GT 4.2.0 Index Service: User's Guide
GT 4.2.0 Index Service: User’s Guide

Introduction

This guide contains information for end-users of the WS MDS Index Service. The Index Service collects information about grid resources and publishes them as service group entries.
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Chapter 1. Getting Information from the MDS Index Service

To view the information contained in an Index Service, you can use either Java WS Core commands (outlined below) or WebMDS.

1. Simple usage

A typical example of using the default Index Service is with the `wsrf-query` Java WS Core command. For example:

```
$GLOBUS_LOCATION/bin/wsrf-query -s https://localhost:8443/wsrf/services/DefaultIndexService
```

displays all the resource properties collected by the default Index Service on your local host.

You can also use an XPath query to drill down your search as well as other Java WS Core commands such as `wsrf-get-property` and `wsrf-get-properties`. For more information, review the User's Guide.
WS MDS Index User Commands

The index service exposes information via service groups and is accessed using the same command-line tools used to query other WSRF services for information. These tools are part of Java WS Core.

- `wsrf-query`
- `wsrf-get-property`
- `wsrf-get-properties`

A set of functionally equivalent tools exist written using WS C core. They tend to be faster alternatives to the above java programs. These tools are part of C WS Core.

- `globus-wsrf-query(1)`
- `globus-wsrf-get-property(1)`
- `globus-wsrf-get-properties(1)`

The following commands are originally documented under their respective component guides, but are reproduced here for convenience.
Name

wsrf-query -- Performs query on a resource property document

wsrf-query

Tool description

Queries the resource property document of a resource. By default, a simple XPath query is assumed that returns the entire resource property document.

Command syntax

wsrf-query [options] [query expression] [dialect]
Table 1. Common options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>-h, --help</td>
<td>Displays help information about the command.</td>
</tr>
<tr>
<td>-d, --debug</td>
<td>Enables debug mode. For example, full stack traces of errors will be displayed.</td>
</tr>
<tr>
<td>-e, --eprFile &lt;file&gt;</td>
<td>Specifies an XML file that contains the WS-Addressing endpoint reference.</td>
</tr>
<tr>
<td>-s, --service &lt;url&gt;</td>
<td>Specifies the service URL.</td>
</tr>
<tr>
<td>-k, --key &lt;name value&gt;</td>
<td>Specifies the resource key. The name is the QName of the resource key in the string form: {namespaceURI}localPart, while the value is the simple value of the key. For complex keys, use the --eprFile option. Example: -k &quot;(<a href="http://www.globus.org)MyKey">http://www.globus.org)MyKey</a>&quot; 123</td>
</tr>
<tr>
<td>-f, --descriptor &lt;file&gt;</td>
<td>Specifies a client security descriptor. Overrides all other security settings.</td>
</tr>
<tr>
<td>-a, --anonymous</td>
<td>Enables anonymous authentication. Only supported with transport security or the GSI Secure Conversation authentication mechanism.</td>
</tr>
<tr>
<td>-g, --delegation &lt;mode&gt;</td>
<td>Enables delegation. mode can be either 'limited' or 'full'. Only supported with the GSI Secure Conversation authentication mechanism.</td>
</tr>
<tr>
<td>-l, --contextLifetime &lt;value&gt;</td>
<td>Sets the lifetime of the client security context. value is in milliseconds. Only supported with the GSI Secure Conversation authentication mechanism.</td>
</tr>
<tr>
<td>-m, --securityMech &lt;type&gt;</td>
<td>Specifies the authentication mechanism. type can be 'msg' for GSI Secure Message, or 'conv' for GSI Secure Conversation.</td>
</tr>
<tr>
<td>-c, --serverCertificate &lt;file&gt;</td>
<td>Specifies the server's certificate file used for encryption. Only needed for the GSI Secure Message authentication mechanism.</td>
</tr>
<tr>
<td>-p, --protection &lt;type&gt;</td>
<td>Specifies the protection level. type can be 'sig' for signature or 'enc' for encryption.</td>
</tr>
<tr>
<td>-x, --proxyFilename &lt;value&gt;</td>
<td>Sets the proxy file to use as client credential.</td>
</tr>
<tr>
<td>-z, --authorization &lt;type&gt;</td>
<td>Specifies authorization type. type can be 'self', 'host', 'none', or a string specifying the expected identity of the remote party.</td>
</tr>
<tr>
<td>-t, --timeout &lt;timeout&gt;</td>
<td>Specifies client timeout (in seconds). The client will wait maximum of the timeout value for a response from the server before returning an error. By default the timeout value is 10 minutes.</td>
</tr>
</tbody>
</table>

Examples:

$ wsrf-query -s https://127.0.0.1:8443/wsrf/services/DefaultIndexService \ "count(//*[local-name()='Entry'])"

$ wsrf-query -s https://127.0.0.1:8443/wsrf/services/DefaultIndexService \ "number(//*[local-name()='GLUECE']/glue:ComputingElement/glue:State/@glue:FreeCPUs)=0"

$ wsrf-query -s http://localhost:8080/wsrf/services/ContainerRegistryService \ "/*/*/*/*[local-name()='Address']"
Name

wsrf-get-property -- Gets values of a single resource property

wsrf-get-property

Tool description

Gets a single resource property from a resource.

Command syntax

wsrf-get-property [options] <property>

The <property> is a QName of the resource property in the string form: {namespaceURI}localPart.
Table 2. Common options

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<th>Option</th>
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<tbody>
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<td>-h, --help</td>
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<tr>
<td>-x, --proxyFilename &lt;value&gt;</td>
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Example:

```bash
```
**Name**

wsrf-get-properties -- Gets values of multiple resource properties

wsrf-get-properties

**Tool description**

Gets multiple resource properties from a resource.

**Command syntax**

wsrf-get-properties [options] <property1> [<property2>... <propertyN>]

Each `<propertyN>` is a QName of the resource property in the string form: `{namespaceURI}localPart`. 
Table 3. Common options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>-h, --help</td>
<td>Displays help information about the command.</td>
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<td>-d, --debug</td>
<td>Enables debug mode. For example, full stack traces of errors will be displayed.</td>
</tr>
<tr>
<td>-e, --eprFile &lt;file&gt;</td>
<td>Specifies an XML file that contains the WS-Addressing endpoint reference.</td>
</tr>
<tr>
<td>-s, --service &lt;url&gt;</td>
<td>Specifies the service URL.</td>
</tr>
<tr>
<td>-k, --key &lt;name value&gt;</td>
<td>Specifies the resource key. The name is the QName of the resource key in the string form: [namespaceURI]localPart, while the value is the simple value of the key. For complex keys, use the --eprFile option. Example:</td>
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<td>-p, --protection &lt;type&gt;</td>
<td>Specifies the protection level. type can be 'sig' for signature or 'enc' for encryption.</td>
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<tr>
<td>-x, --proxyFilename &lt;value&gt;</td>
<td>Sets the proxy file to use as client credential.</td>
</tr>
<tr>
<td>-z, --authorization &lt;type&gt;</td>
<td>Specifies authorization type. type can be 'self', 'host', 'none', or a string specifying the expected identity of the remote party.</td>
</tr>
<tr>
<td>-t, --timeout &lt;timeout&gt;</td>
<td>Specifies client timeout (in seconds). The client will wait maximum of the timeout value for a response from the server before returning an error. By default the timeout value is 10 minutes.</td>
</tr>
</tbody>
</table>

Example:

```
$ wsrf-get-properties -s http://localhost:8080/wsrfservices/CounterService -k 
"{(http://counter.com)CounterKey" 123 \
"{(http://docs.oasis-open.org/wsrfs/2004/06/wsrfs-WS-ResourceLifetime-1.2-draft-01.xsd)CurrentTime" \
"{(http://docs.oasis-open.org/wsrfs/2004/06/wsrfs-WS-ResourceLifetime-1.2-draft-01.xsd)TerminationTime" \
```

Draft
Name
globus-wsrf-query -- Query a WSRF resource's Resource Property document

globus-wsrf-query [OPTIONS]... SERVICE-SPECIFIER QUERY-EXPRESSION

Tool description
Perform an XPATH query on a resource property document.

Command syntax

globus-wsrf-query [OPTIONS]... SERVICE-SPECIFIER QUERY-EXPRESSION

Table 4. Application-specific options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>-n</td>
<td>----nsMapFile FILENAME.</td>
<td>Use the namespace map entries in FILENAME in the XPATH context.</td>
</tr>
<tr>
<td>-N</td>
<td>--namespace PREFIX=NAMESPACE-URI</td>
<td>Create a namespace mapping in the XPATH context for the PREFIX string to resolve to the NAMESPACE-URI namespace.</td>
</tr>
</tbody>
</table>
Table 5. Common options

<table>
<thead>
<tr>
<th>Option</th>
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</tr>
</thead>
<tbody>
<tr>
<td>-a</td>
<td>--anonymous</td>
</tr>
<tr>
<td>-d, --debug</td>
<td>Enables debug mode. In debug mode, all SOAP messages will be displayed to stderr and full WSRF Fault messages will be displayed.</td>
</tr>
<tr>
<td>-e</td>
<td>--eprFile FILENAME</td>
</tr>
<tr>
<td>-h</td>
<td>--help</td>
</tr>
<tr>
<td>-k</td>
<td>--key KEYNAME VALUE</td>
</tr>
<tr>
<td>-m, --securityMech TYPE</td>
<td>Set authentication mechanism. TYPE is one of msg for WS-SecureMessage or conv for WS-SecureConversation.</td>
</tr>
<tr>
<td>-p, --protection LEVEL</td>
<td>Set message protection level. LEVEL is one of sig for digital signature or enc for encryption. The default is 'sig'.</td>
</tr>
<tr>
<td>-s</td>
<td>--service ENDPOINT</td>
</tr>
<tr>
<td>-t</td>
<td>--timeout SECONDS</td>
</tr>
<tr>
<td>-u</td>
<td>--usage</td>
</tr>
<tr>
<td>-V</td>
<td>--version</td>
</tr>
<tr>
<td>-v</td>
<td>--certKeyFiles CERTIFICATE-FI LENAME KEY-FILENAME</td>
</tr>
<tr>
<td>-x</td>
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<td>--versions</td>
<td>Show version information for all loaded modules and exit.</td>
</tr>
</tbody>
</table>

SERVICE-SPECIFIER: [-s URI [-k KEY VALUE] | -e FILENAME]

QUERY-EXPRESSION: XPath-Expression-String

Examples:

```
% globus-wsrf-query -e widget.epr "//*[local-name() = 'CurrentTime']"
<ns02:CurrentTime
  xmlns:ns00="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns01="http://www.w3.org/2001/XMLSchema"
  xmlns:ns02="http://docs.oasis-open.org/wsrf/2004/06/wsrf-WS-ResourceLifetime-1.2-draft"
  ns00:type="ns01:dateTime">2006-05-30T13:53:15Z</ns02:CurrentTime>
```
Contents of `widget.epr`:

```xml
<ns01:EndpointReference xmlns:ns01="http://schemas.xmlsoap.org/ws/2004/03/addressing">
  <ns01:Address>http://globus.my.org:8080/wsrf/services/WidgetService</ns01:Address>
  <ns01:ReferenceProperties>
  </ns01:ReferenceProperties>
</ns01:EndpointReference>
```

**Limitations**

- The namespace mapping option and use of namespace prefixes in the `XPath-Expression-String` does not work when communicating with the Java container unless the `http://wsrf.globus.org/core/query/targetedXPath` dialect is used.

**Output and Exit Code**

If the query is successful, the program displays the output of the query to `stdout` and terminates with exit code 0. In the case of an error, the type of error will be displayed to `stderr` and the program will terminate with a non-0 exit code.
Name

globus-wsrf-get-property -- Get a resource property's value

globus-wsrf-get-property [OPTIONS]... SERVICE-SPECIFIER PROPERTY-NAME

Tool description

Get the value of a resource property from a WSRF resource.

Command syntax

globus-wsrf-get-property [OPTIONS]... SERVICE-SPECIFIER PROPERTY-NAME

Table 6. Common options

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<td>-z</td>
<td>--authorization TYPE</td>
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<td>--versions</td>
<td>Show version information for all loaded modules and exit.</td>
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</tbody>
</table>
SERVICE-SPECIFIER: [-s URI [-k KEY VALUE] | -e FILENAME]

PROPERTY-NAME: [{Namespace-URI}]Property-Name

Example:

```bash
% globus-wsrf-get-property -e widget.epr \
 '{http://docs.oasis-open.org/wsrf/2004/06/wsrf-WS-ResourceLifetime-1.2-draft-01.xsd}CurrentTime

<ns02:CurrentTime
 xmlns:ns00="http://www.w3.org/2001/XMLSchema-instance"
 xmlns:ns01="http://www.w3.org/2001/XMLSchema"
 xmlns:ns02="http://docs.oasis-open.org/wsrf/2004/06/wsrf-WS-ResourceLifetime-1.2-draft-01.xsd"
 ns00:type="ns01:dateTime">2006-05-30T14:26:35Z</ns02:CurrentTime>
```

Output and Exit Code

If the property exists, its values (if any) are displayed to `stdout` and the program terminates with exit code 0. In the case of an error, the type of error will be displayed to `stderr` and the program will terminate with a non-0 exit code.
Name

globus-wsrf-get-properties -- Get multiple resource property value

globus-wsrf-get-properties [OPTIONS]... SERVICE-SPECIFIER PROPERTY-NAME...

Tool description

Get the value of multiple resource properties from a WSRF resource.

Command syntax

globus-wsrf-get-properties [OPTIONS]... SERVICE-SPECIFIER PROPERTY-NAME...

Table 7. Common options

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</tbody>
</table>
SERVICE-SPECIFIER: [-s URI [-k KEY VALUE] | -e FILENAME]

PROPERTY-NAME: [{Namespace-URI}]Property-Name

Example:

```bash
% globus-wsrf-get-properties \
  -s http://grid.example.org:8080/wsrf/services/WidgetService \
  -k "{{http://www.globus.org/namespaces/2004/06/core}WidgetKey" 123 \ 
    "{{http://widgets.com}foo" \ 
      "{{http://docs.oasis-open.org/wsrf/2004/06/wsrf-WS-ResourceLifetime-1.2-draft-01.xsd}CurrentTime"

<ns02:foo
  xmlns:ns00="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns01="http://www.w3.org/2001/XMLSchema"
  xmlns:ns02="http://widgets.com"
  ns00:type="ns01:string">
  Foo Value String
</ns02:foo><ns03:CurrentTime
  xmlns:ns00="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns01="http://www.w3.org/2001/XMLSchema"
  xmlns:ns03="http://docs.oasis-open.org/wsrf/2004/06/wsrf-WS-ResourceLifetime-1.2-draft-01.xsd"
  ns00:type="ns01:dateTime">2006-05-30T16:04:15Z</ns03:CurrentTime>
```

**Output and Exit Code**

If the properties exist, their values (if any) are displayed to `stdout` and the program terminates with exit code 0. In the case of an error, the type of error will be displayed to `stderr` and the program will terminate with a non-0 exit code.
Chapter 2. Graphical User Interface

There is no GUI specifically for the Index Service. The release contains WebMDS which can be used to display monitoring information collected in an Index Service in a normal web browser.
Chapter 3. Troubleshooting

General troubleshooting information is based on Java WS Core and is included below.

For a list of common errors in GT, see Error Codes.

1. Error Messages

Table 3.1. WS MDS Index Service Error Messages

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Definition</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>error</td>
<td>what causes this</td>
<td>possible solutions</td>
</tr>
</tbody>
</table>

WS MDS is built on Java WS Core, please see Java WS Core Error Codes for more error code documentation.

2. General troubleshooting information

- In general, if you want to investigate a problem on your own please see Chapter 10, Debugging for details on how to turn on debugging.

- Most of the command line clients have a `-debug` option that will display more detailed error messages, including the error stack traces.

- Search the mailing lists such as gt-user@globus.org or jwscore-user@globus.org (before posting a message).

- If you think you have found a bug please report it in our Bugzilla system. Please include as much as detail about the problem as possible.

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2. mailto:gt-user@globus.org
3. mailto:jwscore-user@globus.org
# Glossary

## C

certificate A public key plus information about the certificate owner bound together by the digital signature of a CA. In the case of a CA certificate, the certificate is self signed, i.e. it was signed using its own private key.

## W

Web Services Addressing (WSA) The WS-Addressing specification defines transport-neutral mechanisms to address web services and messages. Specifically, it defines XML elements to identify web service endpoints and to secure end-to-end endpoint identification in messages. See the [W3C WS Addressing Working Group](http://www.w3.org/2002/ws/addr/) for details.

## X

XML Extensible Markup Language (XML) is standard, flexible, and extensible data format used for web services. See the [W3C XML site](http://www.w3.org/XML/) for details.

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20 [http://www.w3.org/XML/](http://www.w3.org/XML/)
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