

# **GT 4.0 WS MDS Trigger Service**

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# Docs that relate to all MDS components: Key Concepts, Migrating Guide and Samples

- [Key Concepts](#)<sup>1</sup>
- [Migrating Guide](#)<sup>2</sup>
- [Samples](#)<sup>3</sup>

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<sup>1</sup> ../key-index.html

<sup>2</sup> ../WS\_MDS\_Migrating\_Guide.html

<sup>3</sup> ../WS\_MDS\_Samples.html

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# Chapter 1. GT 4.0 WS MDS Trigger Service: System Administrator's Guide

## 1. Introduction

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

This information is in addition to the basic Globus Toolkit prerequisite, overview, installation, security configuration instructions in the [GT 4.0 System Administrator's Guide](#)<sup>1</sup>. Read through this guide before continuing!

## 2. Building and Installing

The Trigger service is installed as part of the standard Globus Toolkit installation.

## 3. Configuring

The trigger service is an MDS aggregator service, and so inherits much of its configuration system from the *aggregator framework* module.

### 3.1. Configuring the Aggregator Framework

The aggregator framework does not have its own service side configuration, although services which are based on the framework have their own service side configuration options (such as [MDS Index](#)<sup>2</sup> and [MDS Trigger](#)<sup>3</sup>) which are documented in the per-service documentation.

Registrations to a working aggregator framework are configured for the `mds-servicegroup-add`<sup>4</sup> tool. This tool takes an XML configuration file listing registrations, and causes those registrations to be made.

In general, configuration of aggregator services involves configuring the service to get information from one or more sources in a Grid. The mechanism for doing this is defined by (inherited from) the aggregator framework and described in this section.

#### 3.1.1. Configuration overview

Each aggregator service has an associated ServiceGroup, which is used to keep track of configuration information and aggregated data. Configuring an Aggregating Service Group to perform a data aggregation is performed by adding a service group entry with the appropriate configuration information. This can be done from the command line using the `mds-servicegroup-add` command.

invocation. An AggregatorContent object is composed of two `xsd:any` arrays: AggregatorConfig, which contains registration parameters, and AggregatorData, which contains the actual collected data. Typically, the AggregatorConfig content is specified when the

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<sup>1</sup> <http://www.globus.org/toolkit/docs/4.0/admin/docbook/>

<sup>2</sup> <http://www.globus.org/toolkit/docs/4.0/info/index/>

<sup>3</sup> <http://www.globus.org/toolkit/docs/4.0/info/trigger/>

<sup>4</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator/re01.html>

- The `AggregatorConfig xsd:any` array is used to specify parameters that are to be passed to the underlying `AggregatorSource` when the `ServiceGroup add` method is invoked. These parameters are generally type-specific to the implementation of the `AggregatorSource` and/or `AggregatorSink` being used.
- The `AggregatorData xsd:any` array is used as the storage location for aggregated data that is the result of message deliveries to the `AggregatorSink`. Generally, the `AggregatorData` parameter of the `AggregatorContent` is not populated when the `ServiceGroup add` method is invoked, but rather is populated by message delivery from the `AggregatorSource`.

## 3.1.2. Syntax of the interface

### 3.1.2.1. Configuring the Aggregator Sources

The following links provide information for configuring the three types of aggregator sources provided by the Globus Toolkit:

- [Configuring the Execution Aggregator Source](#)<sup>5</sup>
- [Configuring the Query Aggregator Source](#)<sup>6</sup>
- [Configuring the Subscription Aggregator Source](#)<sup>7</sup>

### 3.1.2.2. Configuring the Aggregator Sink

An aggregator sink may require sink-specific configuration (the MDS *Trigger service* requires sink-specific configuration; the MDS *Index service* does not). See the documentation for the specific *aggregator service* being used for details on sink-specific documentation.

## 3.2. Additional configuration for the Trigger Service

In addition to the source parameters specified above, the `TriggerRuleType` element *must* be added to all registrations made to the trigger service.

The `TriggerRuleType` is defined in `trigger-types.xsd`<sup>8</sup> in `trigger/source`.

This registration parameter contains the following options:

- `matchingRule`: XPath rule to be applied against incoming data. The XPath expression will be evaluated against aggregated data, and will be regarded as matching the incoming data if it matches one or more nodes in that data.
- `actionScript`: the name of a script in `$GLOBUS_LOCATION/libexec/trigger/` that will be executed when the `matchingRule` matches (except as rate limited by the following parameters).
- `minimumFiringInterval`: the action script will not be executed more than once in this number of seconds. If unspecified, there will be no minimum interval.
- `minimumMatchTime`: the `matchingRule` must be true for this number of seconds before the `actionScript` will be executed. If unspecified, there is no minimum time period that the rule must match and the rule will fire immediately the `matchingRule` becomes true.

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<sup>5</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/Execution\\_Aggregator\\_Source.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/Execution_Aggregator_Source.html)

<sup>6</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/Query\\_Aggregator\\_Source.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/Query_Aggregator_Source.html)

<sup>7</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/Subscription\\_Aggregator\\_Source.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/Subscription_Aggregator_Source.html)

<sup>8</sup> [http://viewcvs.globus.org/viewcvs.cgi/ws-mds/trigger/source/schema/mds/trigger/trigger-types.xsd?rev=1.2&only\\_with\\_tag=globus\\_4\\_0\\_0&content-type=text/vnd.viewcvs-markup](http://viewcvs.globus.org/viewcvs.cgi/ws-mds/trigger/source/schema/mds/trigger/trigger-types.xsd?rev=1.2&only_with_tag=globus_4_0_0&content-type=text/vnd.viewcvs-markup)

- `outputXSL`: (UNIMPLEMENTED in GT 3.9.3). The delivered message will be transformed by the specified XSLT stylesheet and fed into the stdin of the action script. It is intended that this will be implemented in a subsequent release of the GT3.9.x series.

The rate limiting parameters behave in such a way that the rate of action script executions can be *decreased* by *increasing* the `minimumFiringInterval` and/or by *increasing* the `minimumMatchTime`.

### 3.3. Example of a trigger registration file

A complete and working example of a trigger registration file can be viewed at `$GLOBUS_LOCATION/etc/globus_wsrfs/mds_trigger/trigger-aggregator-registration.xml`

This file causes a small test script to be run when it detects that the GLUE RP appears in the `DefaultIndexService`. (Please refer to the [GLUE RP documentation](#)<sup>9</sup> for more information about configuring and using it). By default, the registration example fires no more than once in every 10 minute interval. As you can see, that is dictated by the `minimumFiringInterval` value specified. The sample registration also causes the GLUE RP to be polled (i.e. updated) every 10 minutes to make sure that the entry is still valid.

Currently, the example trigger registration file will fire on the default installation because the MJFS (i.e. GRAM) contains the GLUE RP and the `matchingRule` is indicated as the XPath indicator for the node-set containing the GLUE RP in particular (i.e. `//*[local-name()='GLUECE']`). However, you can easily substitute more advanced XPath queries for firing on more specific value changes. For example, locating a specific node-set within the GLUE RP using XPath can look something like this:

```
//*[local-name()='GLUECE']//ns1:ComputingElement//ns1:State
```

## 4. Deploying

This component is deployed as part of the standard toolkit installation. By default, there are no trigger actions set to fire on container startup, as these must be configured and registered manually.

### 4.1. Manually registering the Trigger Service

To manually register the example described in [Configuring the Trigger Service](#) (above) do the following:

1. Configure your environment with either *Ganglia* or *Hawkeye* as described in the [GLUE RP documentation](#)<sup>10</sup>. This is necessary because the trigger service relies on polling the GLUE RP which is provided by either one of them. Note: Even without configuring Ganglia or Hawkeye, the GLUE RP is emitted by the scheduler configured for your environment, so this step is not strictly necessary.
2. Now you can start your container as you normally do by running:

```
$GLOBUS_LOCATION/bin/globus-start-container
```

3. At this point, we're ready to make a registration with the `DefaultTriggerService` by running a command similar to the following:

```
$GLOBUS_LOCATION/bin/mds-servicegroup-add -s \  
https://127.0.0.1:8443/wsrfs/services/DefaultTriggerService \  
$GLOBUS_LOCATION/etc/globus_wsrfs/mds_trigger/trigger-aggregator-registration.xml
```

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<sup>9</sup> <http://www.globus.org/toolkit/docs/4.0/info/key/gluerp.html>

<sup>10</sup> <http://www.globus.org/toolkit/docs/4.0/info/key/gluerp.html>

You should see output similar to the following if your environment has been configured properly:

```
Processing configuration file...
Processed 1 registration entries
Successfully registered
https://127.0.0.1:8443/wsrf/services/ManagedJobFactoryService to servicegroup at
https://127.0.0.1:8443/wsrf/services/DefaultTriggerService
```

## 4.2. Deploying into Tomcat

The MDS4 Trigger service has been tested to work without any additional setup when deployed into Tomcat. Please follow these [basic instructions](#)<sup>11</sup> to deploy GT4 services into Tomcat. Note: please complete any prerequisite service configuration steps before you deploy into Tomcat.

## 5. Testing

To determine if the registration was made properly, you can query the `DefaultTriggerService` using a tool like `$GLOBUS_LOCATION/bin/wsrf-query` and visually inspect the output.

For example, running:

```
$GLOBUS_LOCATION/bin/wsrf-query -s \  
    https://127.0.0.1:8443/wsrf/services/DefaultTriggerService "/*"
```

should yield output similar to the following for the example above:

```
...
<ns1:Content xsi:type="ns11:AggregatorContent"
xmlns:ns11="http://mds.globus.org/aggregator/types">
  <ns11:AggregatorConfig>
    <ns11:GetResourcePropertyPollType>
      <ns11:PollIntervalMillis>600000</ns11:PollIntervalMillis>
      <ns11:ResourcePropertyName>glue:GLUECE</ns11:ResourcePropertyName>
    </ns11:GetResourcePropertyPollType>
    <ns3:TriggerRuleType
xmlns:ns3="http://mds.globus.org/2004/08/trigger/types">
      <ns3:matchingRule>//*[local-name()='GLUECE']</ns3:matchingRule>
      <ns3:actionScript>glue-trigger-action.sh</ns3:actionScript>
      <ns3:minimumFiringInterval>600</ns3:minimumFiringInterval>
    </ns3:TriggerRuleType>
  </ns11:AggregatorConfig>
  <ns11:AggregatorData>
    <ns12:TriggerStatus>
      <ns12:conditionTrueSince>2005-04-11T16:31:00.501Z</ns12:conditionTrueSince>
      <ns12:actionFiredAt>2005-04-11T16:31:00.656Z</ns12:actionFiredAt>
      <ns12:ruleLastCheckedAt>2005-04-11T16:31:00.493Z</ns12:ruleLastCheckedAt>
      <ns12:actionOutput>
        <exampleGLUETriggerActionScriptOutput xmlns="">
          <glueDataDetected>true</glueDataDetected>
        </exampleGLUETriggerActionScriptOutput>
      </ns12:actionOutput>
    </ns12:TriggerStatus>
  </ns11:AggregatorData>
</ns1:Content>
```

---

<sup>11</sup> <http://www.globus.org/toolkit/docs/4.0/common/javawscore/admin-index.html#javawscore-admin-tomcat-deploying>

```
</ns12:actionOutput>
</ns12:TriggerStatus>
</ns11:AggregatorData>
</ns1:Content>
...
```

The included sample trigger script not only emits some XML data as seen above in the `actionOutput` node, but it also attempts to append some data to a file each time it is fired. Thus, to be sure it is working properly, you can inspect the file `/tmp/glue_detected` by running a command like

```
cat /tmp/glue_detected
```

which should yield output similar to this:

```
GLUECE RP was detected in the output at Mon Apr 11 11:01:01 CDT 2005
GLUECE RP was detected in the output at Mon Apr 11 11:11:00 CDT 2005
GLUECE RP was detected in the output at Mon Apr 11 11:21:00 CDT 2005
GLUECE RP was detected in the output at Mon Apr 11 11:31:00 CDT 2005
GLUECE RP was detected in the output at Mon Apr 11 11:41:00 CDT 2005
```

## 6. Security Considerations

The security considerations for the [Aggregator Framework](#)<sup>12</sup> also apply to the Trigger Service:

By default, the *aggregator sources* do not use authentication credentials -- they retrieve information using anonymous SSL authentication or no authentication at all, and thus retrieve only publicly-available information. If a user or administrator changes that configuration so that a service's aggregator source uses credentials to acquire non-privileged data, then that user or administrator must configure the service's aggregator sink to limit access to authorized users.

## 7. Troubleshooting

*Problem: I'm sure the registration was made properly, but the trigger script never fires.*

*Solution:* Verify that you've properly configured the [GLUE RP output](#)<sup>13</sup> via Ganglia or Hawkeye. Even a properly made trigger registration will never fire if the GLUE RP cannot be produced.

## 8. Usage statistics collection by the Globus Alliance (4.0.5+)

Starting with 4.0.5, the following usage statistics are sent by default in a UDP packet each time a registration is made to an Index Service or Trigger Service:

- Service name
- Total number of registrations
- Number of current registrations
- Time that the aggregator resource was created

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<sup>12</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator>

<sup>13</sup> <http://www.globus.org/toolkit/docs/4.0/info/key/gluerp.html>

If you wish to disable this feature, please see the Java WS Core System Administrator's Guide section on [Usage Statistics Configuration](#)<sup>14</sup> for instructions.

Also, please see our [policy statement](#)<sup>15</sup> on the collection of usage statistics.

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<sup>14</sup> [http://www.globus.org/toolkit/docs/4.0/common/javawscore/admin-index.html#s-javawscore-Interface\\_Config\\_Frag-usageStatisticsTargets](http://www.globus.org/toolkit/docs/4.0/common/javawscore/admin-index.html#s-javawscore-Interface_Config_Frag-usageStatisticsTargets)

<sup>15</sup> [http://www.globus.org/toolkit/docs/4.0/Usage\\_Stats.html](http://www.globus.org/toolkit/docs/4.0/Usage_Stats.html)

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# Chapter 2. GT 4.0 WS MDS Trigger Service: User's Guide

## 1. Introduction

The WS MDS Trigger Service collects information about Grid resources and can be configured to execute a program if the collected data meets certain conditions.

End-users will typically interact with the Trigger Service indirectly, using some mechanism specific to the triggered executable program (for example, an executable program may send mail to an end-user or write a structured log file that will later be read by some other program).

## 2. Command-line tools

The Trigger Service itself does not have any command-line clients for end users; instead, the trigger service is configured to run an executable program to take some action (for example, send mail to a set of users, or write a log entry to a file).

The `mds-servicegroup-add`<sup>1</sup> command in the Aggregator Framework is used to configure the Trigger Service to collect information from various sources.

## 3. Graphical user interfaces

There is no GUI specifically for the Trigger Service. The release contains [WebMDS](#)<sup>2</sup> which can be used to display the status of resources registered to a Trigger Service in a normal web browser.

## 4. Troubleshooting

The Trigger Service does not have any end-user clients. General troubleshooting information can be found in the [GT 4.0 Java WS Core User's Guide](#)<sup>3</sup>.

## 5. Usage statistics collection by the Globus Alliance (4.0.5+)

Starting with 4.0.5, the following usage statistics are sent by default in a UDP packet each time a registration is made to an Index Service or Trigger Service:

- Service name
- Total number of registrations
- Number of current registrations

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<sup>1</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator/rn01re02.html>

<sup>2</sup> <http://www.globus.org/toolkit/docs/4.0/info/webmds/index.html>

<sup>3</sup> [../common/javawscore/user-index.html#s-javawscore-user-troubleshooting](http://www.globus.org/toolkit/docs/4.0/info/webmds/index.html#s-javawscore-user-troubleshooting)

- Time that the aggregator resource was created

If you wish to disable this feature, please see the Java WS Core System Administrator's Guide section on [Usage Statistics Configuration](#)<sup>4</sup> for instructions.

Also, please see our [policy statement](#)<sup>5</sup> on the collection of usage statistics.

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<sup>4</sup> [http://www.globus.org/toolkit/docs/4.0/common/javawscore/admin-index.html#s-javawscore-Interface\\_Config\\_Frag-usageStatisticsTargets](http://www.globus.org/toolkit/docs/4.0/common/javawscore/admin-index.html#s-javawscore-Interface_Config_Frag-usageStatisticsTargets)

<sup>5</sup> [http://www.globus.org/toolkit/docs/4.0/Usage\\_Stats.html](http://www.globus.org/toolkit/docs/4.0/Usage_Stats.html)

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# Chapter 3. GT 4.0 WS MDS Trigger Service: Developer's Guide

## 1. Introduction

The WS MDS Trigger Service collects information about Grid resources and can be configured to execute a program if the collected data meets certain conditions. This document describes the programmatic interfaces to the Trigger Service.

This document describes the programmatic interfaces to the Trigger Service. See also general Globus Toolkit [coding guidelines](http://www.globus.org/toolkit/docs/development/coding_guidelines)<sup>1</sup> and [GT 4.0 best practices](http://www.globus.org/toolkit/docs/4.0/best_practices)<sup>2</sup>.

## 2. Before you Begin

Before you begin:

### 2.1. Feature summary

Features new in release 4.0

- Not applicable

Other Supported Features

- Monitors resource properties for matching trigger conditions
- When a trigger condition matches, fires a customizable action: for example, sends email to an administrator.
- Monitored services are managed through service group-based registration API, allowing use of many of the same clients that can be used in the *Index Service*.

Deprecated Features

- Not applicable

### 2.2. Tested platforms

Tested Platforms for WS-MDS Trigger Service

- Linux on i386
- Windows XP

Tested containers for WS-MDS Trigger Service:

- Java WS Core container
- Tomcat 5.0.28

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<sup>1</sup> [http://www.globus.org/toolkit/docs/development/coding\\_guidelines.html](http://www.globus.org/toolkit/docs/development/coding_guidelines.html)

<sup>2</sup> [http://www.globus.org/toolkit/docs/4.0/best\\_practices.html](http://www.globus.org/toolkit/docs/4.0/best_practices.html)

## 2.3. Backward compatibility summary

The Trigger Service is a new component for GT 4.0 and so has no compatibility statement.

## 2.4. Technology dependencies

The Trigger Service depends on the following GT components:

- [Java WS Core](#)<sup>3</sup>
- [WS MDS Aggregator Framework](#)<sup>4</sup>

The Trigger Service depends on the following 3rd party software:

- None

## 2.5. Security considerations

The security considerations for the [Aggregator Framework](#)<sup>5</sup> also apply to the Trigger Service:

By default, the *aggregator sources* do not use authentication credentials -- they retrieve information using anonymous SSL authentication or no authentication at all, and thus retrieve only publicly-available information. If a user or administrator changes that configuration so that a service's aggregator source uses credentials to acquire non-privileged data, then that user or administrator must configure the service's aggregator sink to limit access to authorized users.

# 3. Architecture and design overview

The Trigger Service collects information and acts on it, by executing an administrator-supplied executable program when certain conditions (expressed as XPath matches on the collected information) are met. There are two programmatic interfaces to the Trigger Service: information is collected using an [aggregator source](#)<sup>6</sup> and acted upon by an executable program.

There is no "client" interface to the Trigger Service -- "clients" will typically interact with the Trigger Service indirectly, using some mechanism specific to the triggered executable program (for example, an executable program may send mail to an end-user or write a structured log file that will later be read by some other program).

# 4. Public interface

The public interfaces for specifying trigger actions, including specifications for executable programs to be executed by the trigger, can be found in [Trigger Service Public Interface Guide](#).

The public interfaces for creating and configuring aggregator sources -- sources of information used by the trigger service -- can be found in the [Aggregator Sources Reference](#)<sup>7</sup>.

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<sup>3</sup> <http://www.globus.org/toolkit/docs/4.0/common/javawscore/>

<sup>4</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator/>

<sup>5</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator](http://www.globus.org/toolkit/docs/4.0/info/aggregator/)

<sup>6</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS\\_MDS\\_Aggregator\\_Sources\\_Reference.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS_MDS_Aggregator_Sources_Reference.html)

<sup>7</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS\\_MDS\\_Aggregator\\_Sources\\_Reference.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS_MDS_Aggregator_Sources_Reference.html)

## 5. Usage scenarios

### 5.1. Controlling information collected by the Trigger Service

Information is collected by the Trigger Service by way of an *aggregator source*. The Globus Toolkit distribution includes several standard aggregator sources (see [Aggregator Sources Reference](#)<sup>8</sup> for more details). To create your own custom information source, see the [WS MDS Aggregator Framework Developer's Guide](#)<sup>9</sup>.

### 5.2. Controlling the Conditions Under Which the Executable is Executed

This is handled through configuration options (see [Configuring the Trigger Service](#) for details).

### 5.3. Programming the Executable

The executable program triggered by the Trigger Service can be written in any programming or scripting language. The specifications for this program are documented in [Configuring the executable](#)<sup>10</sup>.

## 6. Tutorials

There are no tutorials available at this time.

## 7. Debugging

See the [Debug section of the Java WS Core Developer's Guide](#)<sup>11</sup> for general information on logging, including which files to edit to set logging properties.

To turn on debug logging for the Trigger Service, add the line:

```
log4j.category.org.globus.mds.trigger=DEBUG
```

to the appropriate properties file. Since the Trigger Service is implemented using the [aggregator framework](#), you may also want to turn on aggregator debugging by adding this line:

```
log4j.category.org.globus.mds.aggregator=DEBUG
```

## 8. Troubleshooting

General troubleshooting information can be found in the [GT 4.0 Java WS Core Developer's Guide](#)<sup>12</sup>.

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<sup>8</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS\\_MDS\\_Aggregator\\_Sources\\_Reference.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS_MDS_Aggregator_Sources_Reference.html)

<sup>9</sup> [../aggregator/developer-index.html](#)

<sup>10</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/Execution\\_Aggregator\\_Source.html#aggregator-execution\\_aggregator\\_source-executable](http://www.globus.org/toolkit/docs/4.0/info/aggregator/Execution_Aggregator_Source.html#aggregator-execution_aggregator_source-executable)

<sup>11</sup> [../common/javawscore/developer-index.html#s-javawscore-developer-debugging](#)

<sup>12</sup> [../common/javawscore/developer-index.html#s-javawscore-developer-troubleshooting](#)

## 9. Related Documentation

Specifications for resource properties, service groups, and subscription/notification are available at <http://www.globus.org/wsrp/>.

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# Chapter 4. GT 4.0 WS MDS Trigger Service: Fact Sheet

## 1. Brief component overview

The Trigger Service collects data from resources on the grid and, if administrator defined rules match, can perform various actions. An example use is to send email when queue length on a compute resource goes over a threshold value.

## 2. Summary of features

Features new in release 4.0

- Not applicable

Other Supported Features

- Monitors resource properties for matching trigger conditions
- When a trigger condition matches, fires a customizable action: for example, sends email to an administrator.
- Monitored services are managed through service group-based registration API, allowing use of many of the same clients that can be used in the *[Index Service](#)*.

Deprecated Features

- Not applicable

## 3. Usability summary

Usability improvements for WS MDS Trigger:

- >The MDS Trigger Service is new for the Globus Toolkit 4 release.

## 4. Backward compatibility summary

The Trigger Service is a new component for GT 4.0 and so has no compatibility statement.

## 5. Technology dependencies

The Trigger Service depends on the following GT components:

- [Java WS Core](#)<sup>1</sup>
- [WS MDS Aggregator Framework](#)<sup>2</sup>

The Trigger Service depends on the following 3rd party software:

---

<sup>1</sup> <http://www.globus.org/toolkit/docs/4.0/common/javawscore/>

<sup>2</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator/>

- None

## 6. Tested platforms

Tested Platforms for WS-MDS Trigger Service

- Linux on i386
- Windows XP

Tested containers for WS-MDS Trigger Service:

- Java WS Core container
- Tomcat 5.0.28

## 7. Associated standards

Associated standards for WS MDS Trigger:

- WS-ResourceProperties (WSRF-RP)
- WS-ResourceLifetime (WSRF-RL)
- WS-ServiceGroup (WSRF-SG)
- WS-BaseFaults (WSRF-BF)
- WS-BaseNotification
- WS-Topics

## 8. For More Information

Click [here](#)<sup>3</sup> for more information about this component.

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<sup>3</sup> index.html

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# Chapter 5. GT 4.0 WS MDS Trigger Service: Public Interface Guide

## 1. Semantics and syntax of APIs

### 1.1. Programming Model Overview

There are two programmatic interfaces to the Trigger Service: information is collected using an *Aggregator Source* and acted upon by an executable program.

Information about how to configure existing aggregator sources (such as the aggregator sources distributed with the Globus Toolkit, which include one that polls for resource property information, one that collects resource property information through subscription/notification, and one that collects information by executing an executable program) is found in the [Aggregator Sources Reference](#)<sup>1</sup>; information about how to create new aggregator sources can be found in the [WS MDS Aggregator Framework Developer's Guide](#)<sup>2</sup>.

There is no "client" interface to the Trigger Service -- "clients" will typically interact with the Trigger Service indirectly, using some mechanism specific to the triggered executable program (for example, an executable program may send mail to an end-user or write a structured log file that will later be read by some other program).

## 2. Semantics and syntax of the WSDL

### 2.1. WSDL information for the Aggregator Framework

The trigger service inherits its WSDL interface from the *aggregator framework* module, included below:

#### 2.1.1. Protocol overview

The aggregator framework builds on the [WS-ServiceGroup](#)<sup>3</sup> and [WS-ResourceLifetime](#)<sup>4</sup> specifications. Those specifications should be consulted for details on the syntax of each operation.

Each aggregator framework is represented as a WS-ServiceGroup (specifically, an AggregatorServiceGroup).

Resources may be registered to an AggregatorServiceGroup using the AggregatorServiceGroup Add operation. Each registration will be represented as a ServiceGroupEntry resource. Resources may be *registered* to an AggregatorServiceGroup using the service group add operation, which will cause an entry to be added to the service group.

The entry will include configuration parameters for the *aggregator source*; when the registration is made, the following will happen:

1. The appropriate aggregation source and sinks will be informed,
2. the aggregator source will begin collecting data and inserting it into the corresponding service group entry,
3. and the aggregator sink will begin processing the information in the service group entries.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS\\_MDS\\_Aggregator\\_Sources\\_Reference.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS_MDS_Aggregator_Sources_Reference.html)

<sup>2</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator/developer-index.html>

<sup>3</sup> [http://viewcvs.globus.org/viewcvs.cgi/wsrf/schema/wsrf/servicegroup/WS-ServiceGroup.wsdl?rev=1.9&only\\_with\\_tag=globus\\_4\\_0\\_0](http://viewcvs.globus.org/viewcvs.cgi/wsrf/schema/wsrf/servicegroup/WS-ServiceGroup.wsdl?rev=1.9&only_with_tag=globus_4_0_0)

<sup>4</sup> [http://viewcvs.globus.org/viewcvs.cgi/wsrf/schema/wsrf/lifetime/WS-ResourceLifetime.wsdl?rev=1.11&only\\_with\\_tag=globus\\_4\\_0\\_0](http://viewcvs.globus.org/viewcvs.cgi/wsrf/schema/wsrf/lifetime/WS-ResourceLifetime.wsdl?rev=1.11&only_with_tag=globus_4_0_0)

The method of collection by source and processing by the sink is dependent on the particular instantiation of the aggregator framework (see [per-source documentation](#)<sup>5</sup> for source information and per-service documentation for sink information - for example the [Index Service](#)<sup>6</sup> and the [Trigger Service](#)<sup>7</sup>.)

## 2.1.2. Operations

### 2.1.2.1. AggregatorServiceGroup

- `add`: This operation is used to register a specified resource with the aggregator framework. In addition to the requirements made by the WS-ServiceGroup specification, the Content element of each registration must be an AggregatorContent type, with the AggregatorConfig element containing configuration information specific to each source and sink (documented in the [Aggregator Administrator's Guide](#)<sup>8</sup>).

### 2.1.2.2. AggregatorServiceGroupEntry

- `setTerminationTime`: This operation can be used to set the termination time of the registration, as detailed in WS-ResourceLifetime.

## 2.1.3. Resource properties

### 2.1.3.1. AggregatorServiceGroup Resource Properties

- `Entry`: This resource property publishes details of each registered resource, including both an EPR to the resource, the aggregator framework configuration information, and data from the sink.
- `RegistrationCount`: This resource property publishes registration load information (the total number of registrations since service startup and decaying averages)

## 2.1.4. Faults

The aggregator framework throws standard WS-ServiceGroup, WS-ResourceLifetime, and WS-ResourceProperties faults and does not define any new faults of its own.

## 2.1.5. WSDL and Schema Definition

- [AggregatorServiceGroup](#)<sup>9</sup>
- [AggregatorServiceGroupEntry](#)<sup>10</sup>
- [common types used by AggregatorServiceGroup and AggregatorServiceGroupEntry](#)<sup>11</sup>

Other relevant source files are the:

- [WSRF service group schema](#)<sup>12</sup>

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<sup>5</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS\\_MDS\\_Aggregator\\_Sources\\_Reference.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/WS_MDS_Aggregator_Sources_Reference.html)

<sup>6</sup> <http://www.globus.org/toolkit/docs/4.0/info/index/>

<sup>7</sup> <http://www.globus.org/toolkit/docs/4.0/info/trigger/>

<sup>8</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator/admin-index.html>

<sup>9</sup> [http://viewcvs.globus.org/viewcvs.cgi/ws-mds/aggregator/schema/mds/aggregator/aggregator\\_service\\_group\\_port\\_type.wsdl?rev=1.1&only\\_with\\_tag=globus\\_4\\_0\\_0&content-type=text/vnd.viewcvs-markup](http://viewcvs.globus.org/viewcvs.cgi/ws-mds/aggregator/schema/mds/aggregator/aggregator_service_group_port_type.wsdl?rev=1.1&only_with_tag=globus_4_0_0&content-type=text/vnd.viewcvs-markup)

<sup>10</sup> [http://viewcvs.globus.org/viewcvs.cgi/ws-mds/aggregator/schema/mds/aggregator/aggregator\\_service\\_group\\_entry\\_port\\_type.wsdl?rev=1.2&only\\_with\\_tag=globus\\_4\\_0\\_0&content-type=text/vnd.viewcvs-markup](http://viewcvs.globus.org/viewcvs.cgi/ws-mds/aggregator/schema/mds/aggregator/aggregator_service_group_entry_port_type.wsdl?rev=1.2&only_with_tag=globus_4_0_0&content-type=text/vnd.viewcvs-markup)

<sup>11</sup> [http://viewcvs.globus.org/viewcvs.cgi/ws-mds/aggregator/schema/mds/aggregator/aggregator-types.xsd?rev=1.1&only\\_with\\_tag=globus\\_4\\_0\\_0&content-type=text/vnd.viewcvs-markup](http://viewcvs.globus.org/viewcvs.cgi/ws-mds/aggregator/schema/mds/aggregator/aggregator-types.xsd?rev=1.1&only_with_tag=globus_4_0_0&content-type=text/vnd.viewcvs-markup)

<sup>12</sup> [http://viewcvs.globus.org/viewcvs.cgi/wsrf/schema/wsrf/servicegroup/WS-ServiceGroup.wsdl?rev=1.9&only\\_with\\_tag=globus\\_4\\_0\\_0](http://viewcvs.globus.org/viewcvs.cgi/wsrf/schema/wsrf/servicegroup/WS-ServiceGroup.wsdl?rev=1.9&only_with_tag=globus_4_0_0)

- [WSRF resource lifetime schema](#)<sup>13</sup>
- MDS Usefulrp schema.

## 2.2. Additional WSDL information for the Trigger Service

### 2.2.1. TriggerRuleType element

The `AggregatorConfig` element *must* contain an element of `xsi:type TriggerRuleType`, defining the conditions upon which this trigger registration will fire. This element is documented further in the [Additional configuration for the Trigger Service](#)<sup>14</sup> in the System Administrator's Guide.

### 2.2.2. Trigger Service Resource Properties

In addition to the resource properties for the Aggregator Framework, the Trigger Service exposes the following:

- `ActionsFiredCount`: This resource property counts the total number and average rate of rule firings. This is an accumulator resource property, which is defined in the `usefulrp/schema` module.

## 3. Command-line tools

The Trigger Service itself does not have any command-line clients for end users; instead, the trigger service is configured to run an executable program to take some action (for example, send mail to a set of users, or write a log entry to a file).

The `mds-servicegroup-add`<sup>15</sup> command in the Aggregator Framework is used to configure the Trigger Service to collect information from various sources.

## 4. Overview of Graphical User Interface

There is no GUI specifically for the Trigger Service. The release contains [WebMDS](#)<sup>16</sup> which can be used to display the status of resources registered to a Trigger Service in a normal web browser.

## 5. Semantics and syntax of domain-specific interface

### 5.1. Interface introduction

The trigger service provides an API to action scripts, which are executed when trigger rules fire. These take the form of fork-exec executables (written in any language) which are supplied with rule information on stdin and must output status information on stdout.

---

<sup>13</sup> [http://viewcvs.globus.org/viewcvs.cgi/wsrif/schema/wsrif/lifetime/WS-ResourceLifetime.wsdl?rev=1.11&only\\_with\\_tag=globus\\_4\\_0\\_0](http://viewcvs.globus.org/viewcvs.cgi/wsrif/schema/wsrif/lifetime/WS-ResourceLifetime.wsdl?rev=1.11&only_with_tag=globus_4_0_0)

<sup>14</sup> <http://www.globus.org/toolkit/docs/4.0/info/trigger/admin-index.html#id2827958>

<sup>15</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator/rn01re02.html>

<sup>16</sup> <http://www.globus.org/toolkit/docs/4.0/info/webmds/index.html>

## 5.2. Syntax of the interface

Trigger action scripts take the form of native OS executables, and so can be written in any language that can generate such (for example, bash, PERL, C).

Information on the match that caused an action to fire is fed into the action script through `stdin`. Status information from the action script should be sent to `stdout`, and will be reported in the content of the `ServiceGroupEntry` for the rule.

## 5.3. Format of action script `stdin`

An XML document of the following format will be piped to the `stdin` of the action script:

```
<fire>
  <message>
The message which caused the rule to fire.
  </message>

  <MemberEPR>
The EPR of the service registered for the firing rule.
  </MemberEPR>

  <AggregatorConfig>
The aggregator configuration element for this rule.
  </AggregatorConfig>
</fire>
```

The presence of the *aggregator framework* configuration element allows for additional parameters to be passed to the action script in registrations.

## 5.4. Format of action script `stdout`

The action script should output an XML document to `stdout`. The xml document does not need to match any particular schema. This output will be included in the `ServiceGroupEntry` for the rule.

# 6. Configuration interface

The trigger service is an MDS aggregator service, and so inherits much of its configuration system from the *aggregator framework* module.

## 6.1. Configuring the Aggregator Framework

The aggregator framework does not have its own service side configuration, although services which are based on the framework have their own service side configuration options (such as MDS Index<sup>17</sup> and MDS Trigger<sup>18</sup>) which are documented in the per-service documentation.

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<sup>17</sup> <http://www.globus.org/toolkit/docs/4.0/info/index/>

<sup>18</sup> <http://www.globus.org/toolkit/docs/4.0/info/trigger/>

Registrations to a working aggregator framework are configured for the `mds-servicegroup-add`<sup>19</sup> tool. This tool takes an XML configuration file listing registrations, and causes those registrations to be made.

In general, configuration of aggregator services involves configuring the service to get information from one or more sources in a Grid. The mechanism for doing this is defined by (inherited from) the aggregator framework and described in this section.

### 6.1.1. Configuration overview

Each aggregator service has an associated ServiceGroup, which is used to keep track of configuration information and aggregated data. Configuring an Aggregating Service Group to perform a data aggregation is performed by adding a service group entry with the appropriate configuration information. This can be done from the command line using the `mds-servicegroup-add` command.

invocation. An AggregatorContent object is composed of two `xsd:any` arrays: AggregatorConfig, which contains registration parameters, and AggregatorData, which contains the actual collected data. Typically, the AggregatorConfig content is specified when the

- The AggregatorConfig `xsd:any` array is used to specify parameters that are to be passed to the underlying AggregatorSource when the ServiceGroup `add` method is invoked. These parameters are generally type-specific to the implementation of the AggregatorSource and/or AggregatorSink being used.
- The AggregatorData `xsd:any` array is used as the storage location for aggregated data that is the result of message deliveries to the AggregatorSink. Generally, the AggregatorData parameter of the AggregatorContent is not populated when the ServiceGroup `add` method is invoked, but rather is populated by message delivery from the AggregatorSource.

### 6.1.2. Syntax of the interface

#### 6.1.2.1. Configuring the Aggregator Sources

The following links provide information for configuring the three types of aggregator sources provided by the Globus Toolkit:

- [Configuring the Execution Aggregator Source](http://www.globus.org/toolkit/docs/4.0/info/aggregator/re01.html)<sup>20</sup>
- [Configuring the Query Aggregator Source](http://www.globus.org/toolkit/docs/4.0/info/aggregator/Query_Aggregator_Source.html)<sup>21</sup>
- [Configuring the Subscription Aggregator Source](http://www.globus.org/toolkit/docs/4.0/info/aggregator/Subscription_Aggregator_Source.html)<sup>22</sup>

#### 6.1.2.2. Configuring the Aggregator Sink

An aggregator sink may require sink-specific configuration (the MDS *Trigger service* requires sink-specific configuration; the MDS *Index service* does not). See the documentation for the specific *aggregator service* being used for details on sink-specific documentation.

## 6.2. Additional configuration for the Trigger Service

In addition to the source parameters specified above, the `TriggerRuleType` element *must* be added to all registrations made to the trigger service.

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<sup>19</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator/re01.html>

<sup>20</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/Execution\\_Aggregator\\_Source.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/Execution_Aggregator_Source.html)

<sup>21</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/Query\\_Aggregator\\_Source.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/Query_Aggregator_Source.html)

<sup>22</sup> [http://www.globus.org/toolkit/docs/4.0/info/aggregator/Subscription\\_Aggregator\\_Source.html](http://www.globus.org/toolkit/docs/4.0/info/aggregator/Subscription_Aggregator_Source.html)

The `TriggerRuleType` is defined in [trigger-types.xsd](#)<sup>23</sup> in `trigger/source`.

This registration parameter contains the following options:

- `matchingRule`: XPath rule to be applied against incoming data. The XPath expression will be evaluated against aggregated data, and will be regarded as matching the incoming data if it matches one or more nodes in that data.
- `actionScript`: the name of a script in `$GLOBUS_LOCATION/libexec/trigger/` that will be executed when the `matchingRule` matches (except as rate limited by the following parameters).
- `minimumFiringInterval`: the action script will not be executed more than once in this number of seconds. If unspecified, there will be no minimum interval.
- `minimumMatchTime`: the `matchingRule` must be true for this number of seconds before the `actionScript` will be executed. If unspecified, there is no minimum time period that the rule must match and the rule will fire immediately the `matchingRule` becomes true.
- `outputXSL`: (UNIMPLEMENTED in GT 3.9.3). The delivered message will be transformed by the specified XSLT stylesheet and fed into the stdin of the action script. It is intended that this will be implemented in a subsequent release of the GT3.9.x series.

The rate limiting parameters behave in such a way that the rate of action script executions can be *decreased* by *increasing* the `minimumFiringInterval` and/or by *increasing* the `minimumMatchTime`.

## 6.3. Example of a trigger registration file

A complete and working example of a trigger registration file can be viewed at `$GLOBUS_LOCATION/etc/globus_wsrf_mds_trigger/trigger-aggregator-registration.xml`

This file causes a small test script to be run when it detects that the GLUE RP appears in the `DefaultIndexService`. (Please refer to the [GLUE RP documentation](#)<sup>24</sup> for more information about configuring and using it). By default, the registration example fires no more than once in every 10 minute interval. As you can see, that is dictated by the `minimumFiringInterval` value specified. The sample registration also causes the GLUE RP to be polled (i.e. updated) every 10 minutes to make sure that the entry is still valid.

Currently, the example trigger registration file will fire on the default installation because the MJFS (i.e. GRAM) contains the GLUE RP and the `matchingRule` is indicated as the XPath indicator for the node-set containing the GLUE RP in particular (i.e. `//*[local-name()='GLUECE']`). However, you can easily substitute more advanced XPath queries for firing on more specific value changes. For example, locating a specific node-set within the GLUE RP using XPath can look something like this:

```
//*[local-name()='GLUECE']//ns1:ComputingElement//ns1:State
```

## 6.4. Registering the sample Trigger scenario

Please see [Deploying the Trigger Service](#) for the method of registering the sample trigger scenario with your globus deployment.

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<sup>23</sup> [http://viewcvs.globus.org/viewcvs.cgi/ws-mds/trigger/source/schema/mds/trigger/trigger-types.xsd?rev=1.2&only\\_with\\_tag=globus\\_4\\_0\\_0&content-type=text/vnd.viewcvs-markup](http://viewcvs.globus.org/viewcvs.cgi/ws-mds/trigger/source/schema/mds/trigger/trigger-types.xsd?rev=1.2&only_with_tag=globus_4_0_0&content-type=text/vnd.viewcvs-markup)

<sup>24</sup> <http://www.globus.org/toolkit/docs/4.0/info/key/gluerp.html>

## 7. Environment variable interface

There are no Trigger Service specific environment variables.

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# Chapter 6. GT 4.0 WS MDS Trigger Service: Quality Profile

## 1. Test coverage reports

- None available at this time.

## 2. Code analysis reports

- None available at this time.

## 3. Outstanding bugs

- [2808: trigger service junit test needs some work](#)<sup>1</sup>
- [All open Trigger Service bugs and enhancement requests](#)<sup>2</sup>.

## 4. Bug Fixes

- [2140: fixable WARN at trigger startup](#)<sup>3</sup>
- [All fixed Trigger Service bugs and enhancement requests](#)<sup>4</sup>

## 5. Performance reports

- None available at this time.

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<sup>1</sup> [http://bugzilla.globus.org/globus/show\\_bug.cgi?id=2808](http://bugzilla.globus.org/globus/show_bug.cgi?id=2808)

<sup>2</sup> [http://bugzilla.globus.org/globus/buglist.cgi?short\\_desc\\_type=allwordssubstr&short\\_desc=&product=MDS&component=wsrfr\\_trigger&long\\_desc\\_type=allwordssubstr&long\\_desc=&bug\\_file\\_loc\\_type=allwordssubstr&bug\\_file\\_loc=&bug\\_status=NEW&bug\\_status=AS-SIGNED&bug\\_status=REOPENED&emailtype1=substring&email1=&emailtype2=substring&email2=&bugidtype=include&bug\\_id=&votes=&changedin=&chfieldfrom=&chfieldto=Now&chfieldvalue=&cmdtype=doit&newqueryname=&order=Reuse+same+sort+as+last+time&field0-0=noop&type0-0=noop&value0-0=](http://bugzilla.globus.org/globus/buglist.cgi?short_desc_type=allwordssubstr&short_desc=&product=MDS&component=wsrfr_trigger&long_desc_type=allwordssubstr&long_desc=&bug_file_loc_type=allwordssubstr&bug_file_loc=&bug_status=NEW&bug_status=AS-SIGNED&bug_status=REOPENED&emailtype1=substring&email1=&emailtype2=substring&email2=&bugidtype=include&bug_id=&votes=&changedin=&chfieldfrom=&chfieldto=Now&chfieldvalue=&cmdtype=doit&newqueryname=&order=Reuse+same+sort+as+last+time&field0-0=noop&type0-0=noop&value0-0=)

<sup>3</sup> [http://bugzilla.globus.org/globus/show\\_bug.cgi?id=2140](http://bugzilla.globus.org/globus/show_bug.cgi?id=2140)

<sup>4</sup> [http://bugzilla.globus.org/globus/buglist.cgi?short\\_desc\\_type=allwordssubstr&short\\_desc=&product=MDS&component=wsrfr\\_trigger&long\\_desc\\_type=allwordssubstr&long\\_desc=&bug\\_file\\_loc\\_type=allwordssubstr&bug\\_file\\_loc=&bug\\_status=RESOLVED&bug\\_status=VERIFIED&bug\\_status=CLOSED&emailtype1=substring&email1=&emailtype2=substring&email2=&bugidtype=include&bug\\_id=&votes=&changedin=&chfieldfrom=&chfieldto=Now&chfieldvalue=&cmdtype=doit&newqueryname=&order=Reuse+same+sort+as+last+time&field0-0=noop&type0-0=noop&value0-0=](http://bugzilla.globus.org/globus/buglist.cgi?short_desc_type=allwordssubstr&short_desc=&product=MDS&component=wsrfr_trigger&long_desc_type=allwordssubstr&long_desc=&bug_file_loc_type=allwordssubstr&bug_file_loc=&bug_status=RESOLVED&bug_status=VERIFIED&bug_status=CLOSED&emailtype1=substring&email1=&emailtype2=substring&email2=&bugidtype=include&bug_id=&votes=&changedin=&chfieldfrom=&chfieldto=Now&chfieldvalue=&cmdtype=doit&newqueryname=&order=Reuse+same+sort+as+last+time&field0-0=noop&type0-0=noop&value0-0=)

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# Chapter 7. GT 4.0.8 Incremental Release Notes: WS MDS Trigger Service

## 1. Introduction

These release notes are for the incremental release 4.0.8. It includes a summary of changes since 4.0.7, bug fixes since 4.0.7 and any known problems that still exist at the time of the 4.0.8 release. This page is in addition to the top-level 4.0.8 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.8>.

For release notes about 4.0 (including feature summary, technology dependencies, etc) go to the [WS MDS Trigger 4.0 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

No changes have been made since the previous release.

## 3. Bug Fixes

No new bugs have been fixed for the WS MDS Trigger Service since the previous release.

## 4. Known Problems

- [Bug 5079](#):<sup>2</sup> invalidityTime bug

## 5. For More Information

Click [here](#)<sup>3</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/info/trigger/WS\\_MDS\\_Trigger\\_Release\\_Notes.html](http://www.globus.org/toolkit/docs/4.0/info/trigger/WS_MDS_Trigger_Release_Notes.html)

<sup>2</sup> [http://bugzilla.globus.org/globus/show\\_bug.cgi?id=5079](http://bugzilla.globus.org/globus/show_bug.cgi?id=5079)

<sup>3</sup> [index.html](#)

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# Chapter 8. GT 4.0.7 Incremental Release Notes: WS MDS Trigger Service

## 1. Introduction

These release notes are for the incremental release 4.0.7. It includes a summary of changes since 4.0.6, bug fixes since 4.0.6 and any known problems that still exist at the time of the 4.0.7 release. This page is in addition to the top-level 4.0.7 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.7>.

For release notes about 4.0 (including feature summary, technology dependencies, etc) go to the [WS MDS Trigger 4.0 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

No changes have been made since the previous release.

## 3. Bug Fixes

No new bugs have been fixed for the WS MDS Trigger Service since the previous release.

## 4. Known Problems

- [Bug 5079](#):<sup>2</sup> invalidityTime bug

## 5. For More Information

Click [here](#)<sup>3</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/info/trigger/WS\\_MDS\\_Trigger\\_Release\\_Notes.html](http://www.globus.org/toolkit/docs/4.0/info/trigger/WS_MDS_Trigger_Release_Notes.html)

<sup>2</sup> [http://bugzilla.globus.org/globus/show\\_bug.cgi?id=5079](http://bugzilla.globus.org/globus/show_bug.cgi?id=5079)

<sup>3</sup> [index.html](#)

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# Chapter 9. GT 4.0.6 Incremental Release Notes: WS MDS Trigger Service

## 1. Introduction

These release notes are for the incremental release 4.0.6. It includes a summary of changes since 4.0.5, bug fixes since 4.0.5 and any known problems that still exist at the time of the 4.0.6 release. This page is in addition to the top-level 4.0.6 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.6>.

For release notes about 4.0 (including feature summary, technology dependencies, etc) go to the [WS MDS Trigger 4.0 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

No changes have been made since the previous release.

## 3. Bug Fixes

No new bugs have been fixed for the WS MDS Trigger Service since GT 4.0.5.

## 4. Known Problems

- [Bug 5079](#):<sup>2</sup> invalidityTime bug

## 5. For More Information

Click [here](#)<sup>3</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/info/trigger/WS\\_MDS\\_Trigger\\_Release\\_Notes.html](http://www.globus.org/toolkit/docs/4.0/info/trigger/WS_MDS_Trigger_Release_Notes.html)

<sup>2</sup> [http://bugzilla.globus.org/globus/show\\_bug.cgi?id=5079](http://bugzilla.globus.org/globus/show_bug.cgi?id=5079)

<sup>3</sup> [index.html](#)

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# Chapter 10. GT 4.0.5 Incremental Release Notes: WS MDS Trigger Service

## 1. Introduction

These release notes are for the incremental release 4.0.5. It includes a summary of changes since 4.0.4, bug fixes since 4.0.4 and any known problems that still exist at the time of the 4.0.5 release. This page is in addition to the top-level 4.0.5 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.5>.

For release notes about 4.0 (including feature summary, technology dependencies, etc) go to the [WS MDS Trigger 4.0 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

The following new features were added:

- Support for namespace mappings
- Support for specification of an invalidityTime, a time period during which a trigger is disabled.
- Support for several new flags which control the behavior of triggers
  - evaluateBoolean -- specifies that a trigger should be fired if on boolean true (not just on null results)
  - enableFilteredActionScriptInput - sends filtered output in addition to full xml to the action script
  - disableUnmodifiedActionScriptInput - disables sending of full xml to the action script
- Support for multiple trigger rules per registration

## 3. Bug Fixes

No new bugs have been fixed for the WS MDS Trigger Service since GT 4.0.4.

## 4. Known Problems

- [Bug 5079](#):<sup>2</sup> invalidityTime bug

## 5. For More Information

Click [here](#)<sup>3</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/info/trigger/WS\\_MDS\\_Trigger\\_Release\\_Notes.html](http://www.globus.org/toolkit/docs/4.0/info/trigger/WS_MDS_Trigger_Release_Notes.html)

<sup>2</sup> [http://bugzilla.globus.org/globus/show\\_bug.cgi?id=5079](http://bugzilla.globus.org/globus/show_bug.cgi?id=5079)

<sup>3</sup> [index.html](#)

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# Chapter 11. GT 4.0.4 Incremental Release Notes: WS MDS Trigger Service

## 1. Introduction

These release notes are for the incremental release 4.0.4. It includes a summary of changes since 4.0.3, bug fixes since 4.0.3 and any known problems that still exist at the time of the 4.0.4 release. This page is in addition to the top-level 4.0.4 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.4>.

For release notes about 4.0 (including feature summary, technology dependencies, etc) go to the [WS MDS Trigger 4.0 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

No changes have occurred for WS MDS Trigger service since GT 4.0.3.

## 3. Bug Fixes

No new bugs have been fixed for the WS MDS Trigger Service since GT 4.0.3.

## 4. Known Problems

No problems are known to exist for the WS-MDS Trigger service at the time of the 4.0.4 release.

## 5. For More Information

Click [here](#)<sup>2</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/info/trigger/WS\\_MDS\\_Trigger\\_Release\\_Notes.html](http://www.globus.org/toolkit/docs/4.0/info/trigger/WS_MDS_Trigger_Release_Notes.html)

<sup>2</sup> [index.html](#)

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# Chapter 12. GT 4.0.3 Incremental Release Notes: WS MDS Trigger Service

## 1. Introduction

These release notes are for the incremental release 4.0.3. It includes a summary of changes since 4.0.2, bug fixes since 4.0.2 and any known problems that still exist at the time of the 4.0.3 release. This page is in addition to the top-level 4.0.3 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.3>.

For release notes about 4.0 (including feature summary, technology dependencies, etc) go to the [WS MDS Trigger 4.0 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

No changes have occurred for WS MDS Trigger service since GT 4.0.2.

## 3. Bug Fixes

No new bugs have been fixed for the WS MDS Trigger Service since GT 4.0.2.

## 4. Known Problems

No problems are known to exist for the WS-MDS Trigger service at the time of the 4.0.3 release.

## 5. For More Information

Click [here](#)<sup>2</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/info/trigger/WS\\_MDS\\_Trigger\\_Release\\_Notes.html](http://www.globus.org/toolkit/docs/4.0/info/trigger/WS_MDS_Trigger_Release_Notes.html)

<sup>2</sup> [index.html](#)

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# Chapter 13. GT 4.0.2 Incremental Release Notes: WS MDS Trigger Service

## 1. Introduction

These release notes are for the incremental release 4.0.2. It includes a summary of changes since 4.0.1, bug fixes since 4.0.1 and any known problems that still exist at the time of the 4.0.2 release. This page is in addition to the top-level 4.0.2 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.2>.

For release notes about 4.0 (including feature summary, technology dependencies, etc) go to the [WS MDS Trigger 4.0 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

No changes have occurred for WS MDS Trigger service.

## 3. Bug Fixes

No new bugs were fixed for the WS MDS Trigger Service

## 4. Known Problems

No problems are known to exist for the WS-MDS Trigger service at the time of the 4.0.2 release.

## 5. For More Information

Click [here](#)<sup>2</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/info/trigger/WS\\_MDS\\_Trigger\\_Release\\_Notes.html](http://www.globus.org/toolkit/docs/4.0/info/trigger/WS_MDS_Trigger_Release_Notes.html)

<sup>2</sup> [index.html](#)

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# Chapter 14. GT 4.0.1 Incremental Release Notes: WS MDS Trigger Service

## 1. Introduction

These release notes are for the incremental release 4.0.1. It includes a summary of changes since 4.0.0, bug fixes since 4.0.0 and any known problems that still exist at the time of the 4.0.1 release. This page is in addition to the top-level 4.0.1 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.1>.

For release notes about 4.0 (including feature summary, technology dependencies, etc) go to the [WS MDS Trigger 4.0 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

Other than bug fixes, no changes have occurred for WS MDS Trigger service.

## 3. Bug Fixes

The following bugs were fixed for the WS MDS Trigger Service:

- [Bug 3489](#):<sup>2</sup> Trigger's minimumFiringInterval is not working properly
- [Bug 3488](#)<sup>3</sup> Trigger's minimumMatchTime is not working
- [Bug 3468](#):<sup>4</sup> Trigger unable to process boolean result
- [Bug 3467](#):<sup>5</sup> Trigger unable to process numerical result

## 4. Known Problems

No problems are known to exist for the WS-MDS Trigger service at the time of the 4.0.1 release.

## 5. For More Information

Click [here](#)<sup>6</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/info/trigger/WS\\_MDS\\_Trigger\\_Release\\_Notes.html](http://www.globus.org/toolkit/docs/4.0/info/trigger/WS_MDS_Trigger_Release_Notes.html)

<sup>2</sup> [http://bugzilla.globus.org/bugzilla/show\\_bug.cgi?id=3489](http://bugzilla.globus.org/bugzilla/show_bug.cgi?id=3489)

<sup>3</sup> [http://bugzilla.globus.org/bugzilla/show\\_bug.cgi?id=3488](http://bugzilla.globus.org/bugzilla/show_bug.cgi?id=3488)

<sup>4</sup> [http://bugzilla.globus.org/bugzilla/show\\_bug.cgi?id=3468](http://bugzilla.globus.org/bugzilla/show_bug.cgi?id=3468)

<sup>5</sup> [http://bugzilla.globus.org/bugzilla/show\\_bug.cgi?id=3467](http://bugzilla.globus.org/bugzilla/show_bug.cgi?id=3467)

<sup>6</sup> [index.html](#)

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# Chapter 15. GT 4.0 Release Notes: WS MDS Trigger Service

## 1. Component Overview

The Trigger Service collects data from resources on the grid and, if administrator defined rules match, can perform various actions. An example use is to send email when queue length on a compute resource goes over a threshold value.

## 2. Feature Summary

Features new in release 4.0

- Not applicable

Other Supported Features

- Monitors resource properties for matching trigger conditions
- When a trigger condition matches, fires a customizable action: for example, sends email to an administrator.
- Monitored services are managed through service group-based registration API, allowing use of many of the same clients that can be used in the *Index Service*.

Deprecated Features

- Not applicable

## 3. Bug Fixes

- [2140: fixable WARN at trigger startup](#)<sup>1</sup>
- [All fixed Trigger Service bugs and enhancement requests](#)<sup>2</sup>

## 4. Known Problems

- [2808: trigger service junit test needs some work](#)<sup>3</sup>
- [All open Trigger Service bugs and enhancement requests](#)<sup>4</sup>.

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<sup>1</sup> [http://bugzilla.globus.org/globus/show\\_bug.cgi?id=2140](http://bugzilla.globus.org/globus/show_bug.cgi?id=2140)

<sup>2</sup> [http://bugzilla.globus.org/globus/buglist.cgi?short\\_desc\\_type=allwordssubstr&short\\_desc=&product=MDS&component=wsrc\\_trigger&long\\_desc\\_type=allwordssubstr&long\\_desc=&bug\\_file\\_loc\\_type=allwordssubstr&bug\\_file\\_loc=&bug\\_status=RESOLVED&bug\\_status=VERIFIED&bug\\_status=CLOSED&emailtype1=substring&email1=&emailtype2=substring&email2=&bugidtype=include&bug\\_id=&votes=&changedin=&chfieldfrom=&chfieldto=Now&chfieldvalue=&cmdtype=doit&newqueryname=&order=Reuse+same+sort+as+last+time&field0-0-0=noop&type0-0-0=noop&value0-0-0=](http://bugzilla.globus.org/globus/buglist.cgi?short_desc_type=allwordssubstr&short_desc=&product=MDS&component=wsrc_trigger&long_desc_type=allwordssubstr&long_desc=&bug_file_loc_type=allwordssubstr&bug_file_loc=&bug_status=RESOLVED&bug_status=VERIFIED&bug_status=CLOSED&emailtype1=substring&email1=&emailtype2=substring&email2=&bugidtype=include&bug_id=&votes=&changedin=&chfieldfrom=&chfieldto=Now&chfieldvalue=&cmdtype=doit&newqueryname=&order=Reuse+same+sort+as+last+time&field0-0-0=noop&type0-0-0=noop&value0-0-0=)

<sup>3</sup> [http://bugzilla.globus.org/globus/show\\_bug.cgi?id=2808](http://bugzilla.globus.org/globus/show_bug.cgi?id=2808)

<sup>4</sup> [http://bugzilla.globus.org/globus/buglist.cgi?short\\_desc\\_type=allwordssubstr&short\\_desc=&product=MDS&component=wsrc\\_trigger&long\\_desc\\_type=allwordssubstr&long\\_desc=&bug\\_file\\_loc\\_type=allwordssubstr&bug\\_file\\_loc=&bug\\_status=NEW&bug\\_status=AS-SIGNED&bug\\_status=REOPENED&emailtype1=substring&email1=&emailtype2=substring&email2=&bugidtype=include&bug\\_id=&votes=&changedin=&chfieldfrom=&chfieldto=Now&chfieldvalue=&cmdtype=doit&newqueryname=&order=Reuse+same+sort+as+last+time&field0-0-0=noop&type0-0-0=noop&value0-0-0=](http://bugzilla.globus.org/globus/buglist.cgi?short_desc_type=allwordssubstr&short_desc=&product=MDS&component=wsrc_trigger&long_desc_type=allwordssubstr&long_desc=&bug_file_loc_type=allwordssubstr&bug_file_loc=&bug_status=NEW&bug_status=AS-SIGNED&bug_status=REOPENED&emailtype1=substring&email1=&emailtype2=substring&email2=&bugidtype=include&bug_id=&votes=&changedin=&chfieldfrom=&chfieldto=Now&chfieldvalue=&cmdtype=doit&newqueryname=&order=Reuse+same+sort+as+last+time&field0-0-0=noop&type0-0-0=noop&value0-0-0=)

## 5. Technology Dependencies

The Trigger Service depends on the following GT components:

- [Java WS Core](#)<sup>5</sup>
- [WS MDS Aggregator Framework](#)<sup>6</sup>

The Trigger Service depends on the following 3rd party software:

- None

## 6. Tested Platforms

Tested Platforms for WS-MDS Trigger Service

- Linux on i386
- Windows XP

Tested containers for WS-MDS Trigger Service:

- Java WS Core container
- Tomcat 5.0.28

## 7. Backward Compatibility Summary

The Trigger Service is a new component for GT 4.0 and so has no compatibility statement.

## 8. For More Information

Click [here](#)<sup>7</sup> for more information about this component.

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<sup>5</sup> <http://www.globus.org/toolkit/docs/4.0/common/javawscore/>

<sup>6</sup> <http://www.globus.org/toolkit/docs/4.0/info/aggregator/>

<sup>7</sup> [index.html](#)

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# GT 4.0 WS MDS Glossary

## A

Aggregator Framework	A software framework used to build services that collect and aggregate data. MDS4 Services (such as the Index and Trigger services) are built on the Aggregator Framework, and are sometimes called Aggregator Services.
aggregator services	Services that are built on the Aggregator Framework, such as the MDS4 Index Service and Trigger Service. See Also <a href="#">Aggregator Framework</a> , <a href="#">Index Service</a> , <a href="#">Trigger Service</a> .
aggregator source	A Java class that implements an interface (defined as part of the Aggregator Framework) to collect XML-formatted data. MDS4 contains three aggregator sources: the query aggregator source, the subscription aggregator source, and the execution aggregator source. See Also <a href="#">query aggregator source</a> , <a href="#">subscription aggregator source</a> , <a href="#">execution aggregator source</a> .

## E

execution aggregator source	An Aggregator Source (included in MDS4) that executes an administrator-supplied program to collect information and make it available to an Aggregator Service such as the Index Service. See Also <a href="#">aggregator source</a> .
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## G

Ganglia	A cluster monitoring tool. See <a href="http://ganglia.sourceforge.net">http://ganglia.sourceforge.net</a> .
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## H

Hawkeye	A monitoring service for Condor Pools. See <a href="http://www.cs.wisc.edu/condor/hawkeye/">http://www.cs.wisc.edu/condor/hawkeye/</a> .
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## I

Index Service	An aggregator service that serves as a registry similar to UDDI, but much more flexible. Indexes collect information and publish that information as WSRF resource properties. See Also <a href="#">aggregator services</a> .
information provider	A "helper" software component that collects or formats resource information, for use by an aggregator source or by a WSRF service when creating resource properties.

## Q

query aggregator source      An aggregator source (included in MDS4) that polls a WSRF service for resource property information.  
See Also [aggregator source](#).

## S

subscription aggregator source      An aggregator source (included in MDS4) that collects data from a WSRF service via WSRF subscription/notification.  
See Also [aggregator source](#).

## T

Trigger Service      An aggregator service that collects information and compares that data against a set of conditions defined in a configuration file. When a condition is met, or triggered, an action takes place, such as emailing a system administrator when the disk space on a server reaches a threshold.  
See Also [aggregator services](#).

## W

WebMDS      A web-based interface to WS-RF resource property information that can be used as a user-friendly front-end to the Index Service or other WS-RF services.