globus gsi callback

4.4

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Contents

1 Globus GSI Callback

The Globus GSI Callback library. This library contains functions that extend OpenSSL path validation.

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2 Deprecated List

Global globus_gsi_callback_get_multiple_limited_proxy_ok (p. **10) (globus_gsi_callback_data_t callback_data, int *multiple_limited_proxy_ok)**

This function always returns true now. It will be removed in the next release.

Global globus_gsi_callback_set_multiple_limited_proxy_ok (p. **11) (globus_gsi_callback_data_t callback_data, int multiple_limited_proxy_ok)**

This function has been turned into a no-op. It will be removed in the next release.

3 Module Index

3.1 Modules

Here is a list of all modules:

4 Module Documentation

4.1 Activation

Defines

- #define **GLOBUS_GSI_CALLBACK_MODULE**

4.1.1 Detailed Description

Globus GSI Callback uses standard Globus module activation and deactivation. Before any Globus GSI Callback functions are called, the following function must be called:

```
globus_module_activate(GLOBUS_GSI_CALLBACK_MODULE)
```

This function returns GLOBUS_SUCCESS if Globus GSI Callback was successfully initialized, and you are therefore allowed to subsequently call Globus GSI Callback functions. Otherwise, an error code is returned, and Globus GSI Credential functions should not be subsequently called. This function may be called multiple times.

To deactivate Globus GSI Callback, the following function must be called:

```
globus_module_deactivate(GLOBUS_GSI_CALLBACK_MODULE)
```

This function should be called once for each time Globus GSI Callback was activated.

4.1.2 Define Documentation

4.1.2.1 #define GLOBUS_GSI_CALLBACK_MODULE

Module descriptor.

4.2 Callback Functions

Typedefs

- typedef int(∗ **globus_gsi_extension_callback_t**)(**globus_gsi_callback_data_t** callback_data, X509_EXTENSION ∗extension)

Get callback data index from X509_STORE

- globus_result_t **globus_gsi_callback_get_X509_STORE_callback_data_index** (int ∗index)

Get callback data index from SSL structure

- globus_result_t **globus_gsi_callback_get_SSL_callback_data_index** (int ∗index)

Certificate verify wrapper

- int **globus_gsi_callback_X509_verify_cert** (X509_STORE_CTX ∗context, void ∗arg)

Independent path validation callback.

- int **globus_gsi_callback_create_proxy_callback** (int preverify_ok, X509_STORE_CTX ∗x509_context)

SSL path validation callback.

- int **globus_gsi_callback_handshake_callback** (int preverify_ok, X509_STORE_CTX ∗x509_context)

OpenSSL X509_check_issued() wrapper

- int **globus_gsi_callback_check_issued** (X509_STORE_CTX ∗context, X509 ∗cert, X509 ∗issuer)

4.2.1 Detailed Description

Functions that plug into various plug points in the OpenSSL path validation mechanism. These functions add CRL checking, X509 Extension handling and proxy validation.

4.2.2 Typedef Documentation

4.2.2.1 typedef int(∗ globus_gsi_extension_callback_t)(globus_gsi_callback_data_t callback_data, X509_EXTENSION ∗extension)

Typedef for a callback that may be registered for dealing with unhandled X.509 extension.

4.2.3 Function Documentation

4.2.3.1 globus_result_t globus_gsi_callback_get_X509_STORE_callback_data_index (int ∗ *index*)

Retrieve or create the index for our callback data structure in the X509_STORE.

Parameters

index	Will contain the index upon return

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.2.3.2 globus_result_t globus_gsi_callback_get_SSL_callback_data_index (int * *index*)

Retrieve or create the index for our callback data structure in the SSL structure.

Parameters

index	Will contain the index upon return

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.2.3.3 int globus_gsi_callback_X509_verify_cert (X509_STORE_CTX * *context,* void * *arg*)

This function wraps the OpenSSL certificate verification callback for the purpose of a replacing the standard issuer check with one that deals with proxy certificates.

Should be used with SSL_CTX_set_cert_verify_callback()

Parameters

context	The X509_STORE_CTX for which to register the callback.
arg	Arguments to the callback. Currently ignored.

Returns

1 on success 0 on failure

4.2.3.4 int globus_gsi_callback_create_proxy_callback (int *preverify_ok,* X509_STORE_CTX * *x509_context*)

This function provides a path validation callback for validation outside of a SSL session.

It should be used in X509_STORE_set_verify_cb_func().

Parameters

preverify_ok	Communicates the result of default validation steps performed by OpenSSL
x509_context	The validation state object

Returns

1 on success 0 on failure

4.2.3.5 int globus_gsi_callback_handshake_callback (int *preverify_ok,* X509_STORE_CTX * *x509_context*)

This function provides a path validation callback for the validation part of establishing a SSL session.

It handles proxy certificates, X509 Extensions and CRL checking. It should be used in SSL_CTX_set_verify().

Parameters

preverify_ok	Communicates the result of default validation steps performed by OpenSSL
x509_context	The validation state object.

Returns

1 on success 0 on failure

4.2.3.6 int globus_gsi_callback_check_issued (X509_STORE_CTX * *context*, X509 * *cert*, X509 * *issuer*)

This function wraps the OpenSSL X509_check_issued() call and catches the error caused by the fact that a proxy certificate issuer may not have to have the correct KeyUsage fields set.

Parameters

context	The validation state object.
cert	The certificate to check
issuer	The issuer certificate to check

Returns

1 on success 0 on failure

4.3 Callback Data Functions

Typedefs

- typedef struct globus_l_gsi_callback_data_s * **globus_gsi_callback_data_t**

Initializing and destroying a callback data structure

- globus_result_t **globus_gsi_callback_data_init** (**globus_gsi_callback_data_t** *callback_data)
- globus_result_t **globus_gsi_callback_data_destroy** (**globus_gsi_callback_data_t** callback_data)

Copying a callback data structure

- globus_result_t **globus_gsi_callback_data_copy** (**globus_gsi_callback_data_t** source, **globus_gsi_callback_data_t** *dest)

Getting and setting the certificate chain depth

- globus_result_t **globus_gsi_callback_get_cert_depth** (**globus_gsi_callback_data_t** callback_data, int *cert_depth)
- globus_result_t **globus_gsi_callback_set_cert_depth** (**globus_gsi_callback_data_t** callback_data, int cert_depth)

Getting and setting the "proxy chain" depth

- globus_result_t **globus_gsi_callback_get_proxy_depth** (**globus_gsi_callback_data_t** callback_data, int *proxy_depth)
- globus_result_t **globus_gsi_callback_set_proxy_depth** (**globus_gsi_callback_data_t** callback_data, int proxy_depth)

Getting and setting the certificate type

- globus_result_t **globus_gsi_callback_get_cert_type** (**globus_gsi_callback_data_t** callback_data, globus_gsi_cert_utils_cert_type_t *cert_type)
- globus_result_t **globus_gsi_callback_set_cert_type** (**globus_gsi_callback_data_t** callback_data, globus_gsi_cert_utils_cert_type_t cert_type)

Getting and setting the certificate chain

- globus_result_t **globus_gsi_callback_get_cert_chain** (**globus_gsi_callback_data_t** callback_data, STACK_OF(X509)**cert_chain)
- globus_result_t **globus_gsi_callback_set_cert_chain** (**globus_gsi_callback_data_t** callback_data, STACK_OF(X509)*cert_chain)

Getting and setting the limited proxy handling setting

- globus_result_t **globus_gsi_callback_get_multiple_limited_proxy_ok** (**globus_gsi_callback_data_t** callback_data, int *multiple_limited_proxy_ok)
- globus_result_t **globus_gsi_callback_set_multiple_limited_proxy_ok** (**globus_gsi_callback_data_t** callback_data, int multiple_limited_proxy_ok)

Getting and setting a set of X.509 extension OIDs.

- globus_result_t **globus_gsi_callback_get_extension_oids** (**globus_gsi_callback_data_t** callback_data, void **extension_oids)
- globus_result_t **globus_gsi_callback_set_extension_oids** (**globus_gsi_callback_data_t** callback_data, void *extension_oids)

Getting and setting the trusted certificate directory

- globus_result_t **globus_gsi_callback_get_cert_dir** (**globus_gsi_callback_data_t** callback_data, char **cert_dir)
- globus_result_t **globus_gsi_callback_set_cert_dir** (**globus_gsi_callback_data_t** callback_data, char *cert_dir)

Getting and setting the callback to be called for unknown X.509 extensions

- globus_result_t **globus_gsi_callback_get_extension_cb** (**globus_gsi_callback_data_t** callback_data, **globus_gsi_extension_callback_t** *extension_cb)
- globus_result_t **globus_gsi_callback_set_extension_cb** (**globus_gsi_callback_data_t** callback_data, **globus_gsi_extension_callback_t** extension_cb)

Getting and setting the error status

- globus_result_t **globus_gsi_callback_get_error** (**globus_gsi_callback_data_t** callback_data, globus_result_t *error)
- globus_result_t **globus_gsi_callback_set_error** (**globus_gsi_callback_data_t** callback_data, globus_result_t error)

Getting and setting the check self-signed policy flag

- globus_result_t **globus_gsi_callback_get_check_policy_for_self_signed_certs** (**globus_gsi_callback_data_t** callback_data, globus_bool_t *check)
- globus_result_t **globus_gsi_callback_set_check_policy_for_self_signed_certs** (**globus_gsi_callback_data_t** callback_data, globus_bool_t check)

Getting and setting the allow missing signing policy flag

- globus_result_t **globus_gsi_callback_get_allow_missing_signing_policy** (**globus_gsi_callback_data_t** callback_data, globus_bool_t *allow)
- globus_result_t **globus_gsi_callback_set_allow_missing_signing_policy** (**globus_gsi_callback_data_t** callback_data, globus_bool_t allow)

4.3.1 Detailed Description

Functions that deal with the data structure that contains state associated with the path validation callback.

4.3.2 Typedef Documentation

4.3.2.1 typedef struct globus_l_gsi_callback_data_s* globus_gsi_callback_data_t

Callback data typedef.

4.3.3 Function Documentation

4.3.3.1 globus_result_t globus_gsi_callback_data_init (globus_gsi_callback_data_t * *callback_data*)

This function initializes a globus_gsi_callback_data_t.

Parameters

callback_data	Reference to the structure to be initialized

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.2 globus_result_t globus_gsi_callback_data_destroy (globus_gsi_callback_data_t *callback_data*)

This function destroys a globus_gsi_callback_data_t.

Parameters

callback_data	The structure to be destroyed

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.3 globus_result_t globus_gsi_callback_data_copy (globus_gsi_callback_data_t *source,* globus_gsi_callback_data_t * *dest*)

This function copies a globus_gsi_callback_data_t.

Parameters

source	The structure to be copied
dest	The destination of the copy

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.4 globus_result_t globus_gsi_callback_get_cert_depth (globus_gsi_callback_data_t *callback_data,* int * *cert_depth*)

This function returns the certificate chain depth.

Parameters

callback_data	The globus_gsi_callback_data_t to retrieve the depth from
cert_depth	The returned certificate chain depth

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.5 globus_result_t globus_gsi_callback_set_cert_depth (globus_gsi_callback_data_t *callback_data,* int *cert_depth*)

This function sets the certificate chain depth.

Parameters

callback_data	The globus_gsi_callback_data_t to retrieve the depth from
cert_depth	The certificate chain depth

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.6 globus_result_t globus_gsi_callback_get_proxy_depth (globus_gsi_callback_data_t *callback_data,* int * *proxy_depth*)

This function returns the number of proxies in the certificate chain.

Parameters

callback_data	The globus_gsi_callback_data_t to retrieve the depth from
proxy_depth	The returned "proxy chain" depth

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.7 globus_result_t globus_gsi_callback_set_proxy_depth (globus_gsi_callback_data_t *callback_data,* int *proxy_depth*)

This function sets the number of proxies in the certificate chain.

Parameters

callback_data	The globus_gsi_callback_data_t to retrieve the depth from
proxy_depth	The "proxy chain" depth

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.8 globus_result_t globus_gsi_callback_get_cert_type (globus_gsi_callback_data_t *callback_data,* globus_gsi_cert_utils_cert_type_t * *cert_type*)

This function returns the certificate type of the certificate currently being processed.

Parameters

callback_data	The globus_gsi_callback_data_t to retrieve the certificate type from
cert_type	Variable containing the certificate type on return

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.9 globus_result_t globus_gsi_callback_set_cert_type (globus_gsi_callback_data_t *callback_data,* globus_gsi_cert_utils_cert_type_t *cert_type*)

This function sets the certificate type of the certificate currently being processed.

Parameters

callback_data	The globus_gsi_callback_data_t to set the certificate type on
cert_type	The certificate type

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.10 globus_result_t globus_gsi_callback_get_cert_chain (globus_gsi_callback_data_t *callback_data,* STACK_OF(X509)** *cert_chain*)

This function returns the certificate chain associated with the callback data.

Parameters

callback_data	The globus_gsi_callback_data_t to retreive the certificate chain from.
cert_chain	Contains the certificate chain upon successful return

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.11 globus_result_t globus_gsi_callback_set_cert_chain (globus_gsi_callback_data_t *callback_data,* STACK_OF(X509)* *cert_chain*)

This function sets the certificate chain associated with the callback data.

Parameters

callback_data	The globus_gsi_callback_data_t to set the certificate chain on
cert_chain	The certificate chain

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.12 globus_result_t globus_gsi_callback_get_multiple_limited_proxy_ok (globus_gsi_callback_data_t *callback_data,* int * *multiple_limited_proxy_ok*)

This function gets the value of the limited proxy handling setting.

This setting determines whether path validation will accept limited proxies that have been further delegated, ie certificate chains with a limited proxy followed by further proxies.

Parameters

callback_data	The globus_gsi_callback_data_t to get the limited proxy setting from
multiple_limited-_proxy_ok	Contains the value of the setting upon successful return.

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

Deprecated This function always returns true now. It will be removed in the next release.

4.3.3.13 globus_result_t globus_gsi_callback_set_multiple_limited_proxy_ok (globus_gsi_callback_data_t *callback_data,* int *multiple_limited_proxy_ok*)

This function sets the value of the limited proxy handling setting.

This setting determines whether path validation will accept limited proxies that have been further delegated, ie certificate chains with a limited proxy followed by further proxies.

Parameters

callback_data	The globus_gsi_callback_data_t to set the limited proxy setting on
multiple_limited-_proxy_ok	The value of the setting

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

Deprecated This function has been turned into a no-op. It will be removed in the next release.

4.3.3.14 globus_result_t globus_gsi_callback_get_extension_oids (globus_gsi_callback_data_t *callback_data,* void ** *extension_oids*)

This function gets a list of X.509 extension OIDs that may be used by the extensions callback to allow or disallow certain extensions.

Parameters

callback_data	The globus_gsi_callback_data_t to get the array of extension OIDs from.
extension_oids	Contains the list of extension OIDs upon successful return.

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.15 globus_result_t globus_gsi_callback_set_extension_oids (globus_gsi_callback_data_t *callback_data,* void * *extension_oids*)

This function sets a list of X.509 extension OIDs that may be used by the extensions callback to allow or disallow certain extensions.

Parameters

callback_data	The globus_gsi_callback_data_t to get the array of extension OIDs from.
extension_oids	The list of extension OIDs

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.16 globus_result_t globus_gsi_callback_get_cert_dir (globus_gsi_callback_data_t *callback_data,* char ** *cert_dir*)

This function gets the trusted certificate directory from the callback data.

Parameters

callback_data	The globus_gsi_callback_data_t to get the trusted certificates directory from.
cert_dir	Contains the path to the trusted certificate directory upon successful return.

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.17 globus_result_t globus_gsi_callback_set_cert_dir (globus_gsi_callback_data_t *callback_data,* char * *cert_dir*)

This function sets the trusted certificate directory on the callback data.

Parameters

callback_data	The globus_gsi_callback_data_t to set the trusted certificates directory on.
cert_dir	The path to the trusted certificate directory

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.18 globus_result_t globus_gsi_callback_get_extension_cb (globus_gsi_callback_data_t *callback_data,* globus_gsi_extension_callback_t * *extension_cb*)

This function gets the callback that is called for unknown X.509 extensions.

Parameters

callback_data	The globus_gsi_callback_data_t to get the callback information from
extension_cb	Contains the extension callback upon successful return.

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.19 globus_result_t globus_gsi_callback_set_extension_cb (globus_gsi_callback_data_t *callback_data,* globus_gsi_extension_callback_t *extension_cb*)

This function sets the callback that is called for unknown X.509 extensions.

Parameters

callback_data	The globus_gsi_callback_data_t to set the callback information on
extension_cb	The extension callback

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.20 globus_result_t globus_gsi_callback_get_error (globus_gsi_callback_data_t *callback_data,* globus_result_t * *error*)

This function gets the error status stored in the callback data.

Parameters

callback_data	The globus_gsi_callback_data_t to get the error from
error	Contains the error upon successful return.

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.21 globus_result_t globus_gsi_callback_set_error (globus_gsi_callback_data_t *callback_data,* globus_result_t *error*)

This function sets the error status stored in the callback data.

Parameters

callback_data	The globus_gsi_callback_data_t to set the error on
error	The error

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

4.3.3.22 globus_result_t globus_gsi_callback_get_check_policy_for_self_signed_certs (globus_gsi_callback_data_t *callback_data,* globus_bool_t * *check*)

This function gets the value of the "check policy for self-signed certificates flag" in the callback data.

If this is set than the CA signing policy for a self-signed certificate must include a policy line that allows it to sign itself.

Parameters

callback_data	The globus_gsi_callback_data_t to get the error from
check	Contains the value of the flag upon successful return.

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

Since

Globus Toolkit 4.2.1

4.3.3.23 globus_result_t globus_gsi_callback_set_check_policy_for_self_signed_certs (globus_gsi_callback_data_t *callback_data,* globus_bool_t *check*)

This function sets the value of the "check policy for self-signed certificates flag" in the callback data.

If this is set than the CA signing policy for a self-signed certificate must include a policy line that allows it to sign itself.

Parameters

callback_data	The globus_gsi_callback_data_t to set the error on
check	New value of the flag

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

Since

Globus Toolkit 4.2.1

4.3.3.24 globus_result_t globus_gsi_callback_get_allow_missing_signing_policy (globus_gsi_callback_data_t *callback_data,* globus_bool_t * *allow*)

This function gets the value of the "allow missing signing policy" flag in the callback data.

If this is TRUE then the CA signing policy need not be present.

Parameters

callback_data	The globus_gsi_callback_data_t to get the error from
allow	Contains the value of the flag upon successful return.

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

Since

Globus Toolkit 5.2.0

4.3.3.25 globus_result_t globus_gsi_callback_set_allow_missing_signing_policy (globus_gsi_callback_data_t *callback_data,* globus_bool_t *allow*)

This function sets the value of the "allow missing signing policy" flag in the callback data.

If this is TRUE then the CA signing policy need not be present.

Parameters

callback_data	The globus_gsi_callback_data_t to set the error on
allow	New value of the flag

Returns

GLOBUS_SUCCESS unless an error occurred, in which case, a globus error object ID is returned

Since

Globus Toolkit 5.2.0

4.4 GSI Callback Constants

Enumerations

- enum **globus_gsi_callback_error_t** { **GLOBUS_GSI_CALLBACK_ERROR_SUCCESS** = 0, **GLOBUS_GSI_CALLBACK_ERROR_VERIFY_CRED** = 1, **GLOBUS_GSI_CALLBACK_ERROR_CERT_NOT_YET_VALID** = 2, **GLOBUS_GSI_CALLBACK_ERROR_CANT_GET_LOCAL_CA_CERT** = 3, **GLOBUS_GSI_CALLBACK_ERROR_CERT_HAS_EXPIRED** = 4, **GLOBUS_GSI_CALLBACK_ERROR_INVALID_PROXY** = 5, **GLOBUS_GSI_CALLBACK_ERROR_LIMITED_PROXY** = 6, **GLOBUS_GSI_CALLBACK_ERROR_INVALID_CRL** = 7, **GLOBUS_GSI_CALLBACK_ERROR_REVOKED_CERT** = 8, **GLOBUS_GSI_CALLBACK_ERROR_MIXING_DIFFERENT_PROXY_TYPES** = 9, **GLOBUS_GSI_CALLBACK_ERROR_WITH_SIGNING_POLICY** = 10, **GLOBUS_GSI_CALLBACK_ERROR_OLD_GAA** = 11, **GLOBUS_GSI_CALLBACK_ERROR_CALLBACK_DATA** = 12, **GLOBUS_GSI_CALLBACK_ERROR_ERRNO** = 13, **GLOBUS_GSI_CALLBACK_ERROR_CERT_CHAIN** = 14, **GLOBUS_GSI_CALLBACK_ERROR_WITH_CALLBACK_DATA_INDEX** = 15, **GLOBUS_GSI_CALLBACK_ERROR_PROXY_PATH_LENGTH_EXCEEDED** = 16, **GLOBUS_GSI_CALLBACK_ERROR_LAST** = 18 }

4.4.1 Enumeration Type Documentation

4.4.1.1 enum globus_gsi_callback_error_t

GSI Callback Error codes.

Enumerator:

GLOBUS_GSI_CALLBACK_ERROR_SUCCESS Success - never used.

GLOBUS_GSI_CALLBACK_ERROR_VERIFY_CRED Error verifying credential.

GLOBUS_GSI_CALLBACK_ERROR_CERT_NOT_YET_VALID The certificate is not yet valid.

GLOBUS_GSI_CALLBACK_ERROR_CANT_GET_LOCAL_CA_CERT Unable to discover a local trusted CA for a given ceritficate.

GLOBUS_GSI_CALLBACK_ERROR_CERT_HAS_EXPIRED The certificate has expired.

GLOBUS_GSI_CALLBACK_ERROR_INVALID_PROXY The proxy format is invalid.

GLOBUS_GSI_CALLBACK_ERROR_LIMITED_PROXY Limited proxies are not accepted.

GLOBUS_GSI_CALLBACK_ERROR_INVALID_CRL Invalid CRL.

GLOBUS_GSI_CALLBACK_ERROR_REVOKED_CERT The certificate has been revoked.

GLOBUS_GSI_CALLBACK_ERROR_MIXING_DIFFERENT_PROXY_TYPES The cert chain contains both legacy on rfc compliant proxies.

GLOBUS_GSI_CALLBACK_ERROR_WITH_SIGNING_POLICY Could not verify certificate chain against the signing policy for the issuing CA.

GLOBUS_GSI_CALLBACK_ERROR_OLD_GAA OldGAA error.

GLOBUS_GSI_CALLBACK_ERROR_CALLBACK_DATA Error with the callback data structure.

GLOBUS_GSI_CALLBACK_ERROR_ERRNO System error.

GLOBUS_GSI_CALLBACK_ERROR_CERT_CHAIN Error setting or getting the cert chain from callback data.

GLOBUS_GSI_CALLBACK_ERROR_WITH_CALLBACK_DATA_INDEX Error getting callback data index.

GLOBUS_GSI_CALLBACK_ERROR_PROXY_PATH_LENGTH_EXCEEDED Exceeded the path length specified in the proxy cert info extension.

GLOBUS_GSI_CALLBACK_ERROR_LAST Last marker - never used.