

# globus xio gsi driver Reference Manual

## 2.1

Generated by Doxygen 1.3.9.1

Thu Jan 26 15:03:27 2012

# Contents

<b>1</b>	<b>globus xio gsi driver Module Index</b>	<b>1</b>
<b>2</b>	<b>globus xio gsi driver Module Documentation</b>	<b>1</b>

## 1 globus xio gsi driver Module Index

### 1.1 globus xio gsi driver Modules

Here is a list of all modules:

<b>Globus XIO GSI Driver</b>	<b>1</b>
<b>Opening/Closing</b>	<b>2</b>
<b>Reading/Writing</b>	<b>2</b>
<b>Server</b>	<b>2</b>
<b>Env Variables</b>	<b>2</b>
<b>Attributes and Cntls</b>	<b>2</b>
<b>Types</b>	<b>14</b>
<b>Error Types</b>	<b>15</b>

## 2 globus xio gsi driver Module Documentation

### 2.1 Globus XIO GSI Driver

The GSI driver.

#### Modules

- group **Opening/Closing**
- group **Reading/Writing**
- group **Server**
- group **Env Variables**
- group **Attributes and Cntls**
- group **Types**
- group **Error Types**

#### 2.1.1 Detailed Description

The GSI driver.

## 2.2 Opening/Closing

An XIO handle with the gsi driver can be created with either `globus_xio_handle_create()` or `globus_xio_server_register_accept()`.

If the handle is created with `globus_xio_server_register_accept()`, the `globus_xio_register_open()` call will proceed to accept a GSSAPI security context. Upon successful completion of the open, ie after the open callback has been called, the application may proceed to read or write data associated with the GSI session.

If the handle is created with `globus_xio_handle_create()`, then the XIO handle will implement the client-side (init) of the GSSAPI call sequence and establish a security context with the accepting side indicated by the `contact_string` passed to `globus_xio_register_open()`.

## 2.3 Reading/Writing

The GSI driver behaves similar to the underlying transport driver with respect to reads and writes, except for the try-read and try-write operations (ie. `waitforbytes == 0`) which always return immediately. This is due to the fact that the security layer needs to read and write tokens of a certain minimal size and thus needs to rely on the underlying transport to handle greater than 0 reads/write which is not possible in "try" mode.

## 2.4 Server

`globus_xio_server_create()` causes a new transport-specific listener socket to be created to handle new GSI connections. `globus_xio_server_register_accept()` will accept a new connection for processing. `globus_xio_server_register_close()` cleans up the internal resources associated with the http server and calls close on the listener.

All accepted handles inherit all gsi specific attributes set in the attr to `globus_xio_server_create()`, but can be overridden with the attr to `globus_xio_register_open()`. Furthermore, accepted handles will use the GSSAPI accept security context call unless explicitly overridden during the `globus_xio_register_open()` call (`GLOBUS_XIO_GSI_FORCE_SERVER_MODE`).

## 2.5 Env Variables

The gsi driver uses the following environment variables

- `X509_USER_PROXY`
- `X509_USER_CERT`
- `X509_USER_KEY`
- `X509_CERT_DIR`

For details see Globus: `GSI Environment Variables`

## 2.6 Attributes and Cntls

### Enumerations

- `enum globus_xio_gsi_cmd_t {`  
    `GLOBUS_XIO_GSI_SET_CREDENTIAL,`  
    `GLOBUS_XIO_GSI_GET_CREDENTIAL,`  
    `GLOBUS_XIO_GSI_SET_GSSAPI_REQ_FLAGS,`

**GLOBUS\_XIO\_GSI\_GET\_GSSAPI\_REQ\_FLAGS,**  
**GLOBUS\_XIO\_GSI\_SET\_PROXY\_MODE,**  
**GLOBUS\_XIO\_GSI\_GET\_PROXY\_MODE,**  
**GLOBUS\_XIO\_GSI\_SET\_AUTHORIZATION\_MODE,**  
**GLOBUS\_XIO\_GSI\_GET\_AUTHORIZATION\_MODE,**  
**GLOBUS\_XIO\_GSI\_SET\_DELEGATION\_MODE,**  
**GLOBUS\_XIO\_GSI\_GET\_DELEGATION\_MODE,**  
**GLOBUS\_XIO\_GSI\_SET\_SSL\_COMPATIBLE,**  
**GLOBUS\_XIO\_GSI\_SET\_ANON,**  
**GLOBUS\_XIO\_GSI\_SET\_WRAP\_MODE,**  
**GLOBUS\_XIO\_GSI\_GET\_WRAP\_MODE,**  
**GLOBUS\_XIO\_GSI\_SET\_BUFFER\_SIZE,**  
**GLOBUS\_XIO\_GSI\_GET\_BUFFER\_SIZE,**  
**GLOBUS\_XIO\_GSI\_SET\_PROTECTION\_LEVEL,**  
**GLOBUS\_XIO\_GSI\_GET\_PROTECTION\_LEVEL,**  
**GLOBUS\_XIO\_GSI\_GET\_TARGET\_NAME,**  
**GLOBUS\_XIO\_GSI\_SET\_TARGET\_NAME,**  
**GLOBUS\_XIO\_GSI\_GET\_CONTEXT,**  
**GLOBUS\_XIO\_GSI\_GET\_DELEGATED\_CRED,**  
**GLOBUS\_XIO\_GSI\_GET\_PEER\_NAME,**  
**GLOBUS\_XIO\_GSI\_GET\_LOCAL\_NAME,**  
**GLOBUS\_XIO\_GSI\_INIT\_DELEGATION,**  
**GLOBUS\_XIO\_GSI\_REGISTER\_INIT\_DELEGATION,**  
**GLOBUS\_XIO\_GSI\_ACCEPT\_DELEGATION,**  
**GLOBUS\_XIO\_GSI\_REGISTER\_ACCEPT\_DELEGATION,**  
**GLOBUS\_XIO\_GSI\_FORCE\_SERVER\_MODE,**  
**GLOBUS\_XIO\_GSI\_SET\_ALLOW\_MISSING\_SIGNING\_POLICY,**  
**GLOBUS\_XIO\_GSI\_GET\_ALLOW\_MISSING\_SIGNING\_POLICY }**

## Functions

- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_CREDENTIAL, gss\_cred\_id\_t credential)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_SET\_CREDENTIAL, gss\_cred\_id\_t credential)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_CREDENTIAL, gss\_cred\_id\_t \*credential)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_GET\_CREDENTIAL, gss\_cred\_id\_t \*credential)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_GSSAPI\_REQ\_FLAGS, OM\_uint32 req\_flags)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_GSSAPI\_REQ\_FLAGS, OM\_uint32 \*req\_flags)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_PROXY\_MODE, **globus\_xio\_gsi\_proxy\_mode\_t** proxy\_mode)

- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_PROXY\_MODE, **globus\_xio\_gsi\_proxy\_mode\_t** \*proxy\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_AUTHORIZATION\_MODE, **globus\_xio\_gsi\_authorization\_mode\_t** authz\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_AUTHORIZATION\_MODE, **globus\_xio\_gsi\_authorization\_mode\_t** \*authz\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_DELEGATION\_MODE, **globus\_xio\_gsi\_delegation\_mode\_t** delegation\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_DELEGATION\_MODE, **globus\_xio\_gsi\_delegation\_mode\_t** \*delegation\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_SSL\_COMPATIBLE, globus\_bool\_t ssl\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_ANON, globus\_bool\_t anon\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_WRAP\_MODE, globus\_boolean\_t wrap\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_WRAP\_MODE, globus\_boolean\_t \*wrap\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_BUFFER\_SIZE, globus\_size\_t buffer\_size)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_BUFFER\_SIZE, globus\_size\_t \*buffer\_size)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_PROTECTION\_LEVEL, **globus\_xio\_gsi\_protection\_level\_t** protection\_level)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_PROTECTION\_LEVEL, **globus\_xio\_gsi\_protection\_level\_t** \*protection\_level)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_TARGET\_NAME, gss\_name\_t \*target\_name)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_TARGET\_NAME, gss\_name\_t target\_name)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_GET\_CONTEXT, gss\_ctx\_id\_t \*context)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_GET\_DELEGATED\_CRED, gss\_cred\_id\_t \*credential)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_GET\_PEER\_NAME, gss\_name\_t \*peer\_name)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_GET\_LOCAL\_NAME, gss\_name\_t \*local\_name)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_INIT\_DELEGATION, gss\_cred\_id\_t credential, gss\_OID\_set restriction\_oids, gss\_buffer\_set\_t restriction\_buffers, OM\_uint32 time\_req)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_REGISTER\_INIT\_DELEGATION, gss\_cred\_id\_t credential, gss\_OID\_set restriction\_oids, gss\_buffer\_set\_t restriction\_buffers, OM\_uint32 time\_req, **globus\_xio\_gsi\_delegation\_init\_callback\_t** callback, void \*callback\_arg)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_ACCEPT\_DELEGATION, gss\_cred\_id\_t \*credential, gss\_OID\_set restriction\_oids, gss\_buffer\_set\_t restriction\_buffers, OM\_uint32 time\_req)
- globus\_result\_t **globus\_xio\_handle\_cntl** (handle, driver, GLOBUS\_XIO\_GSI\_REGISTER\_ACCEPT\_DELEGATION, gss\_OID\_set restriction\_oids, gss\_buffer\_set\_t restriction\_buffers, OM\_uint32 time\_req, **globus\_xio\_gsi\_delegation\_accept\_callback\_t** callback, void \*callback\_arg)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_FORCE\_SERVER\_MODE, globus\_bool\_t server\_mode)
- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_SET\_ALLOW\_MISSING\_SIGNING\_POLICY, globus\_bool\_t allow)

- globus\_result\_t **globus\_xio\_attr\_cntl** (attr, driver, GLOBUS\_XIO\_GSI\_GET\_ALLOW\_MISSING\_SIGNING\_POLICY, globus\_bool\_t \*allow)

## 2.6.1 Detailed Description

GSI driver specific attrs and cntls.

See also:

**globus\_xio\_attr\_cntl** ()  
**globus\_xio\_handle\_cntl** ()

## 2.6.2 Enumeration Type Documentation

### 2.6.2.1 enum globus\_xio\_gsi\_cmd\_t

GSI driver specific cntls.

Enumeration values:

**GLOBUS\_XIO\_GSI\_SET\_CREDENTIAL** See usage for: **globus\_xio\_attr\_cntl** (p. 6), **globus\_xio\_handle\_cntl** (p. 6).

**GLOBUS\_XIO\_GSI\_GET\_CREDENTIAL** See usage for: **globus\_xio\_attr\_cntl** (p. 6), **globus\_xio\_handle\_cntl** (p. 7).

**GLOBUS\_XIO\_GSI\_SET\_GSSAPI\_REQ\_FLAGS** See usage for: **globus\_xio\_attr\_cntl** (p. 7).

**GLOBUS\_XIO\_GSI\_GET\_GSSAPI\_REQ\_FLAGS** See usage for: **globus\_xio\_attr\_cntl** (p. 7).

**GLOBUS\_XIO\_GSI\_SET\_PROXY\_MODE** See usage for: **globus\_xio\_attr\_cntl** (p. 7).

**GLOBUS\_XIO\_GSI\_GET\_PROXY\_MODE** See usage for: **globus\_xio\_attr\_cntl** (p. 7).

**GLOBUS\_XIO\_GSI\_SET\_AUTHORIZATION\_MODE** See usage for: **globus\_xio\_attr\_cntl** (p. 8).

**GLOBUS\_XIO\_GSI\_GET\_AUTHORIZATION\_MODE** See usage for: **globus\_xio\_attr\_cntl** (p. 8).

**GLOBUS\_XIO\_GSI\_SET\_DELEGATION\_MODE** See usage for: **globus\_xio\_attr\_cntl** (p. 8).

**GLOBUS\_XIO\_GSI\_GET\_DELEGATION\_MODE** See usage for: **globus\_xio\_attr\_cntl** (p. 8).

**GLOBUS\_XIO\_GSI\_SET\_SSL\_COMPATIBLE** See usage for: **globus\_xio\_attr\_cntl** (p. 9).

**GLOBUS\_XIO\_GSI\_SET\_ANON** See usage for: **globus\_xio\_attr\_cntl** (p. 9).

**GLOBUS\_XIO\_GSI\_SET\_WRAP\_MODE** See usage for: **globus\_xio\_attr\_cntl** (p. 9).

**GLOBUS\_XIO\_GSI\_GET\_WRAP\_MODE** See usage for: **globus\_xio\_attr\_cntl** (p. 9).

**GLOBUS\_XIO\_GSI\_SET\_BUFFER\_SIZE** See usage for: **globus\_xio\_attr\_cntl** (p. 10).

**GLOBUS\_XIO\_GSI\_GET\_BUFFER\_SIZE** See usage for: **globus\_xio\_attr\_cntl** (p. 10).

**GLOBUS\_XIO\_GSI\_SET\_PROTECTION\_LEVEL** See usage for: **globus\_xio\_attr\_cntl** (p. 10).

**GLOBUS\_XIO\_GSI\_GET\_PROTECTION\_LEVEL** See usage for: **globus\_xio\_attr\_cntl** (p. 10).

**GLOBUS\_XIO\_GSI\_GET\_TARGET\_NAME** See usage for: **globus\_xio\_attr\_cntl** (p. 11).

**GLOBUS\_XIO\_GSI\_SET\_TARGET\_NAME** See usage for: **globus\_xio\_attr\_cntl** (p. 11).

**GLOBUS\_XIO\_GSI\_GET\_CONTEXT** See usage for: **globus\_xio\_handle\_cntl** (p. 11).

**GLOBUS\_XIO\_GSI\_GET\_DELEGATED\_CRED** See usage for: **globus\_xio\_handle\_cntl** (p. 11).

**GLOBUS\_XIO\_GSI\_GET\_PEER\_NAME** See usage for: **globus\_xio\_handle\_cntl** (p. 11).

**GLOBUS\_XIO\_GSI\_GET\_LOCAL\_NAME** See usage for: **globus\_xio\_handle\_cntl** (p. 12).

**GLOBUS\_XIO\_GSI\_INIT\_DELEGATION** See usage for: **globus\_xio\_handle\_cntl** (p. 12).

**GLOBUS\_XIO\_GSI\_REGISTER\_INIT\_DELEGATION** See usage for: **globus\_xio\_handle\_cntl** (p. 12).

**GLOBUS\_XIO\_GSI\_ACCEPT\_DELEGATION** See usage for: **globus\_xio\_handle\_cntl** (p. 12).

**GLOBAL\_XIO\_GSI\_REGISTER\_ACCEPT\_DELEGATION** See usage for: **globus\_xio\_handle\_cntl** (p. 13).

**GLOBAL\_XIO\_GSI\_FORCE\_SERVER\_MODE** See usage for: **globus\_xio\_attr\_cntl** (p. 13).

**GLOBAL\_XIO\_GSI\_SET\_ALLOW\_MISSING\_SIGNING\_POLICY** See usage for: **globus\_xio\_attr\_cntl** (p. 13).

**GLOBAL\_XIO\_GSI\_GET\_ALLOW\_MISSING\_SIGNING\_POLICY** See usage for: **globus\_xio\_attr\_cntl** (p. 14).

### 2.6.3 Function Documentation

#### 2.6.3.1 **globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBAL\_XIO\_GSI\_SET\_CREDENTIAL, gss\_cred\_id\_t credential)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the credential to be used

##### Parameters:

**credential** The credential to set. The credential structure needs to remain valid for the lifetime of any xio datastructure it is used by.

##### Note:

If this is called with the **handle\_cntl**, there must be no outstanding operations on the handle.

#### 2.6.3.2 **globus\_result\_t globus\_xio\_handle\_cntl (handle, driver, GLOBAL\_XIO\_GSI\_SET\_CREDENTIAL, gss\_cred\_id\_t credential)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the credential to be used

##### Parameters:

**credential** The credential to set. The credential structure needs to remain valid for the lifetime of any xio datastructure it is used by.

##### Note:

If this is called with the **handle\_cntl**, there must be no outstanding operations on the handle.

#### 2.6.3.3 **globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBAL\_XIO\_GSI\_GET\_CREDENTIAL, gss\_cred\_id\_t \* credential)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the credential to be used

##### Parameters:

**credential** The credential that is currently set. This will only return a credential if a credential was explicitly set prior to this call. It will not return any credential automatically acquired during context initialization.

#### **2.6.3.4 globus\_result\_t globus\_xio\_handle\_cntl (handle, driver, GLOBUS\_XIO\_GSI\_GET\_CREDENTIAL, gss\_cred\_id\_t \* credential)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the credential to be used

##### **Parameters:**

*credential* The credential that is currently set. This will only return a credential if a credential was explicitly set prior to this call. It will not return any credential automatically acquired during context initialization.

#### **2.6.3.5 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_SET\_GSSAPI\_REQ\_FLAGS, OM\_uint32 req\_flags)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the GSSAPI req\_flags to be used

##### **Parameters:**

*req\_flags* The req\_flags to set

#### **2.6.3.6 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_GET\_GSSAPI\_REQ\_FLAGS, OM\_uint32 \* req\_flags)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the GSSAPI req\_flags to be used

##### **Parameters:**

*req\_flags* The req flags currently in effect

#### **2.6.3.7 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_SET\_PROXY\_MODE, globus\_xio\_gsi\_proxy\_mode\_t proxy\_mode)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the proxy mode

##### **Parameters:**

*proxy\_mode* The proxy mode to set

##### **Note:**

Changing the proxy mode changes the req\_flags

#### **2.6.3.8 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_GET\_PROXY\_MODE, globus\_xio\_gsi\_proxy\_mode\_t \* proxy\_mode)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the proxy mode



**Parameters:**

*proxy\_mode* The proxy mode that is currently in effect

**Note:**

Changing the proxy mode changes the req\_flags

**2.6.3.9** `globus_result_t globus_xio_attr_cntl (attr, driver, GLOBUS_XIO_GSI_SET - AUTHORIZATION_MODE, globus_xio_gsi_authorization_mode_t authz_mode)`

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the authorization mode

**Parameters:**

*authz\_mode* The authorization mode to set

**2.6.3.10** `globus_result_t globus_xio_attr_cntl (attr, driver, GLOBUS_XIO_GSI_GET - AUTHORIZATION_MODE, globus_xio_gsi_authorization_mode_t * authz_mode)`

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the authorization mode

**Parameters:**

*authz\_mode* The authorization mode that is currently in effect

**2.6.3.11** `globus_result_t globus_xio_attr_cntl (attr, driver, GLOBUS_XIO_GSI_SET_DELEGATION - MODE, globus_xio_gsi_delegation_mode_t delegation_mode)`

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the delegation mode

**Parameters:**

*delegation\_mode* The delegation mode to use

**Note:**

Changing the delegation mode changes the req\_flags

**2.6.3.12** `globus_result_t globus_xio_attr_cntl (attr, driver, GLOBUS_XIO_GSI_GET_DELEGATION - MODE, globus_xio_gsi_delegation_mode_t * delegation_mode)`

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the delegation mode

**Parameters:**

*delegation\_mode* The delegation mode currently in effect

**2.6.3.13 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_SET\_SSL\_COMPATIBLE, globus\_bool\_t ssl\_mode)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Make the on the wire protocol SSL compatible.

This implies no wrapping of security tokens and no delegation

**Parameters:**

*ssl\_mode* The ssl compatibility mode to use

**Note:**

Changing the ssl compatibility mode changes the req\_flags

**2.6.3.14 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_SET\_ANON, globus\_bool\_t anon\_mode)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Do anonymous authentication

**Parameters:**

*anon\_mode* The ssl compatibility mode to use

**Note:**

Changing the ssl compatibility mode changes the req\_flags and the wrapping mode

**2.6.3.15 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_SET\_WRAP\_MODE, globus\_boolean\_t wrap\_mode)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the wrapping mode

This mode determines whether tokens will be wrapped with a Globus IO style header or not.

**Parameters:**

*wrap\_mode* The wrapping mode to use

**2.6.3.16 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_GET\_WRAP\_MODE, globus\_boolean\_t \* wrap\_mode)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the wrapping mode

This mode determines whether tokens will be wrapped with a Globus IO style header or not.

**Parameters:**

*wrap\_mode* The wrapping mode currently in use.

#### **2.6.3.17 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_SET\_BUFFER\_SIZE, globus\_size\_t *buffer\_size*)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the read buffer size

The read buffer is used for buffering wrapped data, is initialized with a default size of 128K and scaled dynamically to always be able to fit whole tokens.

##### **Parameters:**

*buffer\_size* The size of the read buffer

#### **2.6.3.18 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_GET\_BUFFER\_SIZE, globus\_size\_t \* *buffer\_size*)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the read buffer size

The read buffer is used for buffering wrapped data, is initialized with a default size of 128K and scaled dynamically to always be able to fit whole tokens.

##### **Parameters:**

*buffer\_size* The size of the read buffer

#### **2.6.3.19 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_SET\_PROTECTION\_LEVEL, globus\_xio\_gsi\_protection\_level\_t *protection\_level*)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the protection level

##### **Parameters:**

*protection\_level* The protection level to set

##### **Note:**

Changing the proxy mode changes the req\_flags

#### **2.6.3.20 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_GET\_PROTECTION\_LEVEL, globus\_xio\_gsi\_protection\_level\_t \* *protection\_level*)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the protection level

##### **Parameters:**

*protection\_level* The current protection level

**2.6.3.21 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_GET\_TARGET\_NAME, gss\_name\_t \* target\_name)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the expected peer name

**Parameters:**

*target\_name* The expected peer name

**2.6.3.22 globus\_result\_t globus\_xio\_attr\_cntl (attr, driver, GLOBUS\_XIO\_GSI\_SET\_TARGET\_NAME, gss\_name\_t target\_name)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the expected peer name

**Parameters:**

*target\_name* The expected peer name

**2.6.3.23 globus\_result\_t globus\_xio\_handle\_cntl (handle, driver, GLOBUS\_XIO\_GSI\_GET\_CONTEXT, gss\_ctx\_id\_t \* context)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the GSS context

**Parameters:**

*context* The GSS context

**2.6.3.24 globus\_result\_t globus\_xio\_handle\_cntl (handle, driver, GLOBUS\_XIO\_GSI\_GET\_DELEGATED\_CRED, gss\_cred\_id\_t \* credential)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the delegated credential

**Parameters:**

*credential* The delegated credential

**2.6.3.25 globus\_result\_t globus\_xio\_handle\_cntl (handle, driver, GLOBUS\_XIO\_GSI\_GET\_PEER\_NAME, gss\_name\_t \* peer\_name)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the name of the peer

**Parameters:**

*peer\_name* The GSS name of the peer.

**2.6.3.26 globus\_result\_t globus\_xio\_handle\_cntl (handle, driver, GLOBUS\_XIO\_GSI\_GET\_LOCAL\_NAME, gss\_name\_t \* local\_name)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the GSS name associated with the local credentials

**Parameters:**

*local\_name* The GSS name of the local credentials

**2.6.3.27 globus\_result\_t globus\_xio\_handle\_cntl (handle, driver, GLOBUS\_XIO\_GSI\_INIT\_DELEGATION, gss\_cred\_id\_t credential, gss\_OID\_set restriction\_oids, gss\_buffer\_set\_t restriction\_buffers, OM\_uint32 time\_req)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Initialize delegation-at-any-time process

**Parameters:**

*credential* The GSS credential to delegate

*restriction\_oids* The OIDS for X.509 extensions to embed in the delegated credential

*restriction\_buffers* The corresponding bodies for the X.509 extensions

*time\_req* The lifetime of the delegated credential

**2.6.3.28 globus\_result\_t globus\_xio\_handle\_cntl (handle, driver, GLOBUS\_XIO\_GSI\_REGISTER\_INIT\_DELEGATION, gss\_cred\_id\_t credential, gss\_OID\_set restriction\_oids, gss\_buffer\_set\_t restriction\_buffers, OM\_uint32 time\_req, globus\_xio\_gsi\_delegation\_init\_callback\_t callback, void \* callback\_arg)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Initialize non-blocking delegation-at-any-time process

**Parameters:**

*credential* The GSS credential to delegate

*restriction\_oids* The OIDS for X.509 extensions to embed in the delegated credential

*restriction\_buffers* The corresponding bodies for the X.509 extensions

*time\_req* The lifetime of the delegated credential

*callback* The callback to call when the operation completes

*callback\_arg* The arguments to pass to the callback

**2.6.3.29 globus\_result\_t globus\_xio\_handle\_cntl (handle, driver, GLOBUS\_XIO\_GSI\_ACCEPT\_DELEGATION, gss\_cred\_id\_t \* credential, gss\_OID\_set restriction\_oids, gss\_buffer\_set\_t restriction\_buffers, OM\_uint32 time\_req)**

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Accept delegation-at-any-time process

**Parameters:**

*credential* The delegated GSS credential

*restriction\_oids* The OIDS for X.509 extensions to embed in the delegated credential

*restriction\_buffers* The corresponding bodies for the X.509 extensions

*time\_req* The requested lifetime of the delegated credential

**2.6.3.30** `globus_result_t globus_xio_handle_cntl (handle, driver, GLOBUS_XIO_GSI_REGISTER-ACCEPT_DELEGATION, gss_OID_set restriction_oids, gss_buffer_set_t restriction_buffers, OM_uint32 time_req, globus_xio_gsi_delegation_accept_callback_t callback, void * callback_arg)`

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Accept non-blocking delegation-at-any-time process

**Parameters:**

*restriction\_oids* The OIDS for X.509 extensions to embed in the delegated credential

*restriction\_buffers* The corresponding bodies for the X.509 extensions

*time\_req* The lifetime of the delegated credential

*callback* The callback to call when the operation completes

*callback\_arg* The arguments to pass to the callback

**2.6.3.31** `globus_result_t globus_xio_attr_cntl (attr, driver, GLOBUS_XIO_GSI_FORCE_SERVER-MODE, globus_bool_t server_mode)`

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Force the server mode setting.

This explicitly sets the directionality of context establishment and delegation.

**Parameters:**

*server\_mode* The server mode.

**2.6.3.32** `globus_result_t globus_xio_attr_cntl (attr, driver, GLOBUS_XIO_GSI_SET_ALLOW-MISSING_SIGNING_POLICY, globus_bool_t allow)`

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Set the allow missing signing policy flag

**Parameters:**

*allow* The flag setting to use

**Note:**

Changing this flag changes the req\_flags

### 2.6.3.33 `globus_result_t globus_xio_attr_cntl (attr, driver, GLOBUS_XIO_GSI_GET_ALLOW_MISSING_SIGNING_POLICY, globus_bool_t *allow)`

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Get the allow missing signing policy flag

#### Parameters:

*allow* The flag currently set

## 2.7 Types

### Typedefs

- `typedef void(* globus_xio_gsi_delegation_init_callback_t )(globus_result_t result, void *user_arg)`
- `typedef void(* globus_xio_gsi_delegation_accept_callback_t )(globus_result_t result, gss_cred_id_t delegated_cred, OM_uint32 time_rec, void *user_arg)`

### Enumerations

- `enum globus_xio_gsi_protection_level_t {  
    GLOBUS_XIO_GSI_PROTECTION_LEVEL_NONE,  
    GLOBUS_XIO_GSI_PROTECTION_LEVEL_INTEGRITY,  
    GLOBUS_XIO_GSI_PROTECTION_LEVEL_PRIVACY }`
- `enum globus_xio_gsi_delegation_mode_t {  
    GLOBUS_XIO_GSI_DELEGATION_MODE_NONE,  
    GLOBUS_XIO_GSI_DELEGATION_MODE_LIMITED,  
    GLOBUS_XIO_GSI_DELEGATION_MODE_FULL }`
- `enum globus_xio_gsi_proxy_mode_t {  
    GLOBUS_XIO_GSI_PROXY_MODE_FULL,  
    GLOBUS_XIO_GSI_PROXY_MODE_LIMITED,  
    GLOBUS_XIO_GSI_PROXY_MODE_MANY }`
- `enum globus_xio_gsi_authorization_mode_t {  
    GLOBUS_XIO_GSI_NO_AUTHORIZATION,  
    GLOBUS_XIO_GSI_SELF_AUTHORIZATION,  
    GLOBUS_XIO_GSI_IDENTITY_AUTHORIZATION,  
    GLOBUS_XIO_GSI_HOST_AUTHORIZATION }`

### 2.7.1 Typedef Documentation

#### 2.7.1.1 `typedef void(* globus_xio_gsi_delegation_init_callback_t)(globus_result_t result, void *user_arg)`

Globus XIO GSI init delegation callback.

#### 2.7.1.2 `typedef void(* globus_xio_gsi_delegation_accept_callback_t)(globus_result_t result, gss_cred_id_t delegated_cred, OM_uint32 time_rec, void *user_arg)`

Globus XIO GSI init delegation callback.

## 2.7.2 Enumeration Type Documentation

### 2.7.2.1 enum globus\_xio\_gsi\_protection\_level\_t

Globus XIO GSI protection levels.

Enumeration values:

***GLOBUS\_XIO\_GSI\_PROTECTION\_LEVEL\_NONE*** No security.

***GLOBUS\_XIO\_GSI\_PROTECTION\_LEVEL\_INTEGRITY*** Messages are signed.

***GLOBUS\_XIO\_GSI\_PROTECTION\_LEVEL\_PRIVACY*** Messages are signed and encrypted.

### 2.7.2.2 enum globus\_xio\_gsi\_delegation\_mode\_t

Globus XIO GSI delegation modes.

Enumeration values:

***GLOBUS\_XIO\_GSI\_DELEGATION\_MODE\_NONE*** No delegation.

***GLOBUS\_XIO\_GSI\_DELEGATION\_MODE\_LIMITED*** Delegate a limited proxy.

***GLOBUS\_XIO\_GSI\_DELEGATION\_MODE\_FULL*** Delegate a full proxy.

### 2.7.2.3 enum globus\_xio\_gsi\_proxy\_mode\_t

Globus XIO GSI proxy modes.

Enumeration values:

***GLOBUS\_XIO\_GSI\_PROXY\_MODE\_FULL*** Accept only full proxies.

***GLOBUS\_XIO\_GSI\_PROXY\_MODE\_LIMITED*** Accept full proxies and limited proxies if they are the only limited proxy in the cert chain.

***GLOBUS\_XIO\_GSI\_PROXY\_MODE\_MANY*** Accept both full and limited proxies unconditionally.

### 2.7.2.4 enum globus\_xio\_gsi\_authorization\_mode\_t

Globus XIO GSI authorization modes.

Enumeration values:

***GLOBUS\_XIO\_GSI\_NO\_AUTHORIZATION*** Do not perform any authorization.

This will cause a error when used in conjunction with delegation on the init/client side.

***GLOBUS\_XIO\_GSI\_SELF\_AUTHORIZATION*** Authorize the peer if the peer has the same identity as ourselves.

***GLOBUS\_XIO\_GSI\_IDENTITY\_AUTHORIZATION*** Authorize the peer if the peer identity matches the identity set in the target name.

***GLOBUS\_XIO\_GSI\_HOST\_AUTHORIZATION*** Authorize the peer if the identity of the peer matches the identity of the peer hostname.

## 2.8 Error Types

Enumerations

- enum globus\_xio\_gsi\_error\_t {



```

GLOBUS_XIO_GSI_ERROR_INVALID_PROTECTION_LEVEL,
GLOBUS_XIO_GSI_ERROR_WRAP_GSSAPI,
GLOBUS_XIO_GSI_ERROR_EMPTY_TARGET_NAME,
GLOBUS_XIO_GSI_ERROR_EMPTY_HOST_NAME,
GLOBUS_XIO_GSI_AUTHORIZATION_FAILED,
GLOBUS_XIO_GSI_ERROR_TOKEN_TOO_BIG }

```

### 2.8.1 Detailed Description

The GSI driver uses mostly GSSAPI calls, so it generally just wraps the underlying GSSAPI errors or uses generic xio errors.

**See also:**

```

globus_xio_driver_error_match ()
globus_error_gssapi_match ()
globus_error_match_openssl_error ()

```

### 2.8.2 Enumeration Type Documentation

#### 2.8.2.1 enum globus\_xio\_gsi\_error\_t

GSI driver specific error types.

**Enumeration values:**

***GLOBUS\_XIO\_GSI\_ERROR\_INVALID\_PROTECTION\_LEVEL*** Indicates that the established context does not meet the required protection level.

***GLOBUS\_XIO\_GSI\_ERROR\_WRAP\_GSSAPI*** Wraps a GSSAPI error.

***GLOBUS\_XIO\_GSI\_ERROR\_EMPTY\_TARGET\_NAME*** Indicates that **GLOBUS\_XIO\_GSI\_IDENTITY\_AUTHORIZATION** is set but that the target name is empty.

***GLOBUS\_XIO\_GSI\_ERROR\_EMPTY\_HOST\_NAME*** Indicates that **GLOBUS\_XIO\_GSI\_HOST\_AUTHORIZATION** is set but that no host name is available.

***GLOBUS\_XIO\_GSI\_AUTHORIZATION\_FAILED*** Indicates that the peer is not authorized.

***GLOBUS\_XIO\_GSI\_ERROR\_TOKEN\_TOO\_BIG*** Indicates the the token being read is too big.

Usually happens when someone tries to establish a non secure session with a endpoint that expects security

## Index

Attributes and Cntls, 2

Env Variables, 2

Error Types, 15

Globus XIO GSI Driver, 1

globus\_xio\_attr\_cntl

gsi\_driver\_cntls, 6–11, 13

GLOBUS\_XIO\_GSI\_ACCEPT\_DELEGATION

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_AUTHORIZATION\_-  
FAILED

gsi\_driver\_errors, 16

globus\_xio\_gsi\_authorization\_mode\_t

gsi\_driver\_types, 15

globus\_xio\_gsi\_cmd\_t

gsi\_driver\_cntls, 5

globus\_xio\_gsi\_delegation\_accept\_callback\_t

gsi\_driver\_types, 14

globus\_xio\_gsi\_delegation\_init\_callback\_t

gsi\_driver\_types, 14

GLOBUS\_XIO\_GSI\_DELEGATION\_MODE\_-  
FULL

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_DELEGATION\_MODE\_-  
LIMITED

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_DELEGATION\_MODE\_-  
NONE

gsi\_driver\_types, 15

globus\_xio\_gsi\_delegation\_mode\_t

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_ERROR\_EMPTY\_HOST\_-  
NAME

gsi\_driver\_errors, 16

GLOBUS\_XIO\_GSI\_ERROR\_EMPTY\_-  
TARGET\_NAME

gsi\_driver\_errors, 16

GLOBUS\_XIO\_GSI\_ERROR\_INVALID\_-  
PROTECTION\_LEVEL

gsi\_driver\_errors, 16

globus\_xio\_gsi\_error\_t

gsi\_driver\_errors, 16

GLOBUS\_XIO\_GSI\_ERROR\_TOKEN\_TOO\_BIG

gsi\_driver\_errors, 16

GLOBUS\_XIO\_GSI\_ERROR\_WRAP\_GSSAPI

gsi\_driver\_errors, 16

GLOBUS\_XIO\_GSI\_FORCE\_SERVER\_MODE

gsi\_driver\_cntls, 6

GLOBUS\_XIO\_GSI\_GET\_ALLOW\_MISSING\_-  
SIGNING\_POLICY

gsi\_driver\_cntls, 6

GLOBUS\_XIO\_GSI\_GET\_AUTHORIZATION\_-  
MODE

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_BUFFER\_SIZE

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_CONTEXT

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_CREDENTIAL

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_DELEGATED\_CRED

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_DELEGATION\_-  
MODE

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_GSSAPI\_REQ\_FLAGS

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_LOCAL\_NAME

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_PEER\_NAME

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_PROTECTION\_-  
LEVEL

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_PROXY\_MODE

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_TARGET\_NAME

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_GET\_WRAP\_MODE

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_HOST\_AUTHORIZATION

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_IDENTITY\_-  
AUTHORIZATION

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_INIT\_DELEGATION

gsi\_driver\_cntls, 5

GLOBUS\_XIO\_GSI\_NO\_AUTHORIZATION

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_PROTECTION\_LEVEL\_-  
INTEGRITY

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_PROTECTION\_LEVEL\_-  
NONE

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_PROTECTION\_LEVEL\_-  
PRIVACY

gsi\_driver\_types, 15

globus\_xio\_gsi\_protection\_level\_t

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_PROXY\_MODE\_FULL

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_PROXY\_MODE\_LIMITED

gsi\_driver\_types, 15

GLOBUS\_XIO\_GSI\_PROXY\_MODE\_MANY  
     gsi\_driver\_types, 15  
 globus\_xio\_gsi\_proxy\_mode\_t  
     gsi\_driver\_types, 15  
 GLOBUS\_XIO\_GSI\_REGISTER\_ACCEPT\_-  
     DELEGATION  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_REGISTER\_INIT\_-  
     DELEGATION  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SELF\_AUTHORIZATION  
     gsi\_driver\_types, 15  
 GLOBUS\_XIO\_GSI\_SET\_ALLOW\_MISSING\_-  
     SIGNING\_POLICY  
     gsi\_driver\_cntls, 6  
 GLOBUS\_XIO\_GSI\_SET\_ANON  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_AUTHORIZATION\_-  
     MODE  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_BUFFER\_SIZE  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_CREDENTIAL  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_DELEGATION\_MODE  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_GSSAPI\_REQ\_FLAGS  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_PROTECTION\_-  
     LEVEL  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_PROXY\_MODE  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_SSL\_COMPATIBLE  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_TARGET\_NAME  
     gsi\_driver\_cntls, 5  
 GLOBUS\_XIO\_GSI\_SET\_WRAP\_MODE  
     gsi\_driver\_cntls, 5  
 globus\_xio\_handle\_cntl  
     gsi\_driver\_cntls, 6, 11–13  
 gsi\_driver\_cntls  
     globus\_xio\_attr\_cntl, 6–11, 13  
     GLOBUS\_XIO\_GSI\_ACCEPT\_-  
         DELEGATION, 5  
     globus\_xio\_gsi\_cmd\_t, 5  
     GLOBUS\_XIO\_GSI\_FORCE\_SERVER\_-  
         MODE, 6  
     GLOBUS\_XIO\_GSI\_GET\_ALLOW\_-  
         MISSING\_SIGNING\_POLICY, 6  
     GLOBUS\_XIO\_GSI\_GET\_-  
         AUTHORIZATION\_MODE, 5  
     GLOBUS\_XIO\_GSI\_GET\_BUFFER\_SIZE, 5  
     GLOBUS\_XIO\_GSI\_GET\_CONTEXT, 5  
     GLOBUS\_XIO\_GSI\_GET\_CREDENTIAL, 5

GLOBUS\_XIO\_GSI\_GET\_DELEGATED\_-  
     CRED, 5  
 GLOBUS\_XIO\_GSI\_GET\_DELEGATION\_-  
     MODE, 5  
 GLOBUS\_XIO\_GSI\_GET\_GSSAPI\_REQ\_-  
     FLAGS, 5  
 GLOBUS\_XIO\_GSI\_GET\_LOCAL\_NAME,  
     5  
 GLOBUS\_XIO\_GSI\_GET\_PEER\_NAME, 5  
 GLOBUS\_XIO\_GSI\_GET\_PROTECTION\_-  
     LEVEL, 5  
 GLOBUS\_XIO\_GSI\_GET\_PROXY\_MODE,  
     5  
 GLOBUS\_XIO\_GSI\_GET\_TARGET\_NAME,  
     5  
 GLOBUS\_XIO\_GSI\_GET\_WRAP\_MODE, 5  
 GLOBUS\_XIO\_GSI\_INIT\_DELEGATION, 5  
 GLOBUS\_XIO\_GSI\_REGISTER\_ACCEPT\_-  
     DELEGATION, 5  
 GLOBUS\_XIO\_GSI\_REGISTER\_INIT\_-  
     DELEGATION, 5  
 GLOBUS\_XIO\_GSI\_SET\_ALLOW\_-  
     MISSING\_SIGNING\_POLICY, 6  
 GLOBUS\_XIO\_GSI\_SET\_ANON, 5  
 GLOBUS\_XIO\_GSI\_SET\_-  
     AUTHORIZATION\_MODE, 5  
 GLOBUS\_XIO\_GSI\_SET\_BUFFER\_SIZE, 5  
 GLOBUS\_XIO\_GSI\_SET\_CREDENTIAL, 5  
 GLOBUS\_XIO\_GSI\_SET\_DELEGATION\_-  
     MODE, 5  
 GLOBUS\_XIO\_GSI\_SET\_GSSAPI\_REQ\_-  
     FLAGS, 5  
 GLOBUS\_XIO\_GSI\_SET\_PROTECTION\_-  
     LEVEL, 5  
 GLOBUS\_XIO\_GSI\_SET\_PROXY\_MODE, 5  
 GLOBUS\_XIO\_GSI\_SET\_SSL\_-  
     COMPATIBLE, 5  
 GLOBUS\_XIO\_GSI\_SET\_TARGET\_NAME,  
     5  
 GLOBUS\_XIO\_GSI\_SET\_WRAP\_MODE, 5  
 globus\_xio\_handle\_cntl, 6, 11–13  
 gsi\_driver\_errors  
     GLOBUS\_XIO\_GSI\_AUTHORIZATION\_-  
         FAILED, 16  
     GLOBUS\_XIO\_GSI\_ERROR\_EMPTY\_-  
         HOST\_NAME, 16  
     GLOBUS\_XIO\_GSI\_ERROR\_EMPTY\_-  
         TARGET\_NAME, 16  
     GLOBUS\_XIO\_GSI\_ERROR\_INVALID\_-  
         PROTECTION\_LEVEL, 16  
     globus\_xio\_gsi\_error\_t, 16  
     GLOBUS\_XIO\_GSI\_ERROR\_TOKEN\_-  
         TOO\_BIG, 16  
     GLOBUS\_XIO\_GSI\_ERROR\_WRAP\_-  
         GSSAPI, 16  
 gsi\_driver\_types

globus\_xio\_gsi\_authorization\_mode\_t, 15  
 globus\_xio\_gsi\_delegation\_accept\_callback\_t,  
 14  
 globus\_xio\_gsi\_delegation\_init\_callback\_t, 14  
 GLOBUS\_XIO\_GSI\_DELEGATION\_-  
 MODE\_FULL, 15  
 GLOBUS\_XIO\_GSI\_DELEGATION\_-  
 MODE\_LIMITED, 15  
 GLOBUS\_XIO\_GSI\_DELEGATION\_-  
 MODE\_NONE, 15  
 globus\_xio\_gsi\_delegation\_mode\_t, 15  
 GLOBUS\_XIO\_GSI\_HOST\_-  
 AUTHORIZATION, 15  
 GLOBUS\_XIO\_GSI\_IDENTITY\_-  
 AUTHORIZATION, 15  
 GLOBUS\_XIO\_GSI\_NO\_-  
 AUTHORIZATION, 15  
 GLOBUS\_XIO\_GSI\_PROTECTION\_-  
 LEVEL\_INTEGRITY, 15  
 GLOBUS\_XIO\_GSI\_PROTECTION\_-  
 LEVEL\_NONE, 15  
 GLOBUS\_XIO\_GSI\_PROTECTION\_-  
 LEVEL\_PRIVACY, 15  
 globus\_xio\_gsi\_protection\_level\_t, 15  
 GLOBUS\_XIO\_GSI\_PROXY\_MODE\_FULL,  
 15  
 GLOBUS\_XIO\_GSI\_PROXY\_MODE\_-  
 LIMITED, 15  
 GLOBUS\_XIO\_GSI\_PROXY\_MODE\_-  
 MANY, 15  
 globus\_xio\_gsi\_proxy\_mode\_t, 15  
 GLOBUS\_XIO\_GSI\_SELF\_-  
 AUTHORIZATION, 15

Opening/Closing, 2

Reading/Writing, 2

Server, 2

Types, 14