Similarly, there may be cases where, to achieve the goals of interoperability, extensions to specifications are necessary. As with significantly complex restrictions, large or externally significant extensions should be fed back into the specification development process of the referenced specification, with a view to the eventual removal of the extension from the Profile. Where it seems likely that such an extension may never be included in the referenced specification, the Profile developers should seek alternative solutions to the problem.

All extensibility points in the referenced specifications MUST be noted in (at a minimum) an appendix in the referencing Profile.

4.6   Interactions

Where interactions between one or more specifications in a Profile (or referenced profiles) affect interoperability, these interactions MUST be discussed and procedures to ensure interoperability outlined. These procedures may be conditional on different approaches within various scenarios.

5. Profile Type Distinction

This section provides guidance to Profile writers and reviewers on the factors that distinguish an Informational Profile from a Recommended Profile. These types are based on the GGF document types outlined in GFD.1 [**GFD.1**]. These levels are defined in terms of the status types and adoption levels, with additional requirements in the case of Recommended Profiles.

The criteria for the Profile types for status type and adoption level MUST be met at the time of submission to the GGF Editor.

5.1   Informational Profile

Specifications in an Informational Profile have no restriction on the status type values of their component specifications.

Specifications in an Informational Profile have no restriction on the adoption level values of their component specifications.

Specifications referenced directly or indirectly by an Informational Profile MUST be consistent. For example, if two or more specifications reference the same third specification then they must reference the same version of that specification.

5.2   Recommended Profile as Proposed Recommendation

Every specification in a Recommended Profile, when at the Proposed Recommendation stage of publication, MUST have one of the following status type values: Institutional Standard, De Facto Standard, or Evolving Institutional Standard.

Every specification in a Recommended Profile, when at the Proposed Recommendation stage of publication, MUST have one of the following adoption level values: Interoperable, Community, Adopted, or Ubiquitous.

Specifications referenced directly or indirectly by a Recommended Profile MUST be consistent. For example, if two or more specifications reference the same third specification then they must reference the same version of that specification.

5.3   Recommended Profile as Grid Recommendation

Every specification in a Recommended Profile MUST have one of the following status type values: Institutional Standard or De Facto Standard.

Every specification in a Recommended Profile MUST have one of the following adoption level values: Community, Adopted, or Ubiquitous.

In addition, a GGF Experimental document MUST be published describing experience within the community with the referenced specifications, particularly with respect to interoperability and extent of adoption.

6. Security Considerations

If the Profile contains no specific specifications or strategies with respect to security, it MUST reference other Profiles that do make such references directly or indirectly. In such cases, a reference to the specific Profiles and sections within those Profiles MUST be called out specifically as the source for security considerations.

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