globus gsi credential

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1 Globus GSI Credential

The Globus GSI Credential library. This library contains functions that provide support for handling X.509 based PKI credentials

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2 Module Index

2.1 Modules

Here is a list of all modules:

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3 Module Documentation

3.1 Credential Constants

Enumerations

- enum **globus_gsi_cred_error_t** {
  GLOBUS_GSI_CRED_ERROR_SUCCESS = 0,
  GLOBUS_GSI_CRED_ERROR_READING_PROXY_CRED = 1,
  GLOBUS_GSI_CRED_ERROR_READING_HOST_CRED = 2,
  GLOBUS_GSI_CRED_ERROR_READING_SERVICE_CRED = 3,
  GLOBUS_GSI_CRED_ERROR_READING_CRED = 4,
  GLOBUS_GSI_CRED_ERROR_WRITING_CRED = 5,
  GLOBUS_GSI_CRED_ERROR_WRITING_PROXY_CRED = 6,
  GLOBUS_GSI_CRED_ERROR_CHECKING_PROXY = 7,
  GLOBUS_GSI_CRED_ERROR_VERIFYING_CRED = 8,
  GLOBUS_GSI_CRED_ERROR_WITH_CRED = 9,
  GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT = 10,
  GLOBUS_GSI_CRED_ERROR_WITH_CRED_PRIVATE_KEY = 11,
  GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_CHAIN = 12,
  GLOBUS_GSI_CRED_ERROR_ERRNO = 13,
  GLOBUS_GSI_CRED_ERROR_SYSTEM_CONFIG = 14,
  GLOBUS_GSI_CRED_ERROR_WITH_CRED_HANDLE_ATTRS = 15,
  GLOBUS_GSI_CRED_ERROR_WITH_SSL_CTX = 16,
  GLOBUS_GSI_CRED_ERROR_WITH_CALLBACK_DATA = 17,
  GLOBUS_GSI_CRED_ERROR_CREATING_ERROR_OBJ = 18,
  GLOBUS_GSI_CRED_ERROR_KEY_IS_PASS_PROTECTED = 19,
  GLOBUS_GSI_CRED_ERROR_NO_CRED_FOUND = 20,
  GLOBUS_GSI_CRED_ERROR_SUBJECT_CMP = 21,
  GLOBUS_GSI_CRED_ERROR_GETTING_SERVICE_NAME = 22,
  GLOBUS_GSI_CRED_ERROR_BAD_PARAMETER = 23,
  GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_NAME = 24,
  GLOBUS_GSI_CRED_ERROR_LAST = 25 }
- enum **globus_gsi_cred_type_t**

3.1.1 Detailed Description

3.1.2 Enumeration Type Documentation

3.1.2.1 enum globus_gsi_cred_error_t

Credential Error codes.

Enumerator

GLOBUS_GSI_CRED_ERROR_SUCCESS Success - never used.

GLOBUS_GSI_CRED_ERROR_READING_PROXY_CRED Failed to read proxy credential.

GLOBUS_GSI_CRED_ERROR_READING_HOST_CRED Failed to read host credential.

GLOBUS_GSI_CRED_ERROR_READING_SERVICE_CRED Failed to read service credential.

GLOBUS_GSI_CRED_ERROR_READING_CRED Failed to read user credential.

GLOBUS_GSI_CRED_ERROR_WRITING_CRED Failed to write credential.

GLOBUS_GSI_CRED_ERROR_WRITING_PROXY_CRED Failed to write proxy credential.

GLOBUS_GSI_CRED_ERROR_CHECKING_PROXY Error checking for proxy credential.

GLOBUS_GSI_CRED_ERROR_VERIFYING_CRED Failed to verify credential.

GLOBUS_GSI_CRED_ERROR_WITH_CRED Invalid credential.

GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT Invalid certificate.

GLOBUS_GSI_CRED_ERROR_WITH_CRED_PRIVATE_KEY Invalid private key.

GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_CHAIN Invalid certificate chain.

GLOBUS_GSI_CRED_ERROR_ERRNO System error.

GLOBUS_GSI_CRED_ERROR_SYSTEM_CONFIG A Globus GSI System Configuration call failed.

GLOBUS_GSI_CRED_ERROR_WITH_CRED_HANDLE_ATTRS Invalid credential handle attributes.

GLOBUS_GSI_CRED_ERROR_WITH_SSL_CTX Faulty SSL context.

GLOBUS_GSI_CRED_ERROR_WITH_CALLBACK_DATA Faulty callback data.

GLOBUS_GSI_CRED_ERROR_CREATING_ERROR_OBJ Failed to aggregate errors.

GLOBUS_GSI_CRED_ERROR_KEY_IS_PASS_PROTECTED Error reading private key - the key is password protected.

GLOBUS_GSI_CRED_ERROR_NO_CRED_FOUND Couldn't find credential to read.

GLOBUS_GSI_CRED_ERROR_SUBJECT_CMP Credential subjects do not compare.

GLOBUS_GSI_CRED_ERROR_GETTING_SERVICE_NAME Unable to obtain service name from CN entry.

GLOBUS_GSI_CRED_ERROR_BAD_PARAMETER Invalid function parameter.

GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_NAME Failed to process certificate subject.

GLOBUS_GSI_CRED_ERROR_LAST End marker - never used.

3.1.2.2 enum globus_gsi_cred_type_t

Credential Type

An enum representing a GSI Credential Type which holds info about the type of a particular credential.

The three types of credential can be: GLOBUS_PROXY, GLOBUS_USER, or GLOBUS_HOST.

See Also

Credential Handle Management (p. 5)

3.2 Activation

Macros

- #define **GLOBUS_GSI_CREDENTIAL_MODULE**

3.2.1 Detailed Description

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

```
globus_module_activate(GLOBUS_GSI_CREDENTIAL_MODULE)
```

This function returns GLOBUS_SUCCESS if Globus GSI Credential was successfully initialized, and you are therefore allowed to subsequently call Globus GSI Credential 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 Credential, the following function must be called:

```
globus_module_deactivate(GLOBUS_GSI_CREDENTIAL_MODULE)
```

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

3.2.2 Macro Definition Documentation

3.2.2.1 #define GLOBUS_GSI_CREDENTIAL_MODULE

Module descriptor.

3.3 Credential Handle Management

Typedefs

- typedef struct
  globus_l_gsi_cred_handle_s * **globus_gsi_cred_handle_t**

Initializing and Destroying a Handle

- globus_result_t **globus_gsi_cred_handle_init** (**globus_gsi_cred_handle_t** *handle, **globus_gsi_cred_handle_attrs_t** handle_attrs)
- globus_result_t **globus_gsi_cred_handle_destroy** (**globus_gsi_cred_handle_t** handle)

Copying a Handle

- globus_result_t **globus_gsi_cred_handle_copy** (**globus_gsi_cred_handle_t** source, **globus_gsi_cred_handle_t** *dest)

Getting the Handle Attributes

- globus_result_t **globus_gsi_cred_get_handle_attrs** (**globus_gsi_cred_handle_t** handle, **globus_gsi_cred_handle_attrs_t** *attrs)

Getting the Credential Expiration

- globus_result_t **globus_gsi_cred_get_goodtill** (**globus_gsi_cred_handle_t** cred_handle, time_t *goodtill)

Getting the Credential Lifetime

- globus_result_t **globus_gsi_cred_get_lifetime** (**globus_gsi_cred_handle_t** cred_handle, time_t *lifetime)

Getting the Credential Strength

- globus_result_t **globus_gsi_cred_get_key_bits** (**globus_gsi_cred_handle_t** cred_handle, int *key_bits)

Setting and Getting the Certificate

- globus_result_t **globus_gsi_cred_set_cert** (**globus_gsi_cred_handle_t** handle, X509 *cert)
- globus_result_t **globus_gsi_cred_get_cert** (**globus_gsi_cred_handle_t** handle, X509 **cert)

Setting and Getting the Credential Key

- globus_result_t **globus_gsi_cred_set_key** (**globus_gsi_cred_handle_t** handle, EVP_PKEY *key)
- globus_result_t **globus_gsi_cred_get_key** (**globus_gsi_cred_handle_t** handle, EVP_PKEY **key)

Setting and Getting the Certificate Chain

- globus_result_t **globus_gsi_cred_set_cert_chain** (**globus_gsi_cred_handle_t** handle, STACK_OF(X509)*cert_chain)
- globus_result_t **globus_gsi_cred_get_cert_chain** (**globus_gsi_cred_handle_t** handle, STACK_OF(X509)**cert_chain)

Get Cred Cert X509 Subject Name object

- globus_result_t **globus_gsi_cred_get_X509_subject_name** (**globus_gsi_cred_handle_t** handle, X509_NAME **subject_name)

Get X509 Identity Name

- globus_result_t **globus_gsi_cred_get_X509_identity_name** (**globus_gsi_cred_handle_t** handle, X509_NAME **identity_name)

Get Cred Cert Subject Name

- globus_result_t **globus_gsi_cred_get_subject_name** (**globus_gsi_cred_handle_t** handle, char **subject_name)

Get Policies from Cert Chain

- globus_result_t **globus_gsi_cred_get_policies** (**globus_gsi_cred_handle_t** handle, STACK **policies)

Get Policy Languages from Cert Chain

- globus_result_t **globus_gsi_cred_get_policy_languages** (**globus_gsi_cred_handle_t** handle, STACK_OF(ASN1_OBJECT)**policy_languages)

Get Cred Cert X509 Issuer Name object

- globus_result_t **globus_gsi_cred_get_X509_issuer_name** (**globus_gsi_cred_handle_t** handle, X509_NAME **issuer_name)

Get Issuer Name

- globus_result_t **globus_gsi_cred_get_issuer_name** (**globus_gsi_cred_handle_t** handle, char **issuer_name)

Get Identity Name

- globus_result_t **globus_gsi_cred_get_identity_name** (**globus_gsi_cred_handle_t** handle, char **identity_name)

Credential validation functions

- globus_result_t **globus_gsi_cred_verify_cert_chain** (**globus_gsi_cred_handle_t** cred_handle, globus_gsi_callback_data_t callback_data)
- globus_result_t **globus_gsi_cred_verify_cert_chain_when** (**globus_gsi_cred_handle_t** cred_handle, globus_gsi_callback_data_t callback_data_in, time_t check_time)
- globus_result_t **globus_gsi_cred_verify** (**globus_gsi_cred_handle_t** handle)

3.3.1 Detailed Description

Create/Destroy/Modify a GSI Credential Handle. Within the Globus GSI Credential Library, all credential operations require a handle parameter. Currenlty only one operation may be in progress at once per credential handle.

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

3.3.2 Typedef Documentation

3.3.2.1 typedef struct globus_l_gsi_cred_handle_s* globus_gsi_cred_handle_t

GSI Credential Handle.

A GSI Credential handle keeps track of state relating to a credential. Handles can have immutable **attributes** (p. 15) associated with them. All credential **operations** (p. 19) take a credential handle pointer as a parameter.

See Also

globus_gsi_cred_handle_init() (p. 7), **globus_gsi_cred_handle_destroy()** (p. 7), **globus_gsi_cred_handle_attrs_t** (p. 15)

3.3.3 Function Documentation

3.3.3.1 globus_result_t globus_gsi_cred_handle_init (globus_gsi_cred_handle_t * *handle*, globus_gsi_cred_handle_attrs_t *handle_attrs*)

Initializes a credential handle to be used credential handling functions.

Takes a set of handle attributes that are immutable to the handle. The handle attributes are only pointed to by the handle, so the lifetime of the attributes needs to be as long as that of the handle.

Parameters

handle	The handle to be initialized
handle_attrs	The immutable attributes of the handle

Returns

GLOBUS_SUCCESS or an error captured in a globus_result_t

References GLOBUS_GSI_CRED_ERROR_BAD_PARAMETER, GLOBUS_GSI_CRED_ERROR_ERRNO, GLOBUS_GSI_CRED_ERROR_WITH_CRED, globus_gsi_cred_handle_attrs_copy(), globus_gsi_cred_handle_attrs_init(), and GLOBUS_GSI_CREDENTIAL_MODULE.

3.3.3.2 globus_result_t globus_gsi_cred_handle_destroy (globus_gsi_cred_handle_t *handle*)

Destroys the credential handle.

Parameters

handle	The credential handle to be destroyed

Returns

GLOBUS_SUCCESS

References globus_gsi_cred_handle_attrs_destroy().

3.3.3.3 globus_result_t globus_gsi_cred_handle_copy (globus_gsi_cred_handle_t *source*, globus_gsi_cred_handle_t * *dest*)

Copies a credential handle.

Parameters

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

Returns

GLOBUS_SUCCESS or an error captured in a globus_result_t

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and globus_gsi_cred_handle_init().

3.3.3.4 globus_result_t globus_gsi_cred_get_handle_attrs (globus_gsi_cred_handle_t *handle*, globus_gsi_cred_handle_attrs_t * *attrs*)

This function retreives a copy of the credential handle attributes.

Parameters

handle	The credential handle to retrieve the attributes from
attrs	Contains the credential attributes on return

Returns

GLOBUS_SUCCESS or an error captured in a globus_result_t

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and globus_gsi_cred_handle_attrs_copy().

3.3.3.5 globus_result_t globus_gsi_cred_get_goodtill (globus_gsi_cred_handle_t *cred_handle*, time_t * *goodtill*)

This function retreives the expiration time of the credential contained in the handle.

Parameters

cred_handle	The credential handle to retrieve the expiration time from
goodtill	Contains the expiration time on return

Returns

GLOBUS_SUCCESS or an error captured in a globus_result_t

References GLOBUS_GSI_CRED_ERROR_WITH_CRED.

3.3.3.6 globus_result_t globus_gsi_cred_get_lifetime (globus_gsi_cred_handle_t *cred_handle*, time_t * *lifetime*)

This function retreives the lifetime of the credential contained in a handle.

Parameters

cred_handle	The credential handle to retrieve the lifetime from
lifetime	Contains the lifetime on return

Returns

GLOBUS_SUCCESS or an error captured in a globus_result_t

References GLOBUS_GSI_CRED_ERROR_WITH_CRED.

3.3.3.7 globus_result_t globus_gsi_cred_get_key_bits (globus_gsi_cred_handle_t *cred_handle,* int * *key_bits*)

This function retreives the key strength of the credential contained in a handle.

Parameters

cred_handle	The credential handle to retrieve the strength from
key_bits	Contains the number of bits in the key on return

Returns

GLOBUS_SUCCESS or an error captured in a globus_result_t

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT.

3.3.3.8 globus_result_t globus_gsi_cred_set_cert (globus_gsi_cred_handle_t *handle,* X509 * *cert*)

Set the Credential's Certificate.

The X509 cert that is passed in should be a valid X509 certificate object

Parameters

handle	The credential handle to set the certificate on
cert	The X509 cert to set in the cred handle. The cert passed in can be NULL which will set the cert in the handle to NULL, freeing the current cert in the handle.

Returns

GLOBUS_SUCCESS or an error object id if an error

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT.

3.3.3.9 globus_result_t globus_gsi_cred_get_cert (globus_gsi_cred_handle_t *handle,* X509 ** *cert*)

Get the certificate of a credential.

Parameters

handle	The credential handle to get the certificate from
cert	The resulting X509 certificate, a duplicate of the certificate in the credential handle. This variable should be freed when the user is finished with it using the function X509_free.

Returns

GLOBUS_SUCCESS if no error, otherwise an error object id is returned

References GLOBUS_GSI_CRED_ERROR_WITH_CRED.

3.3.3.10 globus_result_t globus_gsi_cred_set_key (globus_gsi_cred_handle_t *handle,* EVP_PKEY * *key*)

Set the private key of the credential handle.

Parameters

handle	The handle on which to set the key.
key	The private key to set the handle's key to. This value can be NULL, in which case the current handle's key is freed.

References GLOBUS_GSI_CRED_ERROR_WITH_CRED.

3.3.3.11 globus_result_t globus_gsi_cred_get_key (globus_gsi_cred_handle_t *handle,* EVP_PKEY ** *key*)

Get the credential handle's private key.

Parameters

handle	The credential handle containing the private key to get
key	The private key which after this function returns is set to a duplicate of the private key of the credential handle. This variable needs to be freed by the user when it is no longer used via the function EVP_PKEY_free.

Returns

GLOBUS_SUCCESS or an error object identifier

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_PRIVATE_KEY.

3.3.3.12 globus_result_t globus_gsi_cred_set_cert_chain (globus_gsi_cred_handle_t *handle,* STACK_OF(X509)* *cert_chain*)

Set the certificate chain of the credential handle.

Parameters

handle	The handle containing the certificate chain field to set
cert_chain	The certificate chain to set the handle's certificate chain to

Returns

GLOBUS_SUCCESS if no error, otherwise an error object id is returned

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_CHAIN.

3.3.3.13 globus_result_t globus_gsi_cred_get_cert_chain (globus_gsi_cred_handle_t *handle,* STACK_OF(X509)** *cert_chain*)

Get the certificate chain of the credential handle.

Parameters

handle	The credential handle containing the certificate chain to get
cert_chain	The certificate chain to set as a duplicate of the cert chain in the credential handle. This variable (or the variable it points to) needs to be freed when the user is finished with it using sk_X509_free.

Returns

GLOBUS_SUCCESS if no error, otherwise an error object id is returned

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_CHAIN.

3.3.3.14 globus_result_t globus_gsi_cred_get_X509_subject_name (globus_gsi_cred_handle_t *handle,* X509_NAME ** *subject_name*)

Get the credential handle's certificate subject name.

Parameters

handle	The credential handle containing the certificate to get the subject name of
subject_name	The subject name as an X509_NAME object. This should be freed using X509_NAME_free when the user is finished with it

Returns

GLOBUS_SUCCESS if no error, a error object id otherwise

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT.

3.3.3.15 globus_result_t globus_gsi_cred_get_X509_identity_name (globus_gsi_cred_handle_t *handle,* X509_NAME ** *identity_name*)

Get the identity's X509 subject name from the credential handle.

Parameters

handle	The credential handle containing the certificate to get the identity from
identity_name	The identity certificate's X509 subject name

Returns

GLOBUS_SUCCESS if no error, otherwise an error object identifier is returned

References GLOBUS_GSI_CRED_ERROR_WITH_CRED.

3.3.3.16 globus_result_t globus_gsi_cred_get_subject_name (globus_gsi_cred_handle_t *handle,* char ** *subject_name*)

Get the credential handle's certificate subject name.

Parameters

handle	The credential handle containing the certificate to get the subject name of
subject_name	The subject name as a string. This should be freed using free() when the user is finished with it

Returns

GLOBUS_SUCCESS if no error, a error object id otherwise

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and globus_gsi_cred_get_X509_subject_name().

3.3.3.17 globus_result_t globus_gsi_cred_get_policies (globus_gsi_cred_handle_t *handle,* STACK ** *policies*)

Get the Policies from the Cert Chain in the handle.

The policies will be null-terminated as they are added to the handle. If a policy for a cert in the chain doesn't exist, the string in the stack will be set to the static string GLOBUS_NULL_POLICIES

Parameters

handle	the handle to get the cert chain containing the policies
policies	the stack of policies retrieved from the handle's cert chain

Returns

GLOBUS_SUCCESS or an error object if an error occurred

References GLOBUS_GSI_CRED_ERROR_ERRNO, GLOBUS_GSI_CRED_ERROR_WITH_CRED, GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_CHAIN, and GLOBUS_GSI_CREDENTIAL_MODULE.

3.3.3.18 globus_result_t globus_gsi_cred_get_policy_languages (globus_gsi_cred_handle_t *handle,* STACK_OF(ASN1_OBJECT)** *policy_languages*)

Get the policy languages from the cert chain in the handle.

Parameters

handle	the handle to get the cert chain containing the policies
policy_languages	the stack of policies retrieved from the handle's cert chain

Returns

GLOBUS_SUCCESS or an error object if an error occurred

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_CHAIN.

3.3.3.19 globus_result_t globus_gsi_cred_get_X509_issuer_name (globus_gsi_cred_handle_t *handle,* X509_NAME ** *issuer_name*)

Get the credential handle's certificate issuer name.

Parameters

handle	The credential handle containing the certificate to get the issuer name of
issuer_name	The issuer name as an X509_NAME object. This should be freed using X509_NAME_free when the user is finished with it

Returns

GLOBUS_SUCCESS if no error, a error object id otherwise

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT.

3.3.3.20 globus_result_t globus_gsi_cred_get_issuer_name (globus_gsi_cred_handle_t *handle,* char ** *issuer_name*)

Get the issuer's subject name from the credential handle.

Parameters

handle	The credential handle containing the certificate to get the issuer of
issuer_name	The issuer certificate's subject name

Returns

GLOBUS_SUCCESS if no error, otherwise an error object identifier is returned

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT.

3.3.3.21 globus_result_t globus_gsi_cred_get_identity_name (globus_gsi_cred_handle_t *handle,* char ** *identity_name*)

Get the identity's subject name from the credential handle.

Parameters

handle	The credential handle containing the certificate to get the identity of
identity_name	The identity certificate's subject name

Returns

GLOBUS_SUCCESS if no error, otherwise an error object identifier is returned

References GLOBUS_GSI_CRED_ERROR_WITH_CRED, GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_NAME, and globus_gsi_cred_get_X509_identity_name().

3.3.3.22 globus_result_t globus_gsi_cred_verify_cert_chain (globus_gsi_cred_handle_t *cred_handle,* globus_gsi_callback_data_t *callback_data*)

This function performs path valiadtion on the certificate chain contained in the credential handle.

Parameters

cred_handle	The credential handle containing the certificate chain to be validated
callback_data	A initialized callback data structure

Returns

GLOBUS_SUCCESS if no error, otherwise an error object identifier is returned

References GLOBUS_GSI_CRED_ERROR_VERIFYING_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CALLBACK_DATA.

3.3.3.23 globus_result_t globus_gsi_cred_verify_cert_chain_when (globus_gsi_cred_handle_t *cred_handle,* globus_gsi_callback_data_t *callback_data_in,* time_t *check_time*)

This function performs path valiadtion on the certificate chain contained in the credential handle.

Expiration checks are done at the time given.

Parameters

cred_handle	The credential handle containing the certificate chain to be validated
callback_data	A callback data structure. If NULL, one will be initialized with only the default cert dir set.
check_time	Check if the cert chain was valid at this time. Set to 0 to use a time that the cert is valid, essentially bypassing the expiration check.

Returns

GLOBUS_SUCCESS if no error, otherwise an error object identifier is returned

References GLOBUS_GSI_CRED_ERROR_VERIFYING_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CALLBACK_DATA.

3.3.3.24 globus_result_t globus_gsi_cred_verify (globus_gsi_cred_handle_t *handle*)

This function checks that the certificate is signed by the public key of the issuer cert (the first cert in the chain).

Note that this function DOES NOT check the private key or the public of the certificate, as stated in a previous version of the documentation.

Parameters

handle	The credential handle containing the certificate and key to be validated

Returns

GLOBUS_SUCCESS if no error, otherwise an error object identifier is returned

References GLOBUS_GSI_CRED_ERROR_VERIFYING_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT_CHAIN.

3.4 Credential Handle Attributes

Typedefs

- typedef struct globus_l_gsi_cred_handle_attrs_s * **globus_gsi_cred_handle_attrs_t**

Credential Handle Attributes Initialization and Destruction

- globus_result_t **globus_gsi_cred_handle_attrs_init** (**globus_gsi_cred_handle_attrs_t** *handle_attrs)
- globus_result_t **globus_gsi_cred_handle_attrs_destroy** (**globus_gsi_cred_handle_attrs_t** handle_attrs)

Copy Credential Handle Attributes

- globus_result_t **globus_gsi_cred_handle_attrs_copy** (**globus_gsi_cred_handle_attrs_t** source, **globus_gsi_cred_handle_attrs_t** *dest)

Seting and Getting the CA Cert Dir

- globus_result_t **globus_gsi_cred_handle_attrs_set_ca_cert_dir** (**globus_gsi_cred_handle_attrs_t** handle_attrs, char *ca_cert_dir)
- globus_result_t **globus_gsi_cred_handle_attrs_get_ca_cert_dir** (**globus_gsi_cred_handle_attrs_t** handle_attrs, char **ca_cert_dir)

Setting and Getting the Search Order

- globus_result_t **globus_gsi_cred_handle_attrs_set_search_order** (**globus_gsi_cred_handle_attrs_t** handle_attrs, **globus_gsi_cred_type_t** search_order[])
- globus_result_t **globus_gsi_cred_handle_attrs_get_search_order** (**globus_gsi_cred_handle_attrs_t** handle_attrs, **globus_gsi_cred_type_t** **search_order)

3.4.1 Detailed Description

Create/Destroy/Modify GSI Credential Handle Attributes. Within the Globus GSI Credential Library, all credential handles contain a attribute structure, which in turn contains handle instance independent attributes.

This section defines operations to create, modify and destroy GSI Credential handle attributes.

3.4.2 Typedef Documentation

3.4.2.1 typedef struct globus_l_gsi_cred_handle_attrs_s* globus_gsi_cred_handle_attrs_t

Credential Handle Attributes.

Credential handle attributes provide a set of immutable parameters for a credential handle

See Also

globus_gsi_cred_handle_init (p. 7)

3.4.3 Function Documentation

3.4.3.1 globus_result_t globus_gsi_cred_handle_attrs_init (globus_gsi_cred_handle_attrs_t * *handle_attrs*)

Initializes the immutable Credential Handle Attributes The handle attributes are initialized as follows:

- The search order is set to SERVICE, HOST, PROXY, USER
- All other attributes are set to 0/NULL

Parameters

handle_attrs	the attributes to be initialized

Returns

GLOBUS_SUCESS if initialization was successful, otherwise an error is returned

References GLOBUS_GSI_CRED_ERROR_WITH_CRED_HANDLE_ATTRS.

3.4.3.2 globus_result_t globus_gsi_cred_handle_attrs_destroy (globus_gsi_cred_handle_attrs_t *handle_attrs*)

Destroy the Credential Handle Attributes.

This function does some cleanup and deallocation of the handle attributes.

Parameters

handle_attrs	The handle attributes to destroy

Returns

GLOBUS_SUCCESS

3.4.3.3 globus_result_t globus_gsi_cred_handle_attrs_copy (globus_gsi_cred_handle_attrs_t *source,* globus_gsi_cred_handle_attrs_t * *dest*)

Copy the Credential Handle Attributes.

Parameters

source	The handle attribute to be copied
dest	The copy

Returns

GLOBUS_SUCESS unless there was an error, in which case an error object is returned.

References GLOBUS_GSI_CRED_ERROR_WITH_CRED_HANDLE_ATTRS, globus_gsi_cred_handle_attrs_destroy(), and globus_gsi_cred_handle_attrs_init().

3.4.3.4 globus_result_t globus_gsi_cred_handle_attrs_set_ca_cert_dir (globus_gsi_cred_handle_attrs_t *handle_attrs,* char * *ca_cert_dir*)

Set the Trusted CA Certificate Directory Location.

Parameters

handle_attrs	the credential handle attributes to set
ca_cert_dir	the trusted ca certificates directory

Returns

GLOBUS_SUCCESS if no errors occurred. In case of a null handle_attrs, an error object id is returned

References GLOBUS_GSI_CRED_ERROR_WITH_CRED_HANDLE_ATTRS.

3.4.3.5 globus_result_t globus_gsi_cred_handle_attrs_get_ca_cert_dir (globus_gsi_cred_handle_attrs_t *handle_attrs*, char ** *ca_cert_dir*)

Get the trusted ca cert directory.

Parameters

handle_attrs	the credential handle attributes to get the trusted ca cert directory from
ca_cert_dir	the trusted ca certificates directory

Returns

GLOBUS_SUCCESS if no errors occurred. In case of a null handle_attrs or pointer to ca_cert_dir, an error object id is returned

References GLOBUS_GSI_CRED_ERROR_WITH_CRED_HANDLE_ATTRS.

3.4.3.6 globus_result_t globus_gsi_cred_handle_attrs_set_search_order (globus_gsi_cred_handle_attrs_t *handle_attrs*, globus_gsi_cred_type_t *search_order[]*)

Set the search order for finding a user certificate.

The default value is {SERVICE, HOST, PROXY, USER}

Parameters

handle_attrs	The handle attributes to set the search order of
search_order	The search order. Should be a three element array containing in some order PROXY, USER, HOST, SERVICE. The array should be terminated by the value GLOBUS_SO_END.

Returns

GLOBUS_SUCCESS unless handle_attrs is null

References GLOBUS_GSI_CRED_ERROR_WITH_CRED_HANDLE_ATTRS.

3.4.3.7 globus_result_t globus_gsi_cred_handle_attrs_get_search_order (globus_gsi_cred_handle_attrs_t *handle_attrs*, globus_gsi_cred_type_t ** *search_order*)

Get the search order of the handle attributes.

Parameters

handle_attrs	The handle attributes to get the search order from
search_order	The search_order of the handle attributes

Returns

GLOBUS_SUCCESS unless handle_attrs is null

References GLOBUS_GSI_CRED_ERROR_WITH_CRED_HANDLE_ATTRS.

3.5 Credential Operations

Read Credential

- globus_result_t **globus_gsi_cred_read** (**globus_gsi_cred_handle_t** handle, X509_NAME ∗desired_subject)

Reading Proxy Credentials

- globus_result_t **globus_gsi_cred_read_proxy** (**globus_gsi_cred_handle_t** handle, const char ∗proxy_filename)
- globus_result_t **globus_gsi_cred_read_proxy_bio** (**globus_gsi_cred_handle_t** handle, BIO ∗bio)

Read Key

- globus_result_t **globus_gsi_cred_read_key** (**globus_gsi_cred_handle_t** handle, char ∗key_filename, int(∗pw_cb)())

Read Cert and chain from file

- globus_result_t **globus_gsi_cred_read_cert** (**globus_gsi_cred_handle_t** handle, char ∗cert_filename)

Read Cert and chain from BIO stream

- globus_result_t **globus_gsi_cred_read_cert_bio** (**globus_gsi_cred_handle_t** handle, BIO ∗bio)

Read Cert and chain from a buffer

- globus_result_t **globus_gsi_cred_read_cert_buffer** (char ∗pem_buf, **globus_gsi_cred_handle_t** ∗out_handle, X509 ∗∗out_cert, STACK_OF(X509)∗∗out_cert_chain, char ∗∗out_subject)

Read Cert & Key in PKCS12 Format

- globus_result_t **globus_gsi_cred_read_pkcs12** (**globus_gsi_cred_handle_t** handle, char ∗pkcs12_filename)

Write Credential

- globus_result_t **globus_gsi_cred_write** (**globus_gsi_cred_handle_t** handle, BIO ∗bio)
- globus_result_t **globus_gsi_cred_write_proxy** (**globus_gsi_cred_handle_t** handle, char ∗proxy_filename)

Get the X509 certificate type (EEC, CA, proxy type, etc.)

- globus_result_t **globus_gsi_cred_get_cert_type** (**globus_gsi_cred_handle_t** handle, globus_gsi_cert_utils_cert_type_t ∗type)

3.5.1 Detailed Description

Read/Write a GSI Credential Handle. This section defines operations to read and write GSI Credential handles.

3.5.2 Function Documentation

3.5.2.1 globus_result_t globus_gsi_cred_read (globus_gsi_cred_handle_t *handle,* X509_NAME * *desired_subject*)

Read a Credential from a filesystem location.

The credential to read will be determined by the search order specified in the handle attributes.

Parameters

handle	The credential handle to set. This credential handle should already be initialized using globus_gsi_cred_handle_init.
desired_subject	The subject to check for when reading in a credential. The desired_subject should be either a exact match of the read cert's subject or should just contain the /CN entry. If null, the credential read in is the first match based on the system configuration (paths and environment variables)

Returns

GLOBUS_SUCCESS if no errors occured, otherwise, an error object identifier is returned.

See Also

globus_gsi_cred_read_proxy() (p. 20)
globus_gsi_cred_read_cert_and_key()

Note

This function always searches for the desired credential. If you don't want to perform a search, then don't use this function. The search goes in the order of the handle attributes' search order.

References GLOBUS_GSI_CRED_ERROR_KEY_IS_PASS_PROTECTED, GLOBUS_GSI_CRED_ERROR_NO_CRED_FOUND, GLOBUS_GSI_CRED_ERROR_READING_CRED, GLOBUS_GSI_CRED_ERROR_READING_HOST_CRED, GLOBUS_GSI_CRED_ERROR_READING_PROXY_CRED, GLOBUS_GSI_CRED_ERROR_READING_SERVICE_CRED, GLOBUS_GSI_CRED_ERROR_WITH_CRED, globus_gsi_cred_get_lifetime(), globus_gsi_cred_get_X509_subject_name(), globus_gsi_cred_read_cert(), globus_gsi_cred_read_key(), globus_gsi_cred_read_proxy(), and GLOBUS_GSI_CREDENTIAL_MODULE.

3.5.2.2 globus_result_t globus_gsi_cred_read_proxy (globus_gsi_cred_handle_t *handle,* const char * *proxy_filename*)

Read a proxy from a PEM file.

Parameters

handle	The credential handle to set based on the proxy credential read from the file
proxy_filename	The file containing the proxy credential

Returns

GLOBUS_SUCCESS or an error object identifier

References GLOBUS_GSI_CRED_ERROR_READING_PROXY_CRED, and globus_gsi_cred_read_proxy_bio().

3.5.2.3 globus_result_t globus_gsi_cred_read_proxy_bio (globus_gsi_cred_handle_t *handle,* BIO * *bio*)

Read a Proxy Credential from a BIO stream and set the credential handle to represent the read credential.

The values read from the stream, in order, will be the signed certificate, the private key, and the certificate chain

Parameters

handle	The credential handle to set. The credential should handle be initialized (i.e. not NULL).
bio	The stream to read the credential from

Returns

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

References GLOBUS_GSI_CRED_ERROR_READING_PROXY_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED.

3.5.2.4 globus_result_t globus_gsi_cred_read_key (globus_gsi_cred_handle_t *handle,* char * *key_filename,* int(*)() *pw_cb*)

Read a key from a PEM file.

Parameters

handle	the handle to set based on the key that is read
key_filename	the filename of the key to read
pw_cb	the callback for obtaining a password for decrypting the key.

Returns

GLOBUS_SUCCESS or an error object identifier

References GLOBUS_GSI_CRED_ERROR_KEY_IS_PASS_PROTECTED, and GLOBUS_GSI_CRED_ERROR_READING_CRED.

3.5.2.5 globus_result_t globus_gsi_cred_read_cert (globus_gsi_cred_handle_t *handle,* char * *cert_filename*)

Read a cert from a file.

Cert should be in PEM format. Will also read additional certificates as chain if present.

Parameters

handle	the handle to set based on the certificate that is read
cert_filename	the filename of the certificate to read

Returns

GLOBUS_SUCCESS or an error object identifier

References GLOBUS_GSI_CRED_ERROR_READING_CRED, and globus_gsi_cred_read_cert_bio().

3.5.2.6 globus_result_t globus_gsi_cred_read_cert_bio (globus_gsi_cred_handle_t *handle,* BIO * *bio*)

Read a cert from a BIO.

Cert should be in PEM format. Will also read additional certificates as chain if present.

Parameters

handle	the handle to set based on the certificate that is read
bio	the bio to read the certificate from

Returns

GLOBUS_SUCCESS or an error object identifier

References GLOBUS_GSI_CRED_ERROR_READING_CRED, GLOBUS_GSI_CRED_ERROR_READING_PROXY_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED.

3.5.2.7 globus_result_t globus_gsi_cred_read_cert_buffer (char * *pem_buf,* globus_gsi_cred_handle_t * *out_handle,* X509 ** *out_cert,* STACK_OF(X509)** *out_cert_chain,* char ** *out_subject*)

Read a cert from a buffer.

Cert should be in PEM format. Will also read additional certificates as chain if present. Any paramter besides pem_buf may be NULL.

Parameters

pem_buf	The buffer containing the PEM formatted cert and chain.
out_handle	The handle to initialize and set cert on.
out_cert	The X509 certificate. This should be freed with X509_free().
out_cert_chain	The X509 certificate chain. This should be freed with sk_X509_free().
out_subject	The identity name of the cert. This should be freed with OPENSSL_free().

Returns

GLOBUS_SUCCESS or an error object identifier

References GLOBUS_GSI_CRED_ERROR_READING_CRED, globus_gsi_cred_get_cert(), globus_gsi_cred_get_cert_chain(), globus_gsi_cred_get_identity_name(), globus_gsi_cred_handle_destroy(), globus_gsi_cred_handle_init(), and globus_gsi_cred_read_cert_bio().

3.5.2.8 globus_result_t globus_gsi_cred_read_pkcs12 (globus_gsi_cred_handle_t *handle,* char * *pkcs12_filename*)

Read a cert & key from a file.

The file should be in PKCS12 format.

Parameters

handle	the handle to populate with the read credential
pkcs12_filename	the filename containing the credential to read

Returns

GLOBUS_SUCCESS or an error object identifier

References GLOBUS_GSI_CRED_ERROR_READING_CRED, and GLOBUS_GSI_CRED_ERROR_WITH_CRED.

3.5.2.9 globus_result_t globus_gsi_cred_write (globus_gsi_cred_handle_t *handle,* BIO * *bio*)

Write out a credential to a BIO.

The credential parameters written, in order, are the signed certificate, the RSA private key, and the certificate chain (a set of X509 certificates). the credential is written out in PEM format.

Parameters

handle	The credential to write out
bio	The BIO stream to write out to

Returns

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

References GLOBUS_GSI_CRED_ERROR_WRITING_CRED.

3.5.2.10 globus_result_t globus_gsi_cred_write_proxy (globus_gsi_cred_handle_t *handle,* char * *proxy_filename*)

Write out a credential to a file.

The credential parameters written, in order, are the signed certificate, the RSA private key, and the certificate chain (a set of X509 certificates). the credential is written out in PEM format.

Parameters

handle	The credential to write out
proxy_filename	The file to write out to

Returns

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

References GLOBUS_GSI_CRED_ERROR_WRITING_PROXY_CRED, and globus_gsi_cred_write().

3.5.2.11 globus_result_t globus_gsi_cred_get_cert_type (globus_gsi_cred_handle_t *handle,* globus_gsi_cert_utils_cert_type_t * *type*)

Determine the type of the given X509 certificate For the list of possible values returned, see globus_gsi_cert_utils-_cert_type_t.

Parameters

handle	The credential handle containing the certificate
type	The returned X509 certificate type

Returns

GLOBUS_SUCCESS or an error captured in a globus_result_t

References GLOBUS_GSI_CRED_ERROR_WITH_CRED_CERT.

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