1. Component Overview

The Globus Toolkit GSI C component provides APIs and tools for authentication, authorization and certificate management. The authentication API is built using Public Key Infrastructure (PKI) technologies, e.g. X.509 Certificates and TLS. In addition to authentication it features a delegation mechanism based upon X.509 Proxy Certificates. Authorization support takes the form of a couple of APIs. The first provides a generic authorization API that allows callouts to perform access control based on the client’s credentials (i.e. the X.509 certificate chain). The second provides a simple access control list that maps authorized remote entities to local (system) user names. The second mechanism also provides callouts that allow third parties to override the default behavior and is currently used in the Gatekeeper and GridFTP servers. In addition to the above there are various lower level APIs and tools for managing, discovering and querying certificates.

2. Feature summary

Features new in GT 5.2.3

• None.

Other Supported Features

• Uses internet-standard GSSAPI for security operations.

• Supports certificate-based authentication, using both standard X.509 End Entity and Proxy Certificates.

• Supports delegation of user rights to services using standard X.509 Proxy Certificates.

• Supports authorization based on client certificate chains, including support for X.509v3 certificate extensions.

• Provides tools for managing certificates, proxies, trust roots, and credential identity mapping tables.

Deprecated Features

• None
3. Summary of Changes in GSIC

3.1. New Features: GSIC

None.

3.2. Improvements: GSIC

- GT-271¹: Create Native Packages for gridmap-verify-myproxy-callout

4. Fixed Bugs for GSIC

- GT-235²: GSI does not reload CRLs if they are replaced

5. Known Problems in GSIC

- GT-106³: Free requirement for cred_get_subject_name not in API docs
- GT-107⁴: GSI XIO Driver hangs in delegation code
- GT-110⁵: GSS_I_DISALLOW_ENCRYPTION not being enforced by GSI C GSSAPI
- GT-210⁶: grid-mapfile-check-consistency doesn't work well
- GT-232⁷: gss_accept_sec_context() doesn't return value as per specs

6. Technology dependencies

The GSI C component depends on the following GT components:

- C Common Libraries

The GSI C component depends on the following 3rd party software:

- OpenSSL

7. Tested platforms

GSI C has been tested on the following platforms:

Table 1. Tested Platforms

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Distribution</th>
<th>Version(s)</th>
<th>Architecture(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux</td>
<td>CentOS</td>
<td>4</td>
<td>x86_64</td>
</tr>
</tbody>
</table>

¹ http://jira.globus.org/browse/GT-271
² http://jira.globus.org/browse/GT-235
³ http://jira.globus.org/browse/GT-106
⁴ http://jira.globus.org/browse/GT-107
⁵ http://jira.globus.org/browse/GT-110
⁶ http://jira.globus.org/browse/GT-210
⁷ http://jira.globus.org/browse/GT-232
<table>
<thead>
<tr>
<th>Operating System</th>
<th>Distribution</th>
<th>Version(s)</th>
<th>Architecture(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CentOS</td>
<td></td>
<td>5</td>
<td>i386, x86_64</td>
</tr>
<tr>
<td>Fedora</td>
<td></td>
<td>16, 17</td>
<td>i386, x86_64</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux</td>
<td></td>
<td>5, 6</td>
<td>i386, x86_64</td>
</tr>
<tr>
<td>Scientific Linux</td>
<td></td>
<td>5, 6</td>
<td>i386, x86_64</td>
</tr>
<tr>
<td>Debian</td>
<td></td>
<td>6, 7 (testing)</td>
<td>i386, amd64</td>
</tr>
<tr>
<td>Ubuntu</td>
<td></td>
<td>10.04LTS, 11.10, 12.04LTS, 12.10</td>
<td>i386, amd64</td>
</tr>
<tr>
<td>Mac OS X</td>
<td></td>
<td>10.8 (Mountain Lion)</td>
<td>x86_64</td>
</tr>
<tr>
<td>Solaris</td>
<td></td>
<td>11</td>
<td>x86_64</td>
</tr>
</tbody>
</table>

8. Backward compatibility summary

Protocol changes in GSI C since GT 5.2.2

- None

API changes since GT 5.2.2

- None

Exception changes since GT 5.2.2

- Not applicable

Schema changes since GT 5.2.2

- Not applicable

9. Associated Standards

Associated standards for GSI C:

- RFC 3820[^8] Proxy Certificates
- RFC 2744[^9] GSSAPI: C-bindings
- RFC 2743[^10]: GSSAPI
- GFD 24[^11]: GSSAPI Extensions
- RFC 2246[^12] TLS

10. For More Information

See GSI C for more information about this component.

[^8]: http://www.faqs.org/rfcs/rfc3820.html
[^10]: http://www.faqs.org/rfcs/rfc2743.html
[^12]: http://www.faqs.org/rfcs/rfc2246.html
# Glossary

## P

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>proxy certificate</td>
<td>A short lived certificate issued using a EEC. A proxy certificate typically has the same effective subject as the EEC that issued it and can thus be used in its place. GSI uses proxy certificates for single sign on and delegation of rights to other entities. For more information about types of proxy certificates and their compatibility in different versions of GT, see <a href="http://dev.globus.org/wiki/Security/ProxyCert-Types">http://dev.globus.org/wiki/Security/ProxyCert-Types</a>.</td>
</tr>
<tr>
<td>public key</td>
<td>The public part of a key pair used for cryptographic operations (e.g. signing, encrypting).</td>
</tr>
</tbody>
</table>