globus gsi proxy core Reference Manual

3.4

Generated by Doxygen 1.2.18

Tue Aug 11 22:32:04 2009

Contents

1 Globus GSI Proxy API

The globus_gsi_proxy library is motivated by the desire to provide a abstraction layer for the proxy creation and delegation process. For background on this process please refer to the proxy certificate profile draft.

Any program that uses Globus GSI Proxy functions must include "globus_gsi_proxy.h".

We envision the API being used in the following manner:

Delegator:	Delegatee:
	set desired cert info extension in the handle by using the handle set functions.
	globus_gsi_proxy_create_req
globus_gsi_proxy_inquire_req	
modify cert info extension by using handle set/get/clear functions.	
globus_gsi_proxy_sign_req	
	globus_gsi_proxy_assemble_cred

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2.1 globus gsi proxy core Modules

Here is a list of all modules:

3 globus gsi proxy core Module Documentation

3.1 Activation

Globus GSI Proxy uses standard Globus module activation and deactivation.

Defines

- #define GLOBUS_GSI_PROXY_MODULE

3.1.1 Detailed Description

Globus GSI Proxy uses standard Globus module activation and deactivation.

Before any Globus GSI Proxy functions are called, the following function must be called:

```
    globus_module_activate(GLOBUS_GSI_PROXY_MODULE)
```

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

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

```
globus_module_deactivate(GLOBUS_GSI_PROXY_MODULE)
```

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

3.1.2 Define Documentation

3.1.2.1 #define GLOBUS_GSI_PROXY_MODULE

Module descriptor.

3.2 Handle Management

Create/Destroy/Modify a GSI Proxy Handle.

Initialize and Destroy

- globus_result_t globus_gsi_proxy_handle_init (globus_gsi_proxy_handle_t handle, globus_gsi_proxy_handle_attrs_t handle_attrs)
- globus_result_t globus_gsi_proxy_handle_destroy (globus_gsi_proxy_handle_t handle)

Get/Set Request

- globus_result_t globus_gsi_proxy_handle_get_req (globus_gsi_proxy_handle_t handle, X509_REQ req)
- globus_result_t globus_gsi_proxy_handle_set_req (globus_gsi_proxy_handle_t handle, X509_REQ req)

Get/Set Private Key

- globus_result_t globus_gsi_proxy_handle_get_private_key (globus_gsi_proxy_handle_t handle, EVP_PKEY proxy_key)
- globus_result_t globus_gsi_proxy_handle_set_private_key (globus_gsi_proxy_handle_t handle, EVP_PKEY proxy_key)

Get/Set Proxy Type

globus_result_t globus_gsi_proxy_handle_get_type (globus_gsi_proxy_handle_t handle, globus_gsi_cert_utils_cert_type_t type)

globus_result_t globus_gsi_proxy_handle_set_type (globus_gsi_proxy_handle_t handle, globus_gsi_cert_utils_cert_type_t type)

Get/Set Policy

globus_result_t globus_gsi_proxy_handle_set_policy (globus_gsi_proxy_handle_t handle, unsigned char policy_data, int policy_length, int policy_language_NID)

globus_result_t globus_gsi_proxy_handle_get_policy (globus_gsi_proxy_handle_t handle, unsigned char policy_data, int policy_length, int policy_NID)

Get/Set X509 Extensions

globus_result_t globus_gsi_proxy_handle_add_extension (globus_gsi_proxy_handle_t handle, X509_EXTENSION ext)

globus_result_t globus_gsi_proxy_handle_set_extensions (globus_gsi_proxy_handle_t handle, STACK_OF(X509_EXTENSION) exts)

globus_result_t globus_gsi_proxy_handle_get_extensions (globus_gsi_proxy_handle_t handle, STACK_OF(X509_EXTENSION) exts)

Get/Set Path Length

globus_result_t globus_gsi_proxy_handle_set_pathlen (globus_gsi_proxy_handle_t handle, long pathlen)

globus_result_t globus_gsi_proxy_handle_get_pathlen (globus_gsi_proxy_handle_t handle, int pathlen)

Get/Set Time Valid

globus_result_t globus_gsi_proxy_handle_get_time_valid (globus_gsi_proxy_handle_t handle, int time_valid)

globus_result_t globus_gsi_proxy_handle_set_time_valid (globus_gsi_proxy_handle_t handle, int time_valid)

Clear Cert Info

globus_result_t globus_gsi_proxy_handle_clear_cert_info (globus_gsi_proxy_handle_t handle)

Get/Set Cert Info

globus_result_t globus_gsi_proxy_handle_get_proxy_cert_info (globus_gsi_proxy_handle_t handle, PROXYCERTINFO pci)

globus_result_t globus_gsi_proxy_handle_set_proxy_cert_info (globus_gsi_proxy_handle_t handle, PROXYCERTINFO pci)

Get Signing Algorithm

globus_result_t globus_gsi_proxy_handle_get_signing_algorithm (globus_gsi_proxy_handle_t handle, EVP_MD signing_algorithm)

Get Key Bits

globus_result_t globus_gsi_proxy_handle_get_keybits(globus_gsi_proxy_handle_t handle, int key_bits)

Get Init Prime

globus_result_t globus_gsi_proxy_handle_get_init_prime(globus_gsi_proxy_handle_t handle, int init_prime)

Get Clock Skew

globus_result_t globus_gsi_proxy_handle_get_clock_skew_allowable (globus_gsi_proxy_handle_t handle, int skew)

Get Callback for Creating Keys

globus_result_t globus_gsi_proxy_handle_get_key_gen_callback (globus_gsi_proxy_handle_t handle, void(callback)(int, int, void))

Get/Set Proxy Common Name

globus_result_t globus_gsi_proxy_handle_get_common_name (globus_gsi_proxy_handle_t handle, char common_name)

globus_result_t globus_gsi_proxy_handle_set_common_name (globus_gsi_proxy_handle_t handle, char common_name)

Set/Check Proxy Is Limited

globus_result_t globus_gsi_proxy_handle_set_is_limited (globus_gsi_proxy_handle_t handle, globus_bool_t is_limited)

globus_result_t globus_gsi_proxy_is_limited (globus_gsi_proxy_handle_t handle, globus_bool_t is_limited)

Typedefs

typedef globus_l_gsi_proxy_handle_s globus_gsi_proxy_handle_t

3.2.1 Detailed Description

Create/Destroy/Modify a GSI Proxy Handle.

Within the Globus GSI Proxy Libary, all proxy operations require a handle parameter. Currently, only one proxy operation may be in progress at once per proxy handle.

This section defines operations to create, modify and destroy GSI Proxy handles.

3.2.2 Typedef Documentation

3.2.2.1 typedef struct globus_l_gsi_proxy_handle_s globus_gsi_proxy_handle_t

GSI Proxy Handle.

An GSI Proxy handle is used to associate state with a group of operations. Handles can have immutable attributes associated with them. All proxy operations take a handle pointer as a parameter.

See also:

globus_gsi_proxy_handle_init(), globus_gsi_proxy_handle_destroy(), Handle Attributes

3.2.3 Function Documentation

3.2.3.1 globus_result_t globus_gsi_proxy_handle_init (globus_gsi_proxy_handle_t * handle, globus_gsi_proxy_handle_attrs_t handle_attrs)

Initialize a GSI Proxy handle.

Initialize a proxy handle which can be used in subsequent operations. The handle may only be used in one sequence of operations at a time.

Parameters:

- handle A pointer to the handle to be initialized. If the handle is originally NULL, space is allocated for it. Otherwise, the current values of the handle are overwritten.
- handle_attrs Initial attributes to be used to create this handle.

Returns:

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

See also:

globus_gsi_proxy_handle_destroy()

3.2.3.2 globus_result_t globus_gsi_proxy_handle_get_req (globus_gsi_proxy_handle_t handle, X509_REQ ** req)

Get the certificate request from a GSI Proxy handle.

Parameters:

- handle The handle from which to get the certificate request
- req Parameter used to return the request. It is the users responsibility to free the returned request.

Returns:

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

See also:

globus_gsi_proxy_handle_set_req()

3.2.3.3 globus_result_t globus_gsi_proxy_handle_get_private_key (globus_gsi_proxy_handle_t handle, EVP_PKEY ** proxy_key)

Get the private key from a GSI Proxy handle.

Parameters:

- handle The handle from which to get the private key
- proxy_key Parameter used to return the key. It is the users responsibility to free the returned key.

Returns:

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

See also:

globus_gsi_proxy_handle_set_private_key()

3.2.3.4 globus_result_t globus_gsi_proxy_handle_get_type (globus_gsi_proxy_handle_t handle, globus_gsi_cert_utils_cert_type_t type)

Determine the type of proxy that will be generated when using this handle.

Parameters:

handle The handle from which to get the type

type Parameter used to return the type.

Returns:

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

See also:

globus_gsi_proxy_handle_set_type()

3.2.3.5 globus_result_t globus_gsi_proxy_handle_set_policy (globus_gsi_proxy_handle_t handle, unsigned char policy_data, int policy_length, int policy_language_NID)

Set the policy to be used in the GSI Proxy handle.

This function sets the policy to be used in the proxy cert info extension.

Parameters:

handle The handle to be modified.

policy_data The policy data.

policy_length The length of the policy data

policy_language_NID The NID of the policy language.

Returns:

GLOBUS_SUCCESS if the handle and its associated fields are valid otherwise an error is returned

See also:

globus_gsi_proxy_handle_get_policy()

3.2.3.6 globus_result_t globus_gsi_proxy_handle_add_extension (globus_gsi_proxy_handle_t handle, X509_EXTENSION ext)

Add an X509 extension to the GSI Proxy handle to be added to certificate.

This function adds a X509 extension to the proxy certificate.

Parameters:

handle The handle for the proxy to which the extension should be added.

extension The extension to be added.

Returns:

GLOBUS_SUCCESS if the addition was successful, otherwise an error is returned.

See also:

globus_gsi_proxy_handle_get_extensions() , globus_gsi_proxy_handle_set_extensions()

3.2.3.7 globus_result_t globus_gsi_proxy_handle_set_pathlen (globus_gsi_proxy_handle_t handle, long pathlen)

Set the path length to be used in the GSI Proxy handle.

This function sets the path length to be used in the proxy cert info extension.

Parameters:

handle The handle to be modified.

pathlen The maximum allowable path length

Returns:

GLOBUS_SUCCESS if the handle is valid, otherwise an error is returned

See also:

globus_gsi_proxy_handle_get_pathlen()

3.2.3.8 globus_result_t globus_gsi_proxy_handle_get_time_valid (globus_gsi_proxy_handle_t handle, int * time_valid)

Get the validity time of the proxy

Parameters:

handle The proxy handle to get the expiration date of

time_valid expiration date of the proxy handle

Returns:

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

3.2.3.9 globus_result_t globus_gsi_proxy_handle_clear_cert_info (globus_gsi_proxy_handle_t handle)

Clear the proxy cert info extension stored in the GSI Proxy handle.

This function clears proxy cert info extension related setting in the GSI Proxy handle.

Parameters:

handle The handle for which to clear the proxy cert info extension.

Returns:

GLOBUS_SUCCESS if the handle is valid, otherwise an error is returned

3.2.3.10 globus_result_t globus_gsi_proxy_handle_get_proxy_cert_info (globus_gsi_proxy_handle_t handle, PROXYCERTINFO * pci)

Get the proxy cert info extension stored in the GSI Proxy handle.

This function retrieves the proxy cert info extension from the GSI Proxy handle.

Parameters:

handle The handle from which to get the proxy cert info extension.

pci Contains the proxy cert info extension upon successful return. If the handle does not contain a pci extension, this parameter will be NULL upon return.

Returns:

GLOBUS_SUCCESS upon success GLOBUS_GSI_PROXY_ERROR_WITH_HANDLE if handle is invalid GLOBUS_GSI_PROXY_ERROR_WITH_PROXYCERTINFO if the pci pointer is invalid or if the get failed.

3.2.3.11 globus_result_t globus_gsi_proxy_handle_get_signing_algorithm (globus_gsi_proxy_handle_t handle, EVP_MD ** signing_algorithm)

Get the signing algorithm used to sign the proxy cert request

Parameters:

handle The proxy handle containing the type of signing algorithm used

signing_algorithm signing algorithm of the proxy handle

Returns:

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

3.2.3.12 globus_result_t globus_gsi_proxy_handle_get_keybits (globus_gsi_proxy_handle_t handle, int * key_bits)

Get the key bits used for the pub/private key pair of the proxy

Parameters:

handle The proxy handle to get the key bits of

key_bits key bits of the proxy handle

Returns:

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

3.2.3.13 globus_result_t globus_gsi_proxy_handle_get_init_prime (globus_gsi_proxy_handle_t handle, int * init_prime)

Get the init prime of the proxy handle

Parameters:

handle The handle to get the init prime used in generating the key pair

init_prime The resulting init prime

Returns:

GLOBUS_SUCCESS unless an error occurred, in which case an error object identifier (in the form of a globus_result_t) is returned

3.2.3.14 globus_result_t globus_gsi_proxy_handle_get_clock_skew_allowable (globus_gsi_proxy_handle_t handle, int skew)

Get the clock skew of the proxy handle

Parameters:

handle The handle to get the clock skew of

skew The resulting clock skew

Returns:

GLOBUS_SUCCESS unless an error occurred, in which case an error object identifier (in the form of a globus_result_t) is returned

3.2.3.15 globus_result_t globus_gsi_proxy_handle_get_key_gen_callback (globus_gsi_proxy_handle_t handle, void(callback)(int, int, void))

Get the callback for creating the public/private key pair

Parameters:

handle The proxy handle to get the callback from

callback Parameter used for returning the callback

Returns:

GLOBUS_SUCCESS or an error object identifier

3.2.3.16 globus_result_t globus_gsi_proxy_handle_get_common_name (globus_gsi_proxy_handle_t handle, char common_name)

Get the proxy common name stored in the GSI Proxy handle.

This function retrieves the proxy common name from the GSI Proxy handle. The common name only impacts draft compliant proxies.

Parameters:

handle The handle from which to get the proxy common name.

common_name Contains the proxy common name upon successful return. If the handle does not contain a common name, this parameter will be NULL upon return.

Returns:

GLOBUS_SUCCESS upon success GLOBUS_GSI_PROXY_ERROR_WITH_HANDLE if handle is invalid

3.2.3.17 globus_result_t globus_gsi_proxy_handle_set_is_limited (globus_gsi_proxy_handle_t handle, globus_bool_t is_limited)

Set the limited proxy flag on the proxy handle

Parameters:

handle the proxy handle

is_limited boolean value to set on the proxy handle

Returns:

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

3.2.3.18 globus_result_t globus_gsi_proxy_handle_destroy (globus_gsi_proxy_handle_t handle)

Destroy a GSI Proxy handle.

Parameters:

handle The handle to be destroyed.

Returns:

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

See also:

globus_gsi_proxy_handle_init()

3.2.3.19 globus_result_t globus_gsi_proxy_handle_set_req (globus_gsi_proxy_handle_t handle, X509_REQ * req)

Set the certificate request in a GSI Proxy handle.

Parameters:

handle The handle for which to set the certificate request

req Request to be copied to handle.

Returns:

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

See also:

globus_gsi_proxy_handle_get_req()

3.2.3.20 globus_result_t globus_gsi_proxy_handle_set_private_key (globus_gsi_proxy_handle_t handle, EVP_PKEY * proxy_key)

Set the private key in a GSI Proxy handle.

Parameters:

handle The handle for which to set the private key

proxy_key Parameter used to pass the key

Returns:

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

See also:

globus_gsi_proxy_handle_get_private_key()

3.2.3.21 globus_result_t globus_gsi_proxy_handle_set_type (globus_gsi_proxy_handle_t handle, globus_gsi_cert_utils_cert_type_t type)

Set the type of proxy that will be generated when using this handle.

Note that this will have no effect when generating a proxy from a proxy. In that case the generated proxy will inherit the type of the parent.

Parameters:

handle The handle for which to set the type

type Parameter used to pass the type.

Returns:

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

See also:

globus_gsi_proxy_handle_set_type()

3.2.3.22 globus_result_t globus_gsi_proxy_handle_get_policy (globus_gsi_proxy_handle_t handle, unsigned char policy_data, int policy_length, int policy_NID)

Get the policy from the GSI Proxy handle.

This function gets the policy that is being used in the proxy cert info extension.

Parameters:

handle The handle to be interrogated.

policy_data The policy data.

policy_length The length of the returned policy

policy_NID The NID of the policy language.

Returns:

GLOBUS_SUCCESS if the handle is valid, otherwise an error is returned

See also:

globus_gsi_proxy_handle_set_policy()

3.2.3.23 globus_result_t globus_gsi_proxy_handle_set_extensions (globus_gsi_proxy_handle_t handle, STACK_-OF(X509_EXTENSION) exts)

Set the X509 extensions from a GSI Proxy handle.

This function sets the X509 extensions for a proxy certificate.

Parameters:

handle The handle for the proxy from which the extension should be set.

extensions The extensions to be set. Can be NULL to clear extensions.

Returns:

GLOBUS_SUCCESS if the addition was successful, otherwise an error is returned.

See also:

globus_gsi_proxy_hande_add_extension() , globus_gsi_proxy_hande_get_extensions()

3.2.3.24 globus_result_t globus_gsi_proxy_handle_get_extensions (globus_gsi_proxy_handle_t handle, STACK_OF(X509_EXTENSION) ∗∗ exts)

Get the X509 extensions from a GSI Proxy handle.

This function returns the X509 extensions from the proxy certificate.

Parameters:

handle The handle for the proxy from which the extensions should be retrieved.

extensions The variable to hold the extensions. The caller is responsible for freeing the extensions with sk_X509_EXTENSION_free() when they are done with them.

Returns:

GLOBUS_SUCCESS if the retrieval was successful, otherwise an error is returned.

See also:

globus_gsi_proxy_handle_add_extension() , globus_gsi_proxy_handle_set_extensions()

3.2.3.25 globus_result_t globus_gsi_proxy_handle_get_pathlen (globus_gsi_proxy_handle_t handle, int ∗ pathlen)

Get the path length from the GSI Proxy handle.

This function gets the path length that is being used in the proxy cert info extension.

Parameters:

handle The handle to be interrogated.

pathlen The maximum allowable path length

Returns:

GLOBUS_SUCCESS if the handle is valid, otherwise an error is returned

See also:

globus_gsi_proxy_handle_set_pathlen()

3.2.3.26 globus_result_t globus_gsi_proxy_handle_set_time_valid (globus_gsi_proxy_handle_t handle, int time_valid)

Set the validity time of the proxy.

Parameters:

handle The proxy handle to set the expiration date for

time_valid desired expiration date of the proxy

Returns:

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

3.2.3.27 globus_result_t globus_gsi_proxy_handle_set_proxy_cert_info (globus_gsi_proxy_handle_t handle, PROXYCERTINFO pci)

Set the proxy cert info extension stored in the GSI Proxy handle.

This function sets the proxy cert info extension in the GSI Proxy handle.

Parameters:

handle The handle for which to set the proxy cert info extension.

pci The proxy cert info extension to set.

Returns:

GLOBUS_SUCCESS upon success GLOBUS_GSI_PROXY_ERROR_WITH_HANDLE if handle is invalid GLOBUS_GSI_PROXY_ERROR_WITH_PROXYCERTINFO if the pci pointer is invalid or if the set failed.

3.2.3.28 globus_result_t globus_gsi_proxy_handle_set_common_name (globus_gsi_proxy_handle_t handle, char * common_name)

Set the proxy common name stored in the GSI Proxy handle.

This function sets the proxy common name in the GSI Proxy handle. Note that the common name is only used for draft compliant proxies.

Parameters:

handle The handle for which to set the proxy common name.

common_name The proxy common name to set.

Returns:

GLOBUS_SUCCESS upon success GLOBUS_GSI_PROXY_ERROR_WITH_HANDLE if handle is invalid

3.2.3.29 globus_result_t globus_gsi_proxy_is_limited (globus_gsi_proxy_handle_t handle, globus_bool_t * is_limited)

Check to see if the proxy is a limited proxy.

Parameters:

handle the proxy handle to check

is_limited boolean value to set depending on the type of proxy

Returns:

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

3.3 Handle Attributes

Handle attributes are used to control additional features of the GSI Proxy handle.

Initialize & Destroy

- globus_result_t globus_gsi_proxy_handle_attrs_init (globus_gsi_proxy_handle_attrs_t * handle_attrs)
- globus_result_t globus_gsi_proxy_handle_attrs_destroy (globus_gsi_proxy_handle_attrs_t handle_attrs)

Get/Set Key Bits

- globus_result_t globus_gsi_proxy_handle_attrs_set_keybits(globus_gsi_proxy_handle_attrs_t handle_attrs, int bits)
- globus_result_t globus_gsi_proxy_handle_attrs_get_keybits (globus_gsi_proxy_handle_attrs_t handle_attrs, int bits)

Get/Set Initial Prime Number

- globus_result_t globus_gsi_proxy_handle_attrs_set_init_prime (globus_gsi_proxy_handle_attrs_t handle_attrs, int prime)
- globus_result_t globus_gsi_proxy_handle_attrs_get_init_prime (globus_gsi_proxy_handle_attrs_t handle_attrs, int prime)

Get/Set Signing Algorithm

- globus_result_t globus_gsi_proxy_handle_attrs_set_signing_algorithm (globus_gsi_proxy_handle_attrs_t handle_attrs, EVP_MD algorithm)
- globus_result_t globus_gsi_proxy_handle_attrs_get_signing_algorithm (globus_gsi_proxy_handle_attrs_t handle_attrs, EVP_MD algorithm)

Get/Set Clock Skew Allowable

- globus_result_t globus_gsi_proxy_handle_attrs_set_clock_skew_allowable (globus_gsi_proxy_handle_attrs_t handle_attrs, int skew)
- globus_result_t globus_gsi_proxy_handle_attrs_get_clock_skew_allowable (globus_gsi_proxy_handle_attrs_t handle_attrs, int skew)

Get/Set Key Gen Callback

- globus_result_t globus_gsi_proxy_handle_attrs_get_key_gen_callback (globus_gsi_proxy_handle_attrs_t handle_attrs, void(callback)(int, int, void))
- globus_result_t globus_gsi_proxy_handle_attrs_set_key_gen_callback (globus_gsi_proxy_handle_attrs_t handle_attrs, void(callback)(int, int, void))

Copy Attributes

- globus_result_t globus_gsi_proxy_handle_attrs_copy (globus_gsi_proxy_handle_attrs_t a, globus_gsi_proxy_handle_attrs_t b)

Typedefs

- typedef globus_l_gsi_proxy_handle_attrs_s globus_gsi_proxy_handle_attrs_t

3.3.1 Detailed Description

Handle attributes are used to control additional features of the GSI Proxy handle.

These features are operation independent.

Currently there are no attributes.

See also:
globus_gsi_proxy_handle_t

3.3.2 Typedef Documentation

3.3.2.1 typedef struct globus_l_gsi_proxy_handle_attrs_s globus_gsi_proxy_handle_attrs_t

Handle Attributes.

A GSI Proxy handle attributes type is used to associate immutable parameter values with a Handle Management handle. A handle attributes object should be created with immutable parameters and then passed to the proxy handle init function globus_gsi_proxy_handle_init().

See also:
Handle Management

3.3.3 Function Documentation

3.3.3.1 globus_result_t globus_gsi_proxy_handle_attrs_init (globus_gsi_proxy_handle_attrs_t * handle_attrs)

Initialize GSI Proxy Handle Attributes.

Initialize proxy handle attributes, which can (and should) be associated with a proxy handle. For most purposes, these attributes should primarily be used by the proxy handle.

Currently, no attibute values are initialized.

Parameters:
handle_attrs The handle attributes structure to be initialized

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

See also:
globus_gsi_proxy_handle_attrs_destroy()

3.3.3.2 globus_result_t globus_gsi_proxy_handle_attrs_set_keybits (globus_gsi_proxy_handle_attrs_t handle_attrs, int bits)

Set the length of the public key pair used by the proxy certificate

Parameters:
handle_attrs the attributes to set
bits the length to set it to (usually 1024)

Returns:
GLOBUS_SUCCESS

3.3.3.3 globus_result_t globus_gsi_proxy_handle_attrs_set_init_prime (globus_gsi_proxy_handle_attrs_t handle_attrs, int prime)

Set the initial prime number used for generating public key pairs in the RSA algorithm

Parameters:

handle_attrs The attributes to set

prime The prime number to set it to This value needs to be a prime number

Returns:

GLOBUS_SUCCESS

3.3.3.4 globus_result_t globus_gsi_proxy_handle_attrs_set_signing_algorithm (globus_gsi_proxy_handle_attrs_t handle_attrs, EVP_MD algorithm)

Sets the Signing Algorithm to be used to sign the certificate request. In most cases, the signing party will ignore this value, and sign with an algorithm of its choice.

Parameters:

handle_attrs The proxy handle to set the signing algorithm of

algorithm The signing algorithm to set

Returns:

Returns GLOBUS_SUCCESS if the handle is valid, otherwise an error object is returned.

3.3.3.5 globus_result_t globus_gsi_proxy_handle_attrs_set_clock_skew_allowable (globus_gsi_proxy_handle_attrs_t handle_attrs, int skew)

Sets the clock skew in minutes of the proxy cert request so that time differences between hosts won't cause problems. This value defaults to 5 minutes.

Parameters:

handle_attrs the handle_attrs containing the clock skew to be set

skew the amount to skew by (in seconds)

Returns:

GLOBUS_SUCCESS if the handle_attrs is valid - otherwise an error is returned.

3.3.3.6 globus_result_t globus_gsi_proxy_handle_attrs_get_key_gen_callback (globus_gsi_proxy_handle_attrs_t handle_attrs, void(callback)(int, int, void))

Get the public/private key generation callback that provides status during the generation of the keys

Parameters:

handle_attrs The handle_attrs to get the callback from

callback The callback from the handle attributes

Returns:

GLOBUS_SUCCESS if the handle_attrs is valid, otherwise an error is returned

3.3.3.7 globus_result_t globus_gsi_proxy_handle_attrs_copy (globus_gsi_proxy_handle_attrs_t a, globus_gsi_proxy_handle_attrs_t b)

Make a copy of GSI Proxy handle attributes

Parameters:

a The handle attributes to copy

b The copy

Returns:

GLOBUS_SUCCESS

3.3.3.8 globus_result_t globus_gsi_proxy_handle_attrs_destroy (globus_gsi_proxy_handle_attrs_t handle_attrs)

Destroy the GSI Proxy handle attributes.

Parameters:

handle_attrs The handle attributes to be destroyed.

Returns:

GLOBUS_SUCCESS

See also:

globus_gsi_proxy_handle_attrs_init()

3.3.3.9 globus_result_t globus_gsi_proxy_handle_attrs_get_keybits (globus_gsi_proxy_handle_attrs_t handle_attrs, int bits)

Gets the length of the public key pair used by the proxy certificate.

Parameters:

handle_attrs the attributes to get the key length from

bits the length of the key pair in bits

Returns:

GLOBUS_SUCCESS

3.3.3.10 globus_result_t globus_gsi_proxy_handle_attrs_get_init_prime (globus_gsi_proxy_handle_attrs_t handle_attrs, int prime)

Get the initial prime number used for generating the public key pair in the RSA algorithm.

Parameters:

handle_attrs The attributes to get the initial prime number from

prime The initial prime number taken from the attributes

Returns:

GLOBUS_SUCCESS

3.3.3.11 globus_result_t globus_gsi_proxy_handle_attrs_get_signing_algorithm (globus_gsi_proxy_handle_attrs_t handle_attrs, EVP_MD algorithm)

Gets the Signing Algorithm to used to sign the certificate request.

In most cases, the signing party will ignore this value, and sign with an algorithm of its choice.

Parameters:

- handle_attrs The proxy handle_attrs to get the signing algorithm of
- algorithm Parameter used to return the signing algorithm used

Returns:

Returns GLOBUS_SUCCESS if the handle is valid, otherwise an error object is returned.

3.3.3.12 globus_result_t globus_gsi_proxy_handle_attrs_get_clock_skew_allowable (globus_gsi_proxy_handle_attrs_t handle_attrs, int skew)

Get the allowable clock skew for the proxy certificate.

Parameters:

- handle_attrs The handle_attrs to get the clock skew from
- skew The allowable clock skew (in seconds) to get from the proxy certificate request. This value gets set by the function, so it needs to be a pointer.

Returns:

GLOBUS_SUCCESS if the handle_attrs is valid, otherwise an error is returned

3.3.3.13 globus_result_t globus_gsi_proxy_handle_attrs_set_key_gen_callback (globus_gsi_proxy_handle_attrs_t handle_attrs, void(callback)(int, int, void))

Set the public/private key generation callback that provides status during the generation of the keys.

Parameters:

- handle_attrs The handle_attrs to get the callback from
- callback The callback from the handle attributes

Returns:

GLOBUS_SUCCESS if the handle_attrs is valid, otherwise an error is returned

3.4 Proxy Operations

Initiate a proxy operation.

Create Request

globus_result_t globus_gsi_proxy_create_req (globus_gsi_proxy_handle_t handle, BIO output_bio)

Inquire Request

globus_result_t globus_gsi_proxy_inquire_req (globus_gsi_proxy_handle_t handle, BIO input_bio)

Resign Certificate

globus_result_t globus_gsi_proxy_resign_cert (globus_gsi_proxy_handle_t handle, globus_gsi_cred_handle_t issuer_credential, globus_gsi_cred_handle_t peer_credential, globus_gsi_cred_handle_t resigned_credential)

Sign Request

globus_result_t globus_gsi_proxy_sign_req (globus_gsi_proxy_handle_t handle, globus_gsi_cred_handle_t issuer_credential, BIO output_bio)

Create Signed

globus_result_t globus_gsi_proxy_create_signed (globus_gsi_proxy_handle_t handle, globus_gsi_cred_handle_t issuer, globus_gsi_cred_handle_t proxy_credential)

Assemble credential

globus_result_t globus_gsi_proxy_assemble_cred (globus_gsi_proxy_handle_t handle, globus_gsi_cred_handle_t proxy_credential, BIO input_bio)

3.4.1 Detailed Description

Initiate a proxy operation.

This module contains the API functions for a user to request proxy request generation, proxy request inspection and proxy request signature.

3.4.2 Function Documentation

3.4.2.1 globus_result_t globus_gsi_proxy_create_req (globus_gsi_proxy_handle_t handle, BIO output_bio)

Create a proxy credential request

This function creates a proxy credential request, ie. a unsigned certificate and the corresponding private key, based on the handle that is passed in. The public part of the request is written to the BIO supplied in the output_bio parameter. After the request is written, the PROXYCERTINFO extension contained in the handle is written to the BIO. The proxy handle is updated with the private key.

Parameters:

handle A GSI Proxy handle to use for the request operation.

output_bio A BIO to write the resulting request structure to.

Returns:

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

3.4.2.2 globus_result_t globus_gsi_proxy_inquire_req (globus_gsi_proxy_handle_t handle, BIO input_bio)

Inquire a proxy credential request

This function reads the public part of a proxy credential request from input_bio and if the request contains a ProxyCertInfo extension, updates the handle with the information contained in the extension.

Parameters:

handle A GSI Proxy handle to use for the inquire operation.

input_bio A BIO to read a request structure from.

Returns:

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

3.4.2.3 globus_result_t globus_gsi_proxy_resign_cert (globus_gsi_proxy_handle_t handle, globus_gsi_cred_handle_t issuer_credential, globus_gsi_cred_handle_t peer_credential, globus_gsi_cred_handle_t * resigned_credential)

Resign a existing certificate into a proxy

This function use the public key in a existing certificate to create a new proxy certificate chained to the issuers credentials. This operation will add a ProxyCertInfo extension to the proxy certificate if values contained in the extension are specified in the handle.

Parameters:

handle A GSI Proxy handle to use for the signing operation.

issuer_credential The credential structure to be used for signing the proxy certificate.

peer_credential The credential structure that contains the certificate to be resigned.

resigned_credential A credential structure that upon return will contain the resigned certificate and associated certificate chain.

Returns:

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

3.4.2.4 globus_result_t globus_gsi_proxy_sign_req (globus_gsi_proxy_handle_t handle, globus_gsi_cred_handle_t issuer_credential, BIO * output_bio)

Sign a proxy certificate request

This function signs the public part of a proxy credential request, i.e. the unsigned certificate, previously read by inquire req using the supplied issuer_credential. This operation will add a ProxyCertInfo extension to the proxy certificate if values contained in the extension are specified in the handle. The resulting signed certificate is written to the output bio.

Parameters:

handle A GSI Proxy handle to use for the signing operation.

issuer_credential The credential structure to be used for signing the proxy certificate.

output_bio A BIO to write the resulting certificate to.

Returns:

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

3.4.2.5 globus_result_t globus_gsi_proxy_create_signed (globus_gsi_proxy_handle_t handle, globus_gsi_cred_handle_t issuer, globus_gsi_cred_handle_t * proxy_credential)

Create Signed Proxy Certificate

Parameters:

- handle The proxy handle used to create and sign the proxy certificate
- issuer The issuing credential, used for signing the proxy certificate
- proxy_credential The new proxy credential, containing the signed cert, private key, etc.

Returns:

GLOBUS_SUCCESS if no error occurred, an error object ID otherwise

3.4.2.6 globus_result_t globus_gsi_proxy_assemble_cred (globus_gsi_proxy_handle_t handle, globus_gsi_cred_handle_t proxy_credential, BIO input_bio)

Assemble a proxy credential

This function assembles a proxy credential. It reads a signed proxy certificate and a associated certificate chain from the input_bio and combines them with a private key previously generated by a call to globus_gsi_proxy_create_req. The resulting credential is then returned through the proxy_credential parameter.

Parameters:

- handle A GSI Proxy handle to use for the assemble operation.
- proxy_credential This parameter will contain the assembled credential upon successful return.
- input_bio A BIO to read a signed certificate and corresponding certificate chain from.

Returns:

GLOBUS_SUCCESS if no error occurred, an error object ID otherwise

3.5 Proxy Constants

Enumerations

enum globus_gsi_proxy_error_t { GLOBUS_GSI_PROXY_ERROR_SUCCESS = 0, GLOBUS_GSI_PROXY_ERROR_WITH_HANDLE = 1, GLOBUS_GSI_PROXY_ERROR_WITH_HANDLE_ATTRS = 2, GLOBUS_GSI_PROXY_ERROR_WITH_PROXYCERTINFO = 3, GLOBUS_GSI_PROXY_ERROR_WITH_PROXYPOLICY = 4, GLOBUS_GSI_PROXY_ERROR_WITH_PATHLENGTH = 5, GLOBUS_GSI_PROXY_ERROR_WITH_X509_REQ = 6, GLOBUS_GSI_PROXY_ERROR_WITH_X509 = 7, GLOBUS_GSI_PROXY_ERROR_WITH_X509_EXTENSIONS = 8, GLOBUS_GSI_PROXY_ERROR_WITH_PRIVATE_KEY = 9, GLOBUS_GSI_PROXY_ERROR_WITH_BIO = 10, GLOBUS_GSI_PROXY_ERROR_WITH_CREDENTIAL = 11, GLOBUS_GSI_PROXY_ERROR_WITH_CRED_HANDLE = 12, GLOBUS_GSI_PROXY_ERROR_WITH_CRED_HANDLE_ATTRS = 13, GLOBUS_GSI_PROXY_ERROR_ERRNO = 14, GLOBUS_GSI_PROXY_ERROR_SETTING_HANDLE_TYPE = 15, GLOBUS_GSI_PROXY_INVALID_PARAMETER = 16, GLOBUS_GSI_PROXY_ERROR_SIGNING = 17, GLOBUS_GSI_PROXY_ERROR_LAST = 18 }

3.5.1 Enumeration Type Documentation

3.5.1.1 enum globus_gsi_proxy_error_t

Proxy Error codes.

Enumeration values:

- GLOBUS_GSI_PROXY_ERROR_SUCCESS Success - never used.
- GLOBUS_GSI_PROXY_ERROR_WITH_HANDLE Invalid proxy handle state.

GLOBUS_GSI_PROXY_ERROR_WITH_HANDLE_ATTRS Invalid proxy handle attributes state.

GLOBUS_GSI_PROXY_ERROR_WITH_PROXYCERTINFO Error with ASN.1 proxycertinfo structure.

GLOBUS_GSI_PROXY_ERROR_WITH_PROXYPOLICY Error with ASN.1 proxypolicy structure.

GLOBUS_GSI_PROXY_ERROR_WITH_PATHLENGTH Error with proxy path length.

GLOBUS_GSI_PROXY_ERROR_WITH_X509_REQ Error with the X.509 request structure.

GLOBUS_GSI_PROXY_ERROR_WITH_X509 Error with X.509 structure.

GLOBUS_GSI_PROXY_ERROR_WITH_X509_EXTENSIONS Error with X.509 extensions.

GLOBUS_GSI_PROXY_ERROR_WITH_PRIVATE_KEY Error with private key.

GLOBUS_GSI_PROXY_ERROR_WITH_BIO Error with OpenSSL's BIO handle.

GLOBUS_GSI_PROXY_ERROR_WITH_CREDENTIAL Error with credential.

GLOBUS_GSI_PROXY_ERROR_WITH_CRED_HANDLE Error with credential handle.

GLOBUS_GSI_PROXY_ERROR_WITH_CRED_HANDLE_ATTRS Error with credential handle attributes.

GLOBUS_GSI_PROXY_ERROR_ERRNO System error.

GLOBUS_GSI_PROXY_ERROR_SETTING_HANDLE_TYPE Unable to set proxy type.

GLOBUS_GSI_PROXY_INVALID_PARAMETER Invalid function parameter.

GLOBUS_GSI_PROXY_ERROR_SIGNING A error occured while signing the proxy certificate.

GLOBUS_GSI_PROXY_ERROR_LAST Last marker - never used.

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