Introduction

WebMDS enables end users to view monitoring information via a standard web browser interface, without installing any additional software on their PC. WebMDS is implemented as a servlet that uses a plugin interface to gather monitoring information (or any other information in XML format) and XSLT transforms, and present the data to the user in a readable form. Web site administrators can customize their own WebMDS deployments by using HTML form options, configuring different plugins to collect data and XSLT transforms, and creating their own plugins and XSLT transforms.

This guide contains advanced configuration information for system administrators working with WS MDS WebMDS. It provides references to information on procedures typically performed by system administrators, including installation, configuring, deploying, and testing the installation.

WebMDS is built and installed as part of a default GT installation. Read Installing GT 4.2.1 and WS MDS System Administrator's Guide for more information.
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  default,
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S
security considerations,

T
testing,
  troubleshooting,

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Chapter 1. Configuring

1. Configuration overview

WebMDS can be configured to get information from any of various sources and to filter it through any XSL transform. WebMDS uses configuration files to specify the location of (and to name) sources of information and xsl and web form arguments to select among these configured information sources and xsl transforms.

By default, WebMDS comes configured to report information about an index server using transaction-level security on the default port (8443) on the local system. If you are running the Globus Toolkit in this default configuration, then you can use WebMDS to query your local Index Service without any configuration changes.

If you wish to monitor a different Index Service, you will need to edit the file $GLOBUS_LOCATION/lib/webmds/conf/indexinfo to change the URL in the line:

```
<value>https://127.0.0.1:8443/wsrfservices/DefaultIndexService</value>
```

to match the URL of your default index service. Changes to WebMDS configuration files take effect the next time that Tomcat is restarted.

For other configuration changes (e.g., monitoring different kinds of services), see the detailed configuration information below.

2. Syntax of the interface

Each configuration file in $GLOBUS_LOCATION/lib/webmds/conf defines a source of XML, which can be used in an HTML form to specify sources of information and XSL transforms. The distribution contains some standard configuration files in this directory, including:

**Table 1.1. Pre-configured information sources**

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>indexinfo</td>
<td>all resource properties from an index server running with transaction-level security on port 8443 on the local host</td>
</tr>
<tr>
<td>indexinfo_nosec</td>
<td>all resource properties from an index server running with no security on port 8080 on the local host</td>
</tr>
<tr>
<td>openEndedQuery</td>
<td>all resource properties from a user-specified grid service</td>
</tr>
<tr>
<td>openEndedRP</td>
<td>a user-specified resource property from a user-specified grid service</td>
</tr>
<tr>
<td>servicegroupxsl</td>
<td>an xsl transform that presents summary information about a service group</td>
</tr>
<tr>
<td>sgedetail</td>
<td>an XSL transform that presents detailed information about a service group entry</td>
</tr>
</tbody>
</table>

Each configuration file defines a WebmdsConfig object. A WebmdsConfig object consists of:

- **A description**: a textual description of the XML source being defined.
- **A className**: the name of the Java class that will be used to acquire the XML data.
- **Zero or more parameter objects**, each of which consists of the **name** of some parameter recognized by the Java class specified by className, and the **string value** of that parameter.
For example, this is $GLOBUS\_LOCATION/lib/webmds/conf/servicegroupxsl, which defines the servicegroupxsl XML source:

```xml
<WebmdsConfig>
  <description>
    XSL file to show service group summary information
  </description>
  <className>org.globus.mds.webmds.xmlSources.file.FileXmlSource</className>
  <parameter>
    <name>file</name>
    <value>xslfiles/servicegrouptable.xsl</value>
  </parameter>
</WebmdsConfig>
```

This file tells WebMDS to use the `org.globus.mds.webmds.xmlSources.file.FileXmlSource` Java class (a class which reads XML from a local file) to collect XML data and to pass a file parameter (which that Java class interprets as the name of the file to open, relative to the WebMDS base directory).

Tomcat must be restarted (or one of the more advanced Tomcat administrative mechanisms must be used) for changes to these configuration files to take effect.

### 3. XML Sources included with WebMDS

#### 3.1. FileXMLSource

The class `org.globus.mds.webmds.xmlSources.file.FileXmlSource` reads XML from a file, and recognizes a single parameter:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>file</td>
<td>The name of the file to read. Relative path names are interpreted relative to the WebMDS base directory ($GLOBUS_LOCATION/lib/webmds).</td>
</tr>
</tbody>
</table>

#### 3.2. NodeXMLSource

This XML source class uses a WebmdsNodeSource object to fetch an XML document and return it in a form that is usable by WebMDS. It recognizes the following options:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>class</td>
<td>The name of a class that implements the WebmdsNodeSource interface. An instance of this class will be used to get an XML document.</td>
</tr>
<tr>
<td>parameters</td>
<td>Additional parameters are passed to an instance of the class specified by the class argument.</td>
</tr>
</tbody>
</table>

#### 3.3. Classes That Implement WebmdsNodeSource

The following classes implement the NodeXMLSource interfaces and can be used in conjunction with NodeXMLSource.
### 3.4. ResourcePropertyQueryNodeSource

This class performs a resource property query to get all the resource properties for some web service. It recognizes the following configuration parameters:

**Table 1.4. Configuration parameters used with ResourcePropertyQueryNodeSource**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>endpoint</td>
<td>The endpoint name to be used in a resource property query.</td>
</tr>
<tr>
<td>endpointKeyName and endpointKeyValue</td>
<td>An optional key/value pair to use as reference properties for the endpoint specified with the endpoint parameter.</td>
</tr>
<tr>
<td>allowUserEndpoints</td>
<td>If true, values for xmlSource.sourceName.param.endpoint, xmlSource.sourceName.param.endpointKeyName, and xmlSource.sourceName.param.endpointKeyValue specified in the request will override the configured endpoint value.</td>
</tr>
<tr>
<td>endpointFile</td>
<td>The name of a file from which the endpoint information (in XML) will be read. This configuration parameter can never be overridden by request arguments.</td>
</tr>
</tbody>
</table>

### 3.5. ResourcePropertyNodeSource

This class queries a web service for a single resource property. It recognizes the following parameters:

**Table 1.5. Configuration parameters used with ResourcePropertyNodeSource**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>endpoint</td>
<td>The endpoint name to be used in a resource property query.</td>
</tr>
<tr>
<td>endpointKeyName and endpointKeyValue</td>
<td>An optional key/value pair to use as reference properties for the endpoint specified with the endpoint parameter.</td>
</tr>
<tr>
<td>allowUserEndpoints</td>
<td>If true, values for xmlSource.sourceName.param.endpoint, xmlSource.sourceName.param.endpointKeyName, and xmlSource.sourceName.param.endpointKeyValue specified in the request will override the configured endpoint value.</td>
</tr>
<tr>
<td>endpointFile</td>
<td>The name of a file from which the endpoint information (in XML) will be read. This configuration parameter can never be overridden by request arguments.</td>
</tr>
<tr>
<td>rpNamespace</td>
<td>The namespace part of the QName of the resource property to be queried for.</td>
</tr>
<tr>
<td>rpName</td>
<td>The local name part of the QName of the resource property to be queried for.</td>
</tr>
<tr>
<td>allowUserResourceProperties</td>
<td>If true, values of xmlSource.sourceName.param.rpNamespace and xmlSource.sourceName.param.rpNames specified in the request will override the configured resource property namespace and name.</td>
</tr>
</tbody>
</table>
Chapter 2. Deploying

Because WebMDS is implemented as a servlet, it must be deployed into a servlet container, such as Tomcat\(^1\). The following instructions assume that you’ve installed Tomcat version 5.0.28, and set the \$CATALINA_HOME\ environment variable to the directory into which you’ve installed Tomcat.

1. Standard deployment into Tomcat 5.0.28

The standard deployment consists of two steps: creating a configuration file that tells Tomcat where to find the WebMDS servlet and related files, and restarting Tomcat so that it will read this new configuration file. These steps require write permission on files and directories in \$CATALINA_HOME\; they do not require write permission on anything in \$GLOBUS_LOCATION\.

To create the configuration file, run this command:

```
$GLOBUS_LOCATION/lib/webmds/bin/webmds-create-context-file \n  $CATALINA_HOME/conf/Catalina/localhost
```

This will create \$CATALINA_HOME/conf/Catalina/localhost/webmds.xml. Note: if this file already exists (e.g., if you’ve previously installed another version of WebMDS), you’ll need to use the \(-f\) option to \webmds-create-context-file\.

Next, make sure that Tomcat has a version of the Xalan library (used by WebMDS to do XSL transforms) that is compatible with the one used by Globus:

```
cp $GLOBUS_LOCATION/endorsed/xalan-2.6.jar $CATALINA_HOME/common/endorsed/.
```

Next, restart Tomcat. If Tomcat is already running, stop it:

```
$CATALINA_HOME/bin/shutdown.sh
```

Then, start Tomcat:

```
$CATALINA_HOME/bin/startup.sh
```

2. Deploying WebMDS and Globus in the same Tomcat Server

If you wish to run Globus and WebMDS in the same Tomcat instance (instead of, for example, running Globus in the Globus standalone container and WebMDS in Tomcat), then do the following:

1. Install Globus and deploy it into Tomcat, as described in Installing GT 4.2.1.

2. Run \webmds-create-context-file\:

\(^1\) http://jakarta.apache.org/tomcat/
3. The Globus and WebMDS deployments install identical copies of certain files in different places. The presence of these duplicates causes WebMDS to fail when sending requests to secure servers. To prevent this problem, remove the duplicates:

```bash
rm $GLOBUS_LOCATION/lib/webmds/WEB-INF/lib/puretls.jar
rm $GLOBUS_LOCATION/lib/webmds/WEB-INF/lib/cryptix*.jar
rm $GLOBUS_LOCATION/lib/webmds/WEB-INF/lib/jce-jdk*.jar
```

4. Finally, restart Tomcat. If Tomcat is already running, stop it:

```bash
$CATALINA_HOME/bin/shutdown.sh
```
Then, start Tomcat:

```bash
$CATALINA_HOME/bin/startup.sh
```

3. Custom deployment

If you are already running a Tomcat server (or other server that supports servlets) and your preferred mechanism for installing servlets is something other than creating a configuration file and restarting your web server, feel free to use that mechanism. The servlet root for WebMDS is $GLOBUS_LOCATION/lib/webmds.

For the rest of these instructions, the term *Globus user* will be used to refer to the owner of the $GLOBUS_LOCATION directory, and *Tomcat user* will be used to refer to the owner of the $CATALINA_HOME directory. If the Globus and Tomcat installations were performed from the same user account, the Globus user and Tomcat user will be the same.

Any time you change the servlet configuration (or any jar files used by the servlet), you'll need to let tomcat know there was a change. If you have a preferred way of configuring tomcat, feel free to use it, with $GLOBUS_LOCATION/lib/webmds as the servlet directory. These steps need to be performed by the Tomcat user.

If you're using tomcat 5.0.28 and haven't done any custom configuration (such as defining additional hosts) other than changing the tomcat port, you can configure tomcat by doing the following:

1. Create a context descriptor file called `webmds.xml` in the location where tomcat will look for it:

```bash
$GLOBUS_LOCATION/lib/webmds/bin/webmds-create-context-file \
$CATALINA_HOME/conf/Catalina/localhost
```

Note: if the file $CATALINA_HOME/conf/Catalina/localhost/webmds.xml already exists, you can use the `-f` flag to `create-context-file` to overwrite it, to the tomcat configuration directory.

2. If tomcat is running, shut it down.
$CATALINA_HOME/bin/shutdown.sh

3. Start tomcat up.

$CATALINA_HOME/bin/startup.sh
Chapter 3. Testing

The easiest way to test your installation is to use it to view your Index Service, by pointing your web browser at http://your-tomcat-host:your-tomcat-port/webmds and clicking on the link labelled "A list of resources registered to the local default index service".

For more in-depth tests, you can run the WebMDS unit tests, by doing the following:

1. Install httpunit\(^1\), version 1.6 or later. Set the environment variable GLOBUS_HTTPUNIT_DIR to the directory into which httpunit has been installed.

2. Install the WebMDS test package; from the GT4 distribution directory, run

   make gt4-webmds-test

3. Run the core WebMDS test suite. This tests the WebMDS servlet itself, the File XML Source, and the more commonly-used xslt transforms. There are two modes in which this test suite can be run.

   - The core WebMDS tests can be run in a servlet container simulator. This tests the WebMDS code but does not test whether or not WebMDS has been deployed correctly into Tomcat:

     ```
     ant -f $GLOBUS_LOCATION/etc/globus_wsrf_mds_webmds_test/build.xml test-installed
     ```

     The output should look something like this:

     Buildfile: $GLOBUS_LOCATION/etc/globus_wsrf_mds_webmds_test/build.xml
     test-installed:
     [junit] No webmds.test.servletURL property specified; skipping org.globus.mds.webmds.test.SimpleServletTest http tests
     [junit] No webmds.test.servletURL property specified; skipping org.globus.mds.webmds.test.ServletXslTests http tests
     [junit] Tests run: 8, Failures: 0, Errors: 0, Time elapsed: 4.516 sec

     BUILD SUCCESSFUL
     Total time: 8 seconds

   - The core WebMDS tests can be run against a running WebMDS server, to test the local WebMDS deployment:

     ```
     ant \
     -f $GLOBUS_LOCATION/etc/globus_wsrf_mds_webmds_test/build.xml \ 
     "-Dwebmds.test.servletURL=http://webmds_host:webmds_port/webmds/webmds" \ 
     test-installed
     ```

     The output should look something like this:

---

\(^1\) http://httpunit.sourceforge.net
Buildfile: GLOBUS_LOCATION/etc/globus_wsrft_mds_webmds_test/build.xml

test-installed:
  [junit] Tests run: 8, Failures: 0, Errors: 0, Time elapsed: 5.229 sec

BUILD SUCCESSFUL
Total time: 8 seconds

The tests have passed if the number of failures and number of errors are both 0. Detailed test output can be found in the file $GLOBUS_LOCATION/etc/globus_wsrft_mds_webmds_test/test-reports/TEST-org.globus.mds.webmds.test.PackageTests.xml.

4. Run the WebMDS resource property node source test suite, to test the ability of WebMDS to query a running WS MDS Index Server. This test suite requires that both a secure Index server and an insecure Index server be running. As with the core tests, the resource property tests may be run in two modes.

- The tests can be run in a servlet container simulator. This tests the WebMDS code, and the interaction between the WebMDS code and running Index servers, but does not test whether or not WebMDS has been deployed correctly into tomcat:

  ant -f 
  $GLOBUS_LOCATION/etc/globus_wsrft_mds_webmds_resource_property_source_test/build.xml
  "-Dwebmds.rpTest.insecureServicePrefix=http://index_server_host:index_server_port/wsrf/services"
  "-Dwebmds.rpTest.secureServicePrefix=https://index_server_host:index_server_port/wsrf/services"
  test-installed

  The output should look something like this:

  BUILD SUCCESSFUL
  Total time: 10 seconds

- To run an end-to-end test that tests the communication between a deployed WebMDS server and running index servers, do the following:
ant -f \
$GLOBUS_LOCATION/etc/globus_wsrf_mds_webmds_resource_property_source_test/build.xml \
"-Dwebmds.rpTest.insecureServicePrefix=http://insecure_index_server_host:index_server_port/wsrf/services" \
"-Dwebmds.rpTest.secureServicePrefix=https://secure_index_server_host:index_server_port/wsrf/services" \
"-Dwebmds.test.servletURL=http://webmds_host:webmds_port/webmds/webmds" \
test-installed

The output should look something like this:

Buildfile: $GLOBUS_LOCATION/etc/globus_wsrf_mds_webmds_resource_property_source_test/build.xml

test-installed:
[junit] querying resource properties at 'http://insecure_index_server_host:index_server_port/wsrf/services/DefaultIndexService'
[junit] querying resource properties at 'https://secure_index_server_host:index_server_port/wsrf/services/DefaultIndexService'
[junit] Tests will use Globus servers at https://secure_index_server_host:index_server_port/wsrf/services/DefaultIndexService
[junit] Tests will use Globus servers at https://secure_index_server_host:index_server_port/wsrf/services/DefaultIndexService
[...]

BUILD SUCCESSFUL
Total time: 10 seconds

The tests have passed if the number of failures and number of errors are both 0. Detailed test output can be found in the file $GLOBUS_LOCATION/etc/globus_wsrf_mds_webmds_resource_property_source_test/test-reports/TEST-org.globus.mds.webmds.xmlSources.resourceProperties.test.PackageTests.xml.
Chapter 4. Security Considerations

1. WebMDS Security Considerations

By default, the WebMDS plugins distributed as part of the Toolkit do not use authentication credentials -- they retrieve information using anonymous SSL authentication or no authentication at all, and thus retrieve only publicly-available information.

The ResourcePropertyNodeSource and ResourcePropertyQueryNodeSource plugins can be configured either to allow users to specify what resources they want to query or to only allow users to query resources pre-configured by the web administrator. The standard WebMDS deployment allows users to specify the resources they want to query; to disallow this (for example, to ensure that people don't use your site's bandwidth to view information about some other site's services), remove the files $GLOBUS_LOCATION/lib/webmds/conf/openEndedRP and $GLOBUS_LOCATION/lib/webmds/conf/openEndedQuery.
Chapter 5. Debugging

1. Logging

As of 4.2.1, the Globus Toolkit provides system administration logs that are CEDPs best practices\(^1\) compliant.

Configuration for this logger can be changed by editing \$GLOBUS\_LOCATION/FIXME/path/to/cedpslogfile.

For more details on the CEDPS Logging format, including descriptions of reserved name-value pairs, see http://cedps.net/index.php/LoggingBestPractices:

1.1. Configuring system administration logs

[FIXME the following is java core's info - tailor to this component] The specific logger to edit will be log4j.log-ger.sysadmin in container-log4j.properties. There you can configure the following properties:

log4j.appender.infoCategory=org.apache.log4j.RollingFileAppender
log4j.appender.infoCategory.Threshold=INFO
log4j.appender.infoCategory.File=var/containerLog
log4j.appender.infoCategory.MaxFileSize=10MB
log4j.appender.infoCategory.MaxBackupIndex=2

Above implies the logging file is rolling with each file size limited to 10MB and the logging information is stored in \$GLOBUS\_LOCATION/var/containerLog.

1.2. Sample log file

The sample log file\(^2\) contains many log entries for various scenarios in the Java WS container [FIXME does this apply for your component? if not, can you provide a sample log file?]?

---

\(^1\) http://cedps.net/index.php/LoggingBestPractices
\(^2\) http://www.globus.org/toolkit/docs/4.2.1/common/javawscore/sample-container-log.txt
# Chapter 6. Troubleshooting

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

## 1. Error Messages

Error handling in WebMDS is currently done by throwing exceptions, which are displayed by Tomcat as stack traces.

### Table 6.1. WS MDS Trigger Service Error Messages

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>java.net.ConnectException: Connection refused</td>
<td>If you attempt to use WebMDS to collect information from a service that is not running, you will see a stack trace that begins with: org.globus.mds.webmds.xmlSources.resourceProperties.ResourcePropertySourceException; nested exception is: java.net.ConnectException: Connection refused.</td>
</tr>
<tr>
<td>faultString: org.globus.mds.webmds.xmlSources.resourceProperties.ResourcePropertySourceException: java.net.ConnectException: Connection refused</td>
<td>When WebMDS sends resource property queries to a secure WSRF service instance (such as an WS MDS Index Server), the WebMDS server must trust the certificate authority that issued the certificate used by the WSRF service instance. If the WebMDS server does not trust the certificate authority, queries will produce a stack trace that includes this message.</td>
</tr>
<tr>
<td>WebMDS connections to secure Index Servers (or other secure WSRF servers) just hang</td>
<td>If the JVM used by Tomcat is configured to use a blocking random-number source, WebMDS connections to secure Index Servers (or other secure WSRF servers) can hang. This is the default configuration for many installations.</td>
</tr>
</tbody>
</table>
Glossary

I

Index Service

An aggregator service in WS MDS that serves as a registry similar to UDDI, but much more flexible. Indexes collect information and publish that information as WSRF resource properties.
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GT 4.2.1 WS MDS WebMDS: User's Guide

Introduction

WebMDS is a web-based interface for viewing formatted information about Grid resources. In the simplest instance, a web server administrator creates an HTML link that causes the WebMDS server to collect and format information that is presented to the user. Users can also use web forms to specify parameters that control what information is collected and how it's presented.
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Chapter 1. Visualizing the Index Service with WebMDS

Once you've deployed the WebMDS servlet, simply point your web browser at http://your-tomcat-host:your-tomcat-port/webmds and click on the link labelled "A list of resources registered to the local default index service". For more information, see Chapter 2, Graphical User Interface.

For more detailed information about changing the look of WebMDS and more advanced configuration, see the WebMDS Admin Guide.
Chapter 2. Graphical User Interface

1. Overview of the purpose and functionality of the GUI

The WebMDS GUI is a web-based interface for browsing formatted XML data, such as the results of resource property queries on a grid service.

2. Command and options

WebMDS can be accessed using any web browser. In a default WebMDS installation, the URL http://hostname:port/webmds corresponds to the top-level WebMDS web page. This page includes a link to a WebMDS invocation that provides summary information (with links to detailed information) about a locally-running MDS Index server. It also contains a link to a page of sample web forms demonstrating other uses of WebMDS.

3. Customizing the web forms used to access WebMDS

The WebMDS servlet is located at http://your-tomcat-host:your-tomcat-port/webmds/webmds. It takes the following arguments:

<table>
<thead>
<tr>
<th>Table 2.1. Form arguments used by WebMDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>info</td>
</tr>
<tr>
<td>xsl</td>
</tr>
<tr>
<td>xml-Source.info_name.param.source_specific_options</td>
</tr>
<tr>
<td>xml-Source.xsl_name.param.source_specific_options</td>
</tr>
</tbody>
</table>

4. Limitations

Error conditions (such as typographical errors in resource property names) are presented as stack traces, rather than user-friendly error messages.
Chapter 3. Troubleshooting

The commonly-used WebMDS plugins do resource property queries; the Globus Toolkit `wsrf-query` can be used to determine whether the desired information is available directly from the resource.

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

For debugging information, see Chapter 5, Debugging

1. Error Messages

Error handling in WebMDS is currently done by throwing exceptions, which are displayed by Tomcat as stack traces.

Table 3.1. WS MDS Trigger Service Error Messages

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Definition</th>
</tr>
</thead>
</table>
| java.net.ConnectException: Connection refused | If you attempt to use WebMDS to collect information from a service that is not running, you will see a stack trace that begins with: `org.globus.mds.webmds.xmlSources.resourceProperties.ResourcePropertySourceException`. This can be solved by configuring the Tomcat server that hosts WebMDS to trust the appropriate CA, by either:  
  - placing the CA certificate in `/etc/grid-security/certificates`, or  
  - placing the CA certificate somewhere else, and setting the Tomcat process’s `X509_CERT_DIR` system parameter to the directory in which the CA certificate was installed. One way to do this is to set the `CATALINA_OPTS` environment variable and then restart Tomcat:  
    ```
    export CATALINA_OPTS=-DX509_CERT_DIR=/path/to/cert/dir
    $CATALINA_HOME/bin/shutdown.sh
    $CATALINA_HOME/bin/startup.sh
    ```  

| faultString: org.globus.common.ChainedIOException: Authentication failed [Caused by: Failure unspecified at GSS-API level [Caused by: Unknown CA]] | When WebMDS sends resource property queries to a secure WSRF service instance (such as an WS MDS Index Server), the WebMDS server must trust the certificate authority that issued the certificate used by the WSRF service instance. If the WebMDS server does not trust the certificate, queries will produce a stack trace that includes this message. |
| WebMDS connections to secure Index Servers (or other secure WSRF servers) just hang | If the JVM used by Tomcat is configured to use a blocking random-number source, WebMDS connections to secure Index Servers (or other secure WSRF servers) just hang. This is the default configuration for many installations. |
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GT 4.2.1 WS MDS WebMDS: Developer's Guide
Introduction

WebMDS is a web-based interface for viewing formatted information about Grid resources. Information is collected via a plugin interface and then formatted using an XSLT transform.

Figure 1. WebMDS Information Flow
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Chapter 1. Before you begin

1. Feature summary

Features new in release 4.2.1:

• None

Other Supported Features

• Extensible plugin interface to support various mechanisms to gather monitoring information and XSLT transforms.
• Plugins to acquire monitoring information via resource property mechanisms.
• Plugin to acquire XSLT transforms by reading from local files.

Deprecated Features

• None

2. Tested platforms

Tested Platforms for WebMDS:

• The WebMDS server has only been tested with Tomcat version 5.0.28; it has been tested on RedHat Linux (i386) and, to a lesser extent, on Windows XP.
• On the client side, WebMDS should be accessible from any web browser on any platform.

2.1. Installing WebMDS on Windows

Although the WebMDS server is not officially supported on non-Unix platforms, and no Windows installer exists for WebMDS, it is possible to run WebMDS on Windows. The following instructions describe how to install WebMDS on a Windows platform.

1. Install Tomcat and set your CATALINA_HOME environment variable to the directory into which Tomcat was installed.

2. Install the Globus Java WS-Core distribution from the Globus Toolkit download page. Set your GLOBUS_LOCATION environment variable to the directory into which you installed Globus Java WS-Core.

3. Check the ws-mds distribution out of the Globus CVS repository, using the globus_4_0_branch tag.

4. Install the servicegroup package:

   cd c:\wherever\ws-mds\servicegroup\schema
   ant deploy

1 http://jakarta.apache.org/tomcat/
2 http://www.globus.org/toolkit/downloads/
3 http://www.globus.org/toolkit/docs/development/remote-cvs.html
Before you begin

```
cd ..\source
ant deploy

where wherever is the directory into which you checked out the ws-mds sources.
```

5. Install WebMDS:

```
cd c:\wherever\ws-mds\webmds
ant deploy
```

6. Create the webmds context file (this tells Tomcat where to find WebMDS):

```
%GLOBUS_LOCATION%\lib\webmds\bin\webmds-create-context-file %CATALINA_HOME%\conf\Catalina\localhost
```

7. Restart Tomcat.

WebMDS can then be configured and used as described in the rest of the documentation: WebMDS.

### 3. Backward compatibility summary

Protocol changes since GT version 4.0.x:
- None

API changes since GT version 4.0.x:
- None

Exception changes since GT version 4.0.x:
- None

Schema changes since GT version 4.0.x:
- None

### 4. Technology dependencies

WebMDS depends on the following GT components:
- Java WS Core

WebMDS depends on the following 3rd party software:
- Tomcat

---

5. WebMDS Security Considerations

By default, the WebMDS plugins distributed as part of the Toolkit do not use authentication credentials -- they retrieve information using anonymous SSL authentication or no authentication at all, and thus retrieve only publicly-available information.

The ResourcePropertyNodeSource and ResourcePropertyQueryNodeSource plugins can be configured either to allow users to specify what resources they want to query or to only allow users to query resources pre-configured by the web administrator. The standard WebMDS deployment allows users to specify the resources they want to query; to disallow this (for example, to ensure that people don’t use your site’s bandwidth to view information about some other site’s services), remove the files $GLOBUS_LOCATION/lib/webmds/conf/openEndedRP and $GLOBUS_LOCATION/lib/webmds/conf/openEndedQuery.
Chapter 2. Usage scenarios

There is no "client" programmatic interface to WebMDS; clients communicate using HTTP requests. The web form arguments recognized by WebMDS are documented in User's Guide.

1. Creating a new plugin

To create a new plugin to collect raw XML data, write a Java class that implements the WebmdsXmlSource or WebmdsNodeSource interface. These are documented in APIs. The FileXmlSource and NodeXmlSource classes distributed with WebMDS are examples of classes that implement WebmdsXmlSource; the ResourcePropertyNodeSource and ResourcePropertyQueryNodeSource classes distributed with WebMDS are examples of classes that implement the WebmdsNodeSource interface.

2. Changing format of output

To change the appearance of the output of WebMDS, create a new XSLT transform; see the W3C XSLT Documentation for more information.

---

1 [http://www.w3.org/TR/xslt](http://www.w3.org/TR/xslt)
Chapter 3. Architecture and design overview

Figure 3.1. WebMDS Request Flow

In a typical WebMDS transaction, a user uses a web browser to send an HTTP request, including some web form arguments, to a web server / servlet container. The web server invokes the WebMDS servlet, which uses the form arguments to determine what plugins to use to retrieve the requested XML data and the XSLT transform to apply to it. The WebMDS servlet passes arguments to the plugins, which then retrieve the appropriate data and XSLT transform. The WebMDS servlet applies the XSLT transformation to the XML data and returns the result to the web server, which sends it back to the client's web browser.
Chapter 4. APIs

1. Programming Model Overview

There is no "client" API for accessing WebMDS; WebMDS is a servlet that is accessed via web forms.

WebMDS uses a WebMDS plugin (a Java class that implements the WebmdsXmlSource interface) to acquire XML documents (which can be used either as raw information sources or as XSL transformations). WebMDS comes with two WebMDS plugins: FileXmlSource, which reads XML from a file (and is primarily used to acquire XSL transformations), and NodeXmlSource. NodeXmlSource in turn calls a node source plugin (a Java class that implements the WebmdsNodeSource interface) to acquire an XML DOM document. acquires XML information using a WebMDS XML source, a Java class that implements the WebmdsXmlSource interface. To summarize:

- WebMDS is a servlet that uses plugins to acquire XML documents containing raw data and XSL transformations, and then applies the acquired XSL transformation on the acquired data.
- The plugins used by WebMDS implement the org.globus.mds.webmds.WebmdsXmlSource interface.
- WebMDS plugins include:
  - org.globus.mds.webmds.xmlSources.file.FileXmlSource, which reads XML from a file, and
  - org.globus.mds.webmds.xmlSources.xmlDomNode.NodeXmlSource, which uses its own plugin interface to acquire XML DOM documents.
- The plugins used by NodeXmlSource implement the org.globus.mds.webmds.xmlSources.xmlDomNode.WebmdsNodeSource interface.
- The raw XML data acquired by WebMDS is processed by XSL transformations; see the W3C XSLT Documentation for more information on creating XSL transforms.

2. Component API

- Core WebMDS documentation (includes the WebMDS servlet and the WebmdsNodeSource interface)
- FileXMLSource documentation
- NodeXmlSource documentation (including the WebmdsNodeSource interface)
- Resource property node source plugins.

---

1 http://www.w3.org/TR/xslt
2 http://www.globus.org/api/javadoc-4.0.0/globus_wsrf_mds_webmds/
3 http://www.globus.org/api/javadoc-4.0.0/globus_wsrf_mds_webmds_file_source/
4 http://www.globus.org/api/javadoc-4.0.0/globus_wsrf_mds_webmds_xml_dom_source/
5 http://www.globus.org/api/javadoc-4.0.0/globus_wsrf_mds_webmds_resource_property_source/
Chapter 5. WebMDS Admin Commands

There is no end-user command-line tool for WebMDS.

1. Tool description

The command-line tool `webmds-create-context-file` is used to create Tomcat configuration files needed to deploy WebMDS.

2. Command syntax

```
webmds-create-context-file [-f] tomcat_context_file
```

The `tomcat_context_file` argument is the location of the Tomcat configuration file defining the WebMDS context; in a default Tomcat installation, the location of this file will be `$CATALINA_HOME/conf/Catalina/localhost`.

By default, `webmds-create-context-file` will not overwrite an existing context file; the `-f` option is used to force `webmds-create-context-file` to overwrite an existing file.

Note: `webmds-create-context-file` is found in `$GLOBUS_LOCATION/lib/webmds/bin`

3. Example

```
$GLOBUS_LOCATION/lib/webmds/bin/webmds-create-context-file -f \
$CATALINA_HOME/conf/Catalina/localhost
```

4. Limitations

Changes to the Tomcat context do not take effect until Tomcat is restarted or reloaded.
Chapter 6. Graphical User Interface

1. Overview of the purpose and functionality of the GUI

The WebMDS GUI is a web-based interface for browsing formatted XML data, such as the results of resource property queries on a grid service.

2. Command and options

WebMDS can be accessed using any web browser. In a default WebMDS installation, the URL http://host-name:port/webmds corresponds to the top-level WebMDS web page. This page includes a link to a WebMDS invocation that provides summary information (with links to detailed information) about a locally-running MDS Index server. It also contains a link to a page of sample web forms demonstrating other uses of WebMDS.

3. Customizing the web forms used to access WebMDS

The WebMDS servlet is located at http://your-tomcat-host:your-tomcat-port/webmds/webmds. It takes the following arguments:

Table 6.1. Form arguments used by WebMDS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>info</td>
<td>The name of the XML source that will be used to collect the raw XML data. XML sources are defined by files in $GLOBUS_LOCATION/lib/webmds/conf. This argument must be specified.</td>
</tr>
<tr>
<td>xsl</td>
<td>The name of the XML source that will provide the XSL transform. XML sources are defined by files in $GLOBUS_LOCATION/lib/webmds/conf. If this argument is not specified, the WebMDS servlet will display raw, untransformed XML.</td>
</tr>
<tr>
<td>xml-Source.info_name.param.source_specific_options</td>
<td>Any additional options recognized by the info_name XML source (info_name must be the value of the info argument for this request). Source-specific options are discussed in the next section.</td>
</tr>
<tr>
<td>xml-Source.xsl_name.param.source_specific_options</td>
<td>Any additional options recognized by the xsl_name XML source (xsl_name must be the value of the xsl argument for this request). Source-specific options are discussed in the next section.</td>
</tr>
</tbody>
</table>

4. Limitations

Error conditions (such as typographical errors in resource property names) are presented as stack traces, rather than user-friendly error messages.
Chapter 7. Configuring

1. Configuration overview

WebMDS can be configured to get information from any of various sources and to filter it through any XSL transform. WebMDS uses configuration files to specify the location of (and to name) sources of information and xsl and web form arguments to select among these configured information sources and xsl transforms.

By default, WebMDS comes configured to report information about an index server using transaction-level security on the default port (8443) on the local system. If you are running the Globus Toolkit in this default configuration, then you can use WebMDS to query your local Index Service without any configuration changes.

If you wish to monitor a different Index Service, you will need to edit the file $GLOBUS_LOCATION/lib/webmds/conf/indexinfo to change the URL in the line:

```xml
<value>https://127.0.0.1:8443/wsrf/services/DefaultIndexService</value>
```

to match the URL of your default index service. Changes to WebMDS configuration files take effect the next time that Tomcat is restarted.

For other configuration changes (e.g., monitoring different kinds of services), see the detailed configuration information below.

2. Syntax of the interface

Each configuration file in $GLOBUS_LOCATION/lib/webmds/conf defines a source of XML, which can be used in an HTML form to specify sources of information and XSL transforms. The distribution contains some standard configuration files in this directory, including:

<table>
<thead>
<tr>
<th>Table 7.1. Pre-configured information sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>indexinfo</strong></td>
</tr>
<tr>
<td><strong>indexinfo_nosec</strong></td>
</tr>
<tr>
<td><strong>openEndedQuery</strong></td>
</tr>
<tr>
<td><strong>openEndedRP</strong></td>
</tr>
<tr>
<td><strong>servicegroupxsl</strong></td>
</tr>
<tr>
<td><strong>sgedetail</strong></td>
</tr>
</tbody>
</table>

Each configuration file defines a WebmdsConfig object. A WebmdsConfig object consists of:

- **A description**: a textual description of the XML source being defined.
- **A className**: the name of the Java class that will be used to acquire the XML data.
- **Zero or more parameter objects**, each of which consists of the **name** of some parameter recognized by the Java class specified by className, and the **string value** of that parameter.
For example, this is \$GLOBUS\_LOCATION/lib/webmds/conf/servicegroupxsl, which defines the servicegroupxsl XML source:

```xml
<WebmdsConfig>
  <description>
    XSL file to show service group summary information
  </description>
  <className>org.globus.mds.webmds.xmlSources.file.FileXmlSource</className>
  <parameter>
    <name>file</name>
    <value>xslfiles/servicegrouptable.xsl</value>
  </parameter>
</WebmdsConfig>
```

This file tells WebMDS to use the `org.globus.mds.webmds.xmlSources.file.FileXmlSource` Java class (a class which reads XML from a local file) to collect XML data and to pass a file parameter (which that Java class interprets as the name of the file to open, relative to the WebMDS base directory).

Tomcat must be restarted (or one of the more advanced Tomcat administrative mechanisms must be used) for changes to these configuration files to take effect.

### 3. XML Sources included with WebMDS

#### 3.1. FileXMLSource

The class `org.globus.mds.webmds.xmlSources.file.FileXmlSource` reads XML from a file, and recognizes a single parameter:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>file</td>
<td>The name of the file to read. Relative path names are interpreted relative to the WebMDS base directory ($GLOBUS_LOCATION/lib/webmds).</td>
</tr>
</tbody>
</table>

#### 3.2. NodeXMLSource

This XML source class uses a `WebmdsNodeSource` object to fetch an XML document and return it in a form that is usable by WebMDS. It recognizes the following options:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>class</td>
<td>The name of a class that implements the <code>WebmdsNodeSource</code> interface. An instance of this class will be used to get an XML document.</td>
</tr>
<tr>
<td>parameters</td>
<td>Additional parameters are passed to an instance of the class specified by the <code>class</code> argument.</td>
</tr>
</tbody>
</table>

#### 3.3. Classes That Implement WebmdsNodeSource

The following classes implement the `NodeXMLSource` interfaces and can be used in conjunction with `NodeXMLSource`
3.4. ResourcePropertyQueryNodeSource

This class performs a resource property query to get all the resource properties for some web service. It recognizes the following configuration parameters:

Table 7.4. Configuration parameters used with ResourcePropertyQueryNodeSource

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>endpoint</td>
<td>The endpoint name to be used in a resource property query.</td>
</tr>
<tr>
<td>endpointKeyName and</td>
<td>An optional key/value pair to use as reference properties for the endpoint</td>
</tr>
<tr>
<td>endpointKeyValue</td>
<td>specified with the endpoint parameter.</td>
</tr>
<tr>
<td>allowUserEndpoints</td>
<td>If true, values for xmlSource.sourceName.param.endpoint,</td>
</tr>
<tr>
<td></td>
<td>xmlSource.sourceName.param.endpointKeyName, and xmlSource.sourceforgeName.param.endpointKeyValue specified in the request will override the configured endpoint value.</td>
</tr>
<tr>
<td>endpointFile</td>
<td>The name of a file from which the endpoint information (in XML) will be</td>
</tr>
<tr>
<td></td>
<td>read. This configuration parameter can never be overridden by request</td>
</tr>
<tr>
<td></td>
<td>arguments.</td>
</tr>
</tbody>
</table>

3.5. ResourcePropertyNodeSource

This class queries a web service for a single resource property. It recognizes the following parameters:

Table 7.5. Configuration parameters used with ResourcePropertyNodeSource

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>endpoint</td>
<td>The endpoint name to be used in a resource property query.</td>
</tr>
<tr>
<td>endpointKeyName and</td>
<td>An optional key/value pair to use as reference properties for the endpoint</td>
</tr>
<tr>
<td>endpointKeyValue</td>
<td>specified with the endpoint parameter.</td>
</tr>
<tr>
<td>allowUserEndpoints</td>
<td>If true, values for xmlSource.sourceName.param.endpoint,</td>
</tr>
<tr>
<td></td>
<td>xmlSource.sourceName.param.endpointKeyName, and xmlSource.sourceforgeName.param.endpointKeyValue specified in the request will override the configured endpoint value.</td>
</tr>
<tr>
<td>endpointFile</td>
<td>The name of a file from which the endpoint information (in XML) will be</td>
</tr>
<tr>
<td></td>
<td>read. This configuration parameter can never be overridden by request</td>
</tr>
<tr>
<td></td>
<td>arguments.</td>
</tr>
<tr>
<td>rpNamespace</td>
<td>The namespace part of the QName of the resource property to be queried for.</td>
</tr>
<tr>
<td>rpName</td>
<td>The local name part of the QName of the resource property to be queried for.</td>
</tr>
<tr>
<td>allowUserResourceProperties</td>
<td>If true, values of xmlSource.sourceName.param.rpNamespace and xmlSource.sourceforgeName.param.rabbitNames specified in the request will override the configured resource property namespace and name.</td>
</tr>
</tbody>
</table>
Chapter 8. Debugging

For information on sys admin logs, see Chapter 5, Debugging.

Log information from WebMDS and any WebMDS plugins will be logged by the servlet container into which WebMDS has been deployed. In a vanilla Tomcat 5.0.28 distribution, this information will show up in the file $CATALINA_HOME/logs/catalina.out.
Chapter 9. Troubleshooting

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

1. Error Messages

Error handling in WebMDS is currently done by throwing exceptions, which are displayed by Tomcat as stack traces.

Table 9.1. WS MDS Trigger Service Error Messages

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Definition</th>
</tr>
</thead>
</table>
| java.net.ConnectException: Connection refused | If you attempt to use WebMDS to collect information from a service that is not running, you will see a stack trace that begins with:
org.globus.mds.webmds.xmlSources.resourceProperties.ResourcePropertySourceException: 
java.net.ConnectException: Connection refused |
| faultString: org.globus.mds.webmds.xmlSources.resourceProperties.ResourcePropertySourceException: 
java.net.ConnectException: Connection refused | When WebMDS sends resource property queries to a secure WSRF service instance (such as an WS MDS Index Server), the WebMDS server must trust the certificate authority that issued the certificate used by the WSRF service instance. If the WebMDS server does not trust the certificate authority, then WebMDS queries will produce a stack trace that includes this message. |

WebMDS connections to secure Index Servers (or other secure WSRF servers) just hang

If the JVM used by Tomcat is configured to use a blocking random-number source, WebMDS connections to secure WSRF servers can hang. This is the default configuration for many installations.
Chapter 10. Related Documentation

None available at this time.
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</tr>
</thead>
<tbody>
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</tr>
<tr>
<td><strong>Index Service</strong></td>
</tr>
</tbody>
</table>
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GT 4.2.1 WS MDS Migration Guide
Introduction

The following provides available information about migrating from previous versions of the Globus Toolkit.
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Chapter 1. Migrating MDS from GT4

Although the basic functionality remains the same for MDS in GT4, the architecture has changed from OGSI in GT3 to WSRF in GT4. In OGSI, services advertise service data; in WSRF, services advertise resource properties. Resource Properties and service data are very similar -- both provide a mechanism for expressing arbitrary data about grid resources in XML format, as well as query and notification/subscription interfaces to that data.

The GT4 Index Service provides the same functionality as the GT3 Index Service; however, the GT4 Index Service supports WSRF service group registration and resource property query and subscription/notification mechanisms, while the GT3 Index Service supported OGSI service group registration and service data query and subscription/notification mechanisms.

The following table shows a mapping of some GT3 concepts/tools to GT4.

**Table 1.1. Comparison of MDS in GT3 and GT4**

<table>
<thead>
<tr>
<th>Description</th>
<th>GT2 Version</th>
<th>GT4 Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Query Operations</td>
<td>FindServiceData (to retrieve a single service data element by name or to perform an XPath query against a service's service data elements)</td>
<td>GetResourceProperty (to retrieve a single resource property by name), GetMultipleResourceProperties (to retrieve multiple resource properties by name), and QueryResourceProperties (to perform an XPath query against a service's resource properties).</td>
</tr>
<tr>
<td>APIs used for queries</td>
<td>OGSi (GT3) Core APIs</td>
<td>WS Core APIs</td>
</tr>
<tr>
<td>Command-line clients used for queries</td>
<td>ogsi-find-service-data</td>
<td>wsrf-get-property, wsrf-get-properties, wsrf-query</td>
</tr>
<tr>
<td>Available GUIs</td>
<td>globus-sdb (standalone client) and WebSDB (web interface)</td>
<td>WebMDS (web interface)</td>
</tr>
<tr>
<td>Operations for subscription/notification</td>
<td>OGSi NotificationSource / NotificationSink</td>
<td>WS-Notification</td>
</tr>
<tr>
<td>APIs used for subscription/notification</td>
<td>OGSi (GT3) Core APIs</td>
<td>WS Core APIs</td>
</tr>
<tr>
<td>Index registration mechanism</td>
<td>GT3 services can be configured to publish their service data to index services.</td>
<td>Index Servers maintain aggregating service groups that include registration information (timeout values, the mechanism to use to acquire information, and additional mechanism-specific parameters). The registration is accomplished by adding an entry to an aggregating service group via the mds-servicegroup-add command. In addition, services may be configured to register themselves to the default index server running in the same container.</td>
</tr>
</tbody>
</table>

1. A more detailed mapping of OGSI concepts to WSRF concepts can be found [here](http://www-106.ibm.com/developerworks/library/ws-resource/ogsi_to_wsrf_1.0.pdf).
Chapter 2. Migrating MDS from GT3

Although the basic functionality remains the same for MDS in GT4, the architecture has changed from OGSI in GT3 to WSRF in GT4. In OGSI, services advertise service data; in WSRF, services advertise resource properties. Resource Properties and service data are very similar -- both provide a mechanism for expressing arbitrary data about grid resources in XML format, as well as query and notification/subscription interfaces to that data.

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The following table shows a mapping of some GT3 concepts/tools to GT4.

### Table 2.1. Comparison of MDS in GT3 and GT4

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<tr>
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<th>GT2 Version</th>
<th>GT4 Version</th>
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<tr>
<td>Query Operations</td>
<td>FindServiceData (to retrieve a single service data element by name or to perform an XPath query against a service’s service data elements)</td>
<td>GetResourceProperty (to retrieve a single resource property by name), GetMultipleResourceProperties (to retrieve multiple resource properties by name), and QueryResourceProperties (to perform an XPath query against a service’s resource properties).</td>
</tr>
<tr>
<td>APIs used for queries</td>
<td>OGSi (GT3) Core APIs</td>
<td>WS Core APIs</td>
</tr>
<tr>
<td>Command-line clients used for queries</td>
<td>ogsi-find-service-data</td>
<td>wsrfs-get-property, wsrfs-get-properties, wsrfs-query</td>
</tr>
<tr>
<td>Available GUIs</td>
<td>globus-sdb (standalone client) and WebSDB (web interface)</td>
<td>WebMDS (web interface)</td>
</tr>
<tr>
<td>Operations for subscription/notification</td>
<td>OGSi NotificationSource / NotificationSink</td>
<td>WS-Notification</td>
</tr>
<tr>
<td>APIs used for subscription/notification</td>
<td>OGSi (GT3) Core APIs</td>
<td>WS Core APIs</td>
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<td>Index registration mechanism</td>
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</table>

A more detailed mapping of OGSI concepts to WSRF concepts can be found [here](http://www-106.ibm.com/developerworks/library/ws-resource/ogsi_to_wsrf_1.0.pdf).

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Chapter 3. Migrating MDS from GT2

Although the basic functionality remains the same for MDS in GT4, the architecture, standards used, and implementation have changed significantly in GT2. The following table shows a mapping of some GT2 concepts to GT4 concepts.

Table 3.1. Comparison of MDS in GT2 and GT4

<table>
<thead>
<tr>
<th>Description</th>
<th>GT2 Version</th>
<th>GT4 Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format of data describing a resource</td>
<td>LDAP data hierarchy</td>
<td>XML data document</td>
</tr>
<tr>
<td>Query language</td>
<td>LDAP queries</td>
<td>XPath queries</td>
</tr>
<tr>
<td>Wire protocol for queries</td>
<td>LDAP</td>
<td>WS-ResourceProperties</td>
</tr>
<tr>
<td>APIs used for queries</td>
<td>LDAP APIs</td>
<td>WS Core APIs</td>
</tr>
<tr>
<td>Command-line clients used for queries</td>
<td>grid-info-search</td>
<td>wsrfs-get-property, wsrfs-get-properties, wsrfs-query</td>
</tr>
<tr>
<td>Available GUIs</td>
<td>Various LDAP browsers</td>
<td>WebMDS</td>
</tr>
<tr>
<td>Wire protocol for subscription/notification</td>
<td>Not supported</td>
<td>WS-Notification</td>
</tr>
<tr>
<td>APIs used for subscription/notification</td>
<td>Not supported</td>
<td>WS Core APIs</td>
</tr>
<tr>
<td>Security support</td>
<td>SAML-based security using X.509 user, proxy and host certificates</td>
<td>HTTPS-based security using X.509 user, proxy and host certificates</td>
</tr>
<tr>
<td>Queryable index of aggregated information</td>
<td>GIIS, which publishes data using the LDAP-related standards listed above</td>
<td>WS MDS Index Server, which publishes data using the WSRF-related standards listed above</td>
</tr>
<tr>
<td>Queryable source of non-aggregated information</td>
<td>GRIS, which uses information providers to gather data from services and then publishes that data the LDAP-related standards listed above</td>
<td>Individual web services, which publish data about their own resources using WSRF-related standards listed above</td>
</tr>
<tr>
<td>Index registration mechanism</td>
<td>MDS servers (GRIS's and, in some cases, GII's) register themselves with a GIIS. An MDS server is configured to register itself to a remote index by editing the local MDS server's grid-info-resource-registry.conf file, providing information about the location of the remote index to register to and timeout values for the registration</td>
<td>WS MDS Index servers maintain aggregating service groups that include registration information (timeout values, the mechanism to use to acquire information, and additional mechanism-specific parameters) The registration is accomplished by adding an entry to an aggregating service group via the mds-servicegroup-add command. In addition, services may be configured to register themselves to the default index server running in the same container.</td>
</tr>
<tr>
<td>Mechanism used by an index to collect information</td>
<td>GIIS's send LDAP queries to remote servers.</td>
<td>WS MDS Index servers use a plugin-based architecture to support several mechanisms to collect information. The Globus Toolkit supplies plugins that support collecting information via polling (resource property queries), subscription/notification, and by program execution.</td>
</tr>
</tbody>
</table>
## Glossary

### I

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Service</td>
<td>An aggregator service in WS MDS that serves as a registry similar to UDDI, but much more flexible. Indexes collect information and publish that information as WSRF resource properties.</td>
</tr>
<tr>
<td>information provider</td>
<td>A &quot;helper&quot; software component that collects or formats resource information, for use in WS MDS by an aggregator source or by a WSRF service when creating resource properties.</td>
</tr>
</tbody>
</table>
GT 4.2.1 WS MDS WebMDS: Quality Profile

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2. Code analysis reports ....................................................................................................................... 1
3. Outstanding bugs ............................................................................................................................. 1
4. Bug Fixes ....................................................................................................................................... 1
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1. Test coverage reports

• None available at this time.

2. Code analysis reports

• None available at this time.

3. Outstanding bugs

• 3040: Webmds can break if started from the wrong directory
• 3051: Handle huge indexes
• 6164: WebMDS test erroneously reports errors
• 6197: "$G_L/lib/common/globus_ java_authz_framework.jar" is not included in "$G_L/lib/webmds/WEB-INF/lib"
• 6364: subordinate entry counting does not count the right thing, resulting in counts of 0

4. Bug Fixes

No new fixed bugs in this release.

5. Performance reports

• None available at this time.

1 http://bugzilla.globus.org/globus/show_bug.cgi?id=3040
2 http://bugzilla.globus.org/globus/show_bug.cgi?id=3051
3 http://bugzilla.globus.org/globus/show_bug.cgi?id=6164
4 http://bugzilla.globus.org/globus/show_bug.cgi?id=6197
5 http://bugzilla.globus.org/globus/show_bug.cgi?id=6364
1. Component Overview

WebMDS enables end users to view monitoring information via a standard web browser interface, without installing any additional software on their PC. WebMDS is implemented as a servlet that uses a plugin interface to gather monitoring information (or any other information in XML format) and XSLT transforms, and present the data to the user in a readable form. Web site administrators can customize their own WebMDS deployments by using HTML form options, configuring different plugins to collect data and XSLT transforms, and creating their own plugins and XSLT transforms.

2. Feature summary

Features new in release 4.2.1:

- None

Other Supported Features

- Extensible plugin interface to support various mechanisms to gather monitoring information and XSLT transforms.
- Plugins to acquire monitoring information via resource property mechanisms.
- Plugin to acquire XSLT transforms by reading from local files.

 Deprecated Features

- None

3. Summary of Changes in WebMDS

- No new changes in this release.
4. Bug Fixes

No new fixed bugs in this release.

5. Known Problems

The following problems and limitations are known to exist for WS MDS WebMDS at the time of the 4.2.1 release:

5.1. Limitations

- No known limitations exist.

5.2. Outstanding bugs

- 3040: Webmds can break if started from the wrong directory
  [1]
- 3051: Handle huge indexes
  [2]
- 6164: WebMDS test erroneously reports errors
  [3]
- 6197: "$G_L/lib/common/globus_java_authz_framework.jar" is not included in "$G_L/lib/webmds/WEB-INF/lib"
  [4]
- 6364: subordinate entry counting does not count the right thing, resulting in counts of 0
  [5]

6. Technology dependencies

WebMDS depends on the following GT components:

- Java WS Core

WebMDS depends on the following 3rd party software:

- Tomcat
  [6]

7. Tested platforms

Tested Platforms for WebMDS:

- The WebMDS server has only been tested with Tomcat version 5.0.28; it has been tested on RedHat Linux (i386) and, to a lesser extent, on Windows XP.
- On the client side, WebMDS should be accessible from any web browser on any platform.

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7.1. Installing WebMDS on Windows

Although the WebMDS server is not officially supported on non-Unix platforms, and no Windows installer exists for WebMDS, it is possible to run WebMDS on Windows. The following instructions describe how to install WebMDS on a Windows platform.

1. Install Tomcat\(^7\) and set your CATALINA_HOME environment variable to the directory into which Tomcat was installed.

2. Install the Globus Java WS-Core distribution from the Globus Toolkit download page\(^8\). Set your GLOBUS_LOCATION environment variable to the directory into which you installed Globus Java WS-Core.

3. Check the ws-mds distribution out of the Globus CVS repository\(^9\), using the globus_4_0_branch tag.

4. Install the servicegroup package:

   ```
   cd c:\wherever\ws-mds\servicegroup\schema
   ant deploy
   cd ..\source
   ant deploy
   ```

   where wherever is the directory into which you checked out the ws-mds sources.

5. Install WebMDS:

   ```
   cd c:\wherever\ws-mds\webmds
   ant deploy
   ```

6. Create the webmds context file (this tells Tomcat where to find WebMDS):

   ```
   %GLOBUS_LOCATION%\lib\webmds\bin\webmds-create-context-file %CATALINA_HOME%\conf\Catalina\localhost
   ```

7. Restart Tomcat.

WebMDS can then be configured and used as described in the rest of the documentation: WebMDS.

8. Backward compatibility summary

Protocol changes since GT version 4.0.x:

- None

API changes since GT version 4.0.x:

- None

Exception changes since GT version 4.0.x:

\(^7\) http://jakarta.apache.org/tomcat/

\(^8\) http://www.globus.org/toolkit/downloads/

\(^9\) http://www.globus.org/toolkit/docs/development/remote-cvs.html
• None

Schema changes since GT version 4.0.x:
• None

9. Associated standards for WS MDS WebMDS

• HyperText Transfer Protocol (HTTP)
• HyperText Markup Language (HTML)
• XSL Transformations (XSLT)
• WebMDS is implemented as a Java Servlet

10. For More Information

See WebMDS for more information about this component.