BES Directory Profile: V.0.1

Status of this Memo

This memo provides information to the Grid community regarding the specification of the BES Directory Profile.Distribution is unlimited.

Copyright Notice

Copyright © Open Grid Forum (2014). All Rights Reserved.

Abstract

The BES Directory Profile (BDP) is a profile on OGSA Basic Execution Services 1.0 that provides a Unix directory like interface to OGSA BES endpoints that allow the client to examine and modify BES configuration information as well as list, create, and terminate activities. The profile defines no port-types; rather it simply describes what directory elements MUST exist in a compliant implementation and what the semantics are of interacting with those entries. The goal is to provide a simple uniform mechanism to support requirements identified by the Production Grid Interoperability Working Group of the Open Grid Forum [cite]. The mechanism described for the BDP is independent of the OGSA BES specification. Thus, changes in the OGSA BES specification in the future will not impact the usefulness of the BDP.Contents

[Abstract 1](#_Toc377633694)

[1 Introduction 3](#_Toc377633695)

[2 Notational Conventions 3](#_Toc377633696)

[3 BES Directory Compliance Requirements 4](#_Toc377633697)

[3.1 RNS 1.1 Compliance 4](#_Toc377633698)

[3.2 EPR Metadata fields 4](#_Toc377633699)

[3.2.1 SupportsBESDirectory 4](#_Toc377633700)

[3.3 Factory Attribute and Resource Properties 4](#_Toc377633701)

[3.4 Required RNSEntry Elements returned from lookup 4](#_Toc377633702)

[3.4.1 Activities 4](#_Toc377633703)

[4 Optional BES Directory Compliance Targets 5](#_Toc377633704)

[4.1 Optional RNSEntry elements returned from lookup 5](#_Toc377633705)

[4.1.1 Configuration 5](#_Toc377633706)

[4.1.2 Log 6](#_Toc377633707)

[5 Security Considerations 6](#_Toc377633708)

[6 Author Information 6](#_Toc377633709)

[7 Contributors 6](#_Toc377633710)

[8 Acknowledgements 6](#_Toc377633711)

[Full Copyright Notice 6](#_Toc377633712)

[Intellectual Property Statement 7](#_Toc377633713)

[Normative References 7](#_Toc377633714)

# Introduction

The Production Grid Interoperability Working Group identified a number of execution management use cases and requirements in GFD.180. A number of ways to meet these requirements have been extensively discussed. They fall into two categories: 1) define a new set of specifications from scratch to meet the requirements, and 2), profile and minimally extend existing specifications to meet the requirements.

The BDP is a part of the second approach, profiling and extending existing specifications to meet the requirement. It combines, extends, and profiles five existing specifications to meet the PGI requirements: WS Addressing EndPoint References, OGSA Basic Execution Services (OGSA\_BES, or BES) [GFD.108], RNS 1.1 OGSA-WSRF Basic Profile 1.0 [GFD.172], WS-Iterator 1.0 [GFD.188], and OGSA-ByteIO WSRF Basic Profile 1.0 [GFD.98].

The OGSA Basic Execution Services specification (OGSA\_BES, or BES) [GFD.108] has been in use for over five years. Over the course of use several common extensions have been used by different implementers.

# Notational Conventions

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

The document refers to a “BES Directory Profile compliant system” as a “Compliant system”.

This specification uses namespace prefixes throughout; they are listed in Table 2‑1. Note that the choice of any namespace prefix is arbitrary and not semantically significant.

Table ‑: Prefixes and namespaces used in this specification.

|  |  |
| --- | --- |
| Prefix | Namespace |
| xsd | <http://www.w3.org/2001/XMLSchema> |
| wsa | <http://www.w3.org/2005/03/addressing> |
| rns | <http://schemas.ogf.org/rns/2009/12/rns> |
| byteio | <http://schemas.ggf.org/byteio/2005/10/byte-io> |
| sbyteio | <http://schemas.ggf.org/byteio/2005/10/streamable-access> |
| rbyteio | <http://schemas.ggf.org/byteio/2005/10/random-access> |
| bdp | <http://schemas.ogf.org/bdp/2012/03/bdp> |

# BES Directory Compliance Requirements

This section describes the compliance requirements.

## RNS 1.1 Compliance

Compliant implementations MUST also implement RNS 1.1, OGSA-WSRF Basic Profile 1.0, and WS-Iterator 1.0.

## EPR Metadata fields

### SupportsBESDirectory

This Metadata entry in the Endpoint Reference for the BES endpoint indicates whether the endpoint is compliant with the BES Directory Profile. The entry’s type is xsd:boolean, and it has a cardinality of exactly 1. A value of “true” indicates compliance, while a value of “false” or the absence of the entry indicates non-compliance.

<wsa:EndpointReference>

...

<wsa:Metadata>

<bdp:SupportsBESDirectory>

<xsd:boolean/>

</bdp:SupportsBESDirectory>

</wsa:Metadata>

</wsa:EndpointReference>

## Factory Attribute and Resource Properties

The following elelemt MUST appear in the BES factory attributes, and MAY also appear in the Resource Properties document.

<bdp:SupportsBESDirectory>

<xsd:boolean/>

</bdp:SupportsBESDirectory>

## Required RNSEntry Elements returned from lookup

Recall that an *RNSEntry* is defined in RNS 1.1 as <entryName:string, [endpoint:EPR], [metadata:XML]>.

### Activities

An RNSEntry that refers to another RNS 1.1 endpoint that has entries defined below. In other words, a lookup operation would return three RNSEntries, *mine*, *all*, and *submission\_point*.

Note that in RNS 1.1 if the number of returned RNSEntrys is more than some threshold it returns threshold entries and a WS-Iterator EPR that can be used to get the remaining entries [ref rns 1.1 specification].

#### Mine

"Mine" refers to the activities that the caller can manipulate (destroy, reschedule, etc.). This is defined by local policy and is out of scope of the profile.

"mine" is an RNSEntry that refers to another RNS 1.1 endpoint that has the following entries

* + - Running – is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BES with an ActivityStatus of “Running” owned by the current requesting client.
    - Pending– is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BES with an ActivityStatus of “Pending” owned by the current requesting client.
    - Finished – is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BES with an ActivityStatus of “Finished”.
    - Cancelled – is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BES with an ActivityStatus of “Cancelled”.
    - Failed – is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BES with an ActivityStatus of “Failed”

#### All

An RNSEntry that refers to other RNS 1.1 endpoints that have listings of the activities that the local security policy exposes to the caller. Note this is implementation and perhaps site specific.

* + - Running – is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BESwith an ActivityStatus of “Running”.
    - Pending – is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BESwith an ActivityStatus of “Pending”.
    - Finished – is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BESwith an ActivityStatus of either “Finished”.
    - Cancelled – is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BESwith an ActivityStatus of either “Cancelled”.
    - Failed – is an RNSEntry that refers to another RNS 1.1 endpoint that has an entry for each of the jobs on the BESwith an ActivityStatus of either “Failed”,

#### SubmissionPoint

#### An RNSEntry that refers to a RandomByteIO file. When JSDL files are written to this RNSEntrythe effect is the same as a BES CreateActivity, i.e., the activity is started.

#### Effect of “remove” on an activity

The effect of calling an RNS 1.1 “remove” operation is analogous to an unlink. Upon receipt of a “remove” operation the BES MUST destroy and clean up session state for the activity if the caller is authorized by local policy to perform such an action. The disposition of logging and accounting information is unspecified though it is expected to be un-affected by the remove operation. If the activity is currently running it is the responsibility of the BES to terminate and clean up the activity.

# Optional BES Directory Compliance Targets

## Optional RNSEntry elements returned from lookup

OPTIONAL RNSEntry elements are elements that MAY be present. If they are present though, they MUST have the following meaning and refer to the specified information.

### Configuration

An RNSEntry that refers to another RNS 1.1 endpoint that has the following entries:

#### ResourceDescription

#### An RNSEntry that refers to a ByteIO resource (file) that contains a natural language description of the resource.

#### ConstructionProperties

#### An RNSEntry that refers to a ByteIO resource (file) that can be written to configure the BES, and read to retrieve the current configuration. Note that the format of the file is implementation specific.

### Log

An RNSEntry that refers to a ByteIO resource (file) that contains a human readable log file for the BES. Note that the format of the file is implementation specific.

# Security Considerations

Access control is out of scope. There are three operations on BES endpoints specified via this profile: lookup which is read only, remove, which destroys an activity, and write on an streamable byte IO which has the effect of instantiating an activity (i.e., CreateActivity). The security ramifications for each of these is similar to their corresponding BES operation: lookup corresponds to GetActivityStatus, remove corresponds to TerminateActivities, and write to the stream corresponds to CreateActivity.

See the BES specification, GFD.108, for more information on security considerations.

# Author Information

Daniel Dougherty

University of Virginia

Andrew Grimshaw (editor)  
University of Virginia

Shahbaz Memon  
Forschungszentrum Juelich (FZJ)

# Contributors

We gratefully acknowledge the contributions made to this specification by [insert names].

# Acknowledgements

We are grateful to numerous colleagues for discussions on the topics covered in this document, in particular (in alphabetical order, with apologies to anybody we've missed)[insert names].

We would like to thank the people who took the time to read and comment on earlier drafts. Their comments were valuable in helping us improve the readability and accuracy of this document.

Full Copyright Notice

The OGF takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this specification can be obtained from the OGF Secretariat.

The OGF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights, which may cover technology that may be required to practice this recommendation. Please address the information to the OGF Executive Director.

# Disclaimer

This document and the information contained herein is provided on an “As Is” basis and the OGF disclaims all warranties, express or implied, including but not limited to any warranty that the use of the information herein will not infringe any rights or any implied warranties of merchantability or fitness for a particular purpose.

# Full Copyright Notice

Copyright (C) Open Grid Forum (2014). Some Rights Reserved.

# This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included as references to the derived portions on all such copies and derivative works. The published OGF document from which such works are derived, however, may not be modified in any way, such as by removing the copyright notice or references to the OGF or other organizations, except as needed for the purpose of developing new or updated OGF documents in conformance with the procedures defined in the OGF Document Process, or as required to translate it into languages other than English. OGF, with the approval of its board, may remove this restriction for inclusion of OGF document content for the purpose of producing standards in cooperation with other international standards bodies.

# The limited permissions granted above are perpetual and will not be revoked by the OGF or its successors or assignees.

Intellectual Property Statement

The OGF takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this specification can be obtained from the OGF Secretariat.

The OGF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights which may cover technology that may be required to practice this recommendation. Please address the information to the OGF Executive Director (see contact information at OGF website).

Normative References

[RFC 2119] Bradner, S. Key words for use in RFCs to Indicate Requirement Levels. Internet Engineering Task Force, RFC 2119, March 1997.Available at <http://www.ietf.org/rfc/rfc2119.txt>

[JSDL10] Available at <http://www.ggf.org/documents/GFD.136.pdf>

OGF

WS Addressing EndPoint References

OGSA Basic Execution Services (OGSA\_BES, or BES) [GFD.108]

RNS 1.1 OGSA-WSRF Basic Profile 1.0 [GFD.172]

WS-Iterator 1.0 [GFD.188]

OGSA-ByteIO WSRF Basic Profile 1.0 [GFD.98]