globus common Reference Manual

11.2

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1 globus common Module Index

1.1 globus common Modules

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2.1 globus common Directories

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library **25**

3 globus common Data Structure Index

3.1 globus common Data Structures

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4 globus common Module Documentation

4.1 Globus Callback

4.1.1 Detailed Description

4.2 Globus Callback API

4.3 Globus Callback Spaces

Defines

- #define GLOBUS_CALLBACK_GLOBAL_SPACE

Enumerations

- enum globus_callback_space_behavior_t {
  GLOBUS_CALLBACK_SPACE_BEHAVIOR_SINGLE,
  GLOBUS_CALLBACK_SPACE_BEHAVIOR_SERIALIZED,
  GLOBUS_CALLBACK_SPACE_BEHAVIOR_THREADED }

Functions

- globus_result_t globus_callback_space_init (globus_callback_space_t ∗space, globus_callback_space_-attr_t attr)
- globus_result_t globus_callback_space_reference (globus_callback_space_t space)
- globus_result_t globus_callback_space_destroy (globus_callback_space_t space)
- globus_result_t globus_callback_space_attr_init (globus_callback_space_attr_t ∗attr)
- globus_result_t globus_callback_space_attr_destroy (globus_callback_space_attr_t attr)
- globus_result_t globus_callback_space_attr_set_behavior (globus_callback_space_attr_t attr, globus_-callback_space_behavior_t behavior)
- globus_result_t globus_callback_space_attr_get_behavior (globus_callback_space_attr_t attr, globus_-callback_space_behavior_t ∗behavior)

- globus_result_t globus_callback_space_get (globus_callback_space_t ∗space)
- int globus_callback_space_get_depth (globus_callback_space_t space)
- globus_bool_t globus_callback_space_is_single (globus_callback_space_t space)

4.3.1 Detailed Description

4.3.2 Define Documentation

4.3.2.1 #define GLOBUS_CALLBACK_GLOBAL_SPACE

The 'global' space handle.

This is the default space handle implied if no spaces are explicitly created.

4.3.3 Enumeration Type Documentation

4.3.3.1 enum globus_callback_space_behavior_t

Callback space behaviors describe how a space behaves.

In a non-threaded build all spaces exhibit a behavior == _BEHAVIOR_SINGLE. Setting a specific behavior in this case is ignored.

In a threaded build, _BEHAVIOR_SINGLE retains all the rules and behaviors of a non-threaded build while _BEHAVIOR_THREADED makes the space act as the global space.

Setting a space's behavior to _BEHAVIOR_SINGLE guarantees that the poll protection will always be there and all callbacks are serialized and only kicked out when polled for. In a threaded build, it is still necessary to poll for callbacks in a _BEHAVIOR_SINGLE space. (globus_cond_wait() will take care of this for you also)

Setting a space's behavior to _BEHAVIOR_SERIALIZED guarantees that the poll protection will always be there and all callbacks are serialized. In a threaded build, it is NOT necessary to poll for callbacks in a _BEHAVIOR_-SERIALIZED space. Callbacks in this space will be delivered as soon as possible, but only one outstanding (and unblocked) callback will be allowed at any time.

Setting a space's behavior to _BEHAVIOR_THREADED allows the user to have the poll protection provided by spaces when built non-threaded, yet, be fully threaded when built threaded (where poll protection is not needed)

Enumerator:

GLOBUS_CALLBACK_SPACE_BEHAVIOR_SINGLE The default behavior.

Indicates that you always want poll protection and single threaded behavior (callbacks need to be explicitly polled for

GLOBUS_CALLBACK_SPACE_BEHAVIOR_SERIALIZED Indicates that you want poll protection and all callbacks to be serialized (but they do not need to be polled for in a threaded build).

GLOBUS_CALLBACK_SPACE_BEHAVIOR_THREADED Indicates that you only want poll protection.

4.3.4 Function Documentation

4.3.4.1 globus_result_t globus_callback_space_init (globus_callback_space_t ∗ *space*, globus_callback_-space_attr_t *attr*)

Initialize a user space.

This creates a user space.

Parameters:

space storage for the initialized space handle. This must be destroyed with globus_callback_space_destroy()

attr a space attr descibing desired behaviors. If GLOBUS_NULL, the default behavior of GLOBUS_-CALLBACK_SPACE_BEHAVIOR_SINGLE is assumed. This attr is copied into the space, so it is acceptable to destroy the attr as soon as it is no longer needed

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_ARGUMENT on NULL space
- GLOBUS_CALLBACK_ERROR_MEMORY_ALLOC
- GLOBUS_SUCCESS

See also:

globus_condattr_setspace()

4.3.4.2 globus_result_t globus_callback_space_reference (globus_callback_space_t *space*)

Take a reference to a space.

A library which has been 'given' a space to provide callbacks on would use this to take a reference on the user's space. This prevents mayhem should a user destroy a space before the library is done with it. This reference should be destroyed with globus_callback_space_destroy() (think dup())

Parameters:

space space to reference

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_SPACE
- GLOBUS_SUCCESS

4.3.4.3 globus_result_t globus_callback_space_destroy (globus_callback_space_t *space*)

Destroy a reference to a user space.

This will destroy a reference to a previously initialized space. Space will not actually be destroyed until all callbacks registered with this space have been run and unregistered (if the user has a handle to that callback) AND all references (from globus_callback_space_reference()) have been destroyed.

Parameters:

space space to destroy, previously initialized by globus_callback_space_init() or referenced with globus_-callback_space_reference()

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_SPACE
- GLOBUS_SUCCESS

See also:

globus_callback_space_init()
globus_callback_space_reference()

4.3.4.4 globus_result_t globus_callback_space_attr_init (globus_callback_space_attr_t ∗ *attr*)

Initialize a space attr.

Currently, the only attr to set is the behavior. The default behavior associated with this attr is GLOBUS_-CALLBACK_SPACE_BEHAVIOR_SINGLE

Parameters:

attr storage for the intialized attr. Must be destroyed with globus_callback_space_attr_destroy()

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_ARGUMENT on NULL attr
- GLOBUS_CALLBACK_ERROR_MEMORY_ALLOC
- GLOBUS_SUCCESS

4.3.4.5 globus_result_t globus_callback_space_attr_destroy (globus_callback_space_attr_t *attr*)

Destroy a space attr.

Parameters:

attr attr to destroy, previously initialized with globus_callback_space_attr_init()

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_ARGUMENT on NULL attr
- GLOBUS_SUCCESS

See also:

globus_callback_space_attr_init()

4.3.4.6 globus_result_t globus_callback_space_attr_set_behavior (globus_callback_space_attr_t *attr*, globus_callback_space_behavior_t *behavior*)

Set the behavior of a space.

Parameters:

attr attr to associate behavior with

behavior desired behavior

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_ARGUMENT
- GLOBUS_SUCCESS

See also:

globus_callback_space_behavior_t

4.3.4.7 globus_result_t globus_callback_space_attr_get_behavior (globus_callback_space_attr_t *attr*, globus_callback_space_behavior_t ∗ *behavior*)

Get the behavior associated with an attr.

Note: for a non-threaded build, this will always pass back a behavior == GLOBUS_CALLBACK_SPACE_-BEHAVIOR_SINGLE.

Parameters:

attr attr on which to query behavior

behavior storage for the behavior

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_ARGUMENT
- GLOBUS_SUCCESS

4.3.4.8 globus_result_t globus_callback_space_get (globus_callback_space_t ∗ *space*)

Retrieve the space of a currently running callback.

Parameters:

space storage for the handle to the space currently running

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_ARGUMENT on NULL space
- GLOBUS_CALLBACK_ERROR_NO_ACTIVE_CALLBACK
- GLOBUS_SUCCESS

4.3.4.9 int globus_callback_space_get_depth (globus_callback_space_t *space*)

Retrieve the current nesting level of a space.

Parameters:

space The space to query.

Returns:

- the current nesting level
- -1 on invalid space

4.3.4.10 globus_bool_t globus_callback_space_is_single (globus_callback_space_t *space*)

See if the specified space is a single threaded behavior space.

Parameters:

space the space to query

Returns:

- GLOBUS_TRUE if space's behavior is _BEHAVIOR_SINGLE
- GLOBUS_FALSE otherwise

4.4 Globus Callback Signal Handling

Defines

- #define GLOBUS_SIGNAL_INTERRUPT

Functions

- globus_result_t globus_callback_space_register_signal_handler (int signum, globus_bool_t persist, globus_callback_func_t callback_func, void ∗callback_user_arg, globus_callback_space_t space)
- globus_result_t globus_callback_unregister_signal_handler (int signum, globus_callback_func_t unregister_callback, void ∗unreg_arg)
- void globus_callback_add_wakeup_handler (void(∗wakeup)(void ∗), void ∗user_arg)

4.4.1 Detailed Description

4.4.2 Define Documentation

4.4.2.1 #define GLOBUS_SIGNAL_INTERRUPT

Use this to trap interrupts (SIGINT on unix).

In the future, this will also map to handle ctrl-C on win32.

4.4.3 Function Documentation

4.4.3.1 globus_result_t globus_callback_space_register_signal_handler (int *signum*, globus_bool_t *persist*, globus_callback_func_t *callback_func*, void ∗ *callback_user_arg*, globus_callback_space_t *space*)

Fire a callback when the specified signal is received.

Note that there is a tiny delay between the time this call returns and the signal is actually handled by this library. It is likely that, if the signal was received the instant the call returned, it will be lost (this is normally not an issue, since you would call this in your startup code anyway)

Parameters:

signum The signal to receive. The following signals are not allowed: SIGKILL, SIGSEGV, SIGABRT, SIGBUS, SIGFPE, SIGILL, SIGIOT, SIGPIPE, SIGEMT, SIGSYS, SIGTRAP, SIGSTOP, SIGCONT, and SIGWAITING

persist If GLOBUS_TRUE, keep this callback registered for multiple signals. If GLOBUS_FALSE, the signal handler will automatically be unregistered once the signal has been received.

callback_func the user func to call when a signal is received

callback_user_arg user arg that will be passed to callback

space the space to deliver callbacks to.

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_SPACE
- GLOBUS_CALLBACK_ERROR_INVALID_ARGUMENT
- GLOBUS_SUCCESS otherwise

4.4.3.2 globus_result_t globus_callback_unregister_signal_handler (int *signum*, globus_callback_func_t *unregister_callback*, void ∗ *unreg_arg*)

Unregister a signal handling callback.

Parameters:

signum The signal to unregister.

unregister_callback the function to call when the callback has been canceled and there are no running instances of it (may be NULL). This will be delivered to the same space used in the register call.

unreg_arg user arg that will be passed to callback

Returns:

- GLOBUS_CALLBACK_ERROR_INVALID_ARGUMENT if this signal was registered with persist == false, then there is a race between a signal actually being caught and therefor automatically unregistered and the attempt to manually unregister it. If that race occurs, you will receive this error just as you would for any signal not registered.
- GLOBUS_SUCCESS otherwise

4.4.3.3 void globus_callback_add_wakeup_handler (void(∗)(void ∗) *wakeup*, void ∗ *user_arg*)

Register a wakeup handler with callback library.

This is really only needed in non-threaded builds, but for cross builds should be used everywhere that a callback may sleep for an extended period of time.

An example use is for an io poller that sleeps indefinitely on select(). If the callback library receives a signal that it needs to deliver asap, it will call the wakeup handler(s), These wakeup handlers must run as though they were called from a signal handler (don't use any thread utilities). The io poll example will likely write a single byte to a pipe that select() is monitoring.

This handler will not be unregistered until the callback library is deactivated (via common).

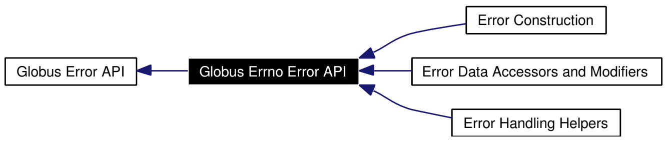
Parameters:

wakeup function to call when callback library needs you to return asap from any blocked callbacks.

user_arg user data that will be passed along in the wakeup handler

4.5 Globus Errno Error API

Collaboration diagram for Globus Errno Error API:



These globus_error functions are motivated by the desire to provide a easier way of generating new error types, while at the same time preserving all features (e.g.

Modules

- Error Construction
- Error Data Accessors and Modifiers
- Error Handling Helpers

4.5.1 Detailed Description

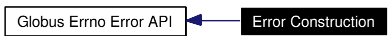
These globus_error functions are motivated by the desire to provide a easier way of generating new error types, while at the same time preserving all features (e.g.

memory management, chaining) of the current error handling framework. The functions in this API are auxiliary to the function in the Globus Generic Error API in the sense that they provide a wraper for representing system errors in terms of a globus_error_t.

Any program that uses Globus Errno Error functions must include "globus_common.h".

4.6 Error Construction

Collaboration diagram for Error Construction:



Create and initialize a Globus Errno Error object.

Construct Error

- globus_object_t ∗ globus_error_construct_errno_error (globus_module_descriptor_t ∗base_source, globus_object_t ∗base_cause, const int system_errno)

Initialize Error

- globus_object_t ∗ globus_error_initialize_errno_error (globus_object_t ∗error, globus_module_-descriptor_t ∗base_source, globus_object_t ∗base_cause, const int system_errno)

Defines

- #define GLOBUS_ERROR_TYPE_ERRNO

4.6.1 Detailed Description

Create and initialize a Globus Errno Error object.

This section defines operations to create and initialize Globus Errno Error objects.

4.6.2 Define Documentation

4.6.2.1 #define GLOBUS_ERROR_TYPE_ERRNO

Error type definition.

4.6.3 Function Documentation

4.6.3.1 globus_object_t∗ globus_error_construct_errno_error (globus_module_descriptor_t ∗ *base_-source*, globus_object_t ∗ *base_cause*, const int *system_errno*)

Allocate and initialize an error of type GLOBUS_ERROR_TYPE_ERRNO.

Parameters:

base_source Pointer to the originating module.

base_cause The error object causing the error. If this is the original error, this paramater may be NULL.

system_errno The system errno.

Returns:

The resulting error object. It is the user's responsibility to eventually free this object using globus_object_-free(). A globus_result_t may be obtained by calling globus_error_put() on this object.

4.6.3.2 globus_object_t∗ globus_error_initialize_errno_error (globus_object_t ∗ *error*, globus_module_-descriptor_t ∗ *base_source*, globus_object_t ∗ *base_cause*, const int *system_errno*)

Initialize a previously allocated error of type GLOBUS_ERROR_TYPE_ERRNO.

Parameters:

error The previously allocated error object.

base_source Pointer to the originating module.

base_cause The error object causing the error. If this is the original error this paramater may be NULL.

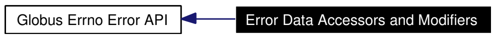
system_errno The system errno.

Returns:

The resulting error object. You may have to call globus_error_put() on this object before passing it on.

4.7 Error Data Accessors and Modifiers

Collaboration diagram for Error Data Accessors and Modifiers:



Get and set data in a Globus Errno Error object.

Get Errno

- int globus_error_errno_get_errno (globus_object_t ∗error)

Set Errno

- void globus_error_errno_set_errno (globus_object_t ∗error, const int system_errno)

4.7.1 Detailed Description

Get and set data in a Globus Errno Error object.

This section defines operations for accessing and modifying data in a Globus Errno Error object.

4.7.2 Function Documentation

4.7.2.1 int globus_error_errno_get_errno (globus_object_t ∗ *error*)

Retrieve the system errno from a errno error object.

Parameters:

error The error from which to retrieve the errno

Returns:

The errno stored in the object

4.7.2.2 void globus_error_errno_set_errno (globus_object_t ∗ *error*, const int *system_errno*)

Set the errno in a errno error object.

Parameters:

error The error object for which to set the errno

system_errno The system errno

Returns:

void

4.8 Error Handling Helpers

Collaboration diagram for Error Handling Helpers:

Helper functions for dealing with Globus Errno Error objects.

Error Match

- globus_bool_t globus_error_errno_match (globus_object_t ∗error, globus_module_descriptor_t ∗module, int system_errno)

Wrap Errno Error

- globus_object_t ∗ globus_error_wrap_errno_error (globus_module_descriptor_t ∗base_source, int system_errno, int type, const char ∗source_file, const char ∗source_func, int source_line, const char ∗short_desc_format,...)

4.8.1 Detailed Description

Helper functions for dealing with Globus Errno Error objects.

This section defines utility functions for dealing with Globus Errno Error objects.

4.8.2 Function Documentation

4.8.2.1 globus_bool_t globus_error_errno_match (globus_object_t ∗ *error*, globus_module_descriptor_t ∗ *module*, int *system_errno*)

Check whether the error originated from a specific module and matches a specific errno.

This function checks whether the error or any of it's causative errors originated from a specific module and contains a specific errno. If the module descriptor is left unspecified this function will check for any error of the specified errno and vice versa.

Parameters:

error The error object for which to perform the check

module The module descriptor to check for

system_errno The errno to check for

Returns:

GLOBUS_TRUE - the error matched the module and errno GLOBUS_FALSE - the error failed to match the module and errno

4.8.2.2 globus_object_t∗ globus_error_wrap_errno_error (globus_module_descriptor_t ∗ *base_source*, int *system_errno*, int *type*, const char ∗ *source_file*, const char ∗ *source_func*, int *source_line*, const char ∗ *short_desc_format*, ...)

Allocate and initialize an error of type GLOBUS_ERROR_TYPE_GLOBUS which contains a causal error of type GLOBUS_ERROR_TYPE_ERRNO.

Parameters:

base_source Pointer to the originating module.

system_errno The errno to use when generating the causal error.

type The error type. We may reserve part of this namespace for common errors. Errors not in this space are assumed to be local to the originating module.

source_file Name of file. Use __FILE__

source_func Name of function. Use _globus_func_name and declare your func with GlobusFuncName(<name>)

source_line Line number. Use __LINE__

short_desc_format Short format string giving a succinct description of the error. To be passed on to the user.

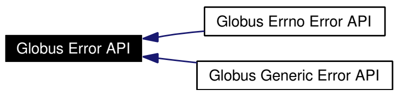
... Arguments for the format string.

Returns:

The resulting error object. It is the user's responsibility to eventually free this object using globus_object_free(). A globus_result_t may be obtained by calling globus_error_put() on this object.

4.9 Globus Error API

Collaboration diagram for Globus Error API:



Intended use:.

Modules

- Globus Errno Error API
- Globus Generic Error API

4.9.1 Detailed Description

Intended use:.

If a function needs to return an error it should do the following:

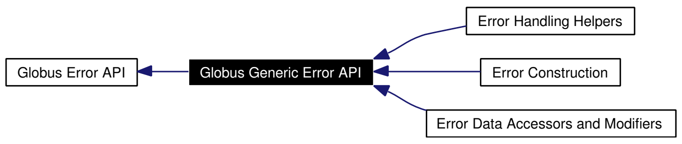
- External errors, such as error returns from system calls and GSSAPI errors, should be wrapped using the appropriate error type.
- The wrapped external error should then be passed as the cause of a globus error.
- External error types are expected to provide a utility function to combine the above two steps.
- The globus error should then be returned from the function.

Notes on how to generate globus errors:

- Module specific error types should be greater or equal to 1024 (to leave some space for global error types).
- You may wish to generate a mapping from error types to format strings for use in short descriptions.
- You may also wish to generate a common prefix for all of the above fromat strings. The suggested prefix is "Function: s Line: s ".

4.10 Globus Generic Error API

Collaboration diagram for Globus Generic Error API:



These globus_error functions are motivated by the desire to provide a easier way of generating new error types, while at the same time preserving all features (e.g.

Modules

- Error Construction
- Error Data Accessors and Modifiers
- Error Handling Helpers

4.10.1 Detailed Description

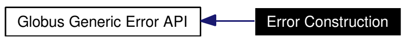
These globus_error functions are motivated by the desire to provide a easier way of generating new error types, while at the same time preserving all features (e.g.

memory management, chaining) of the current error handling framework. It does this by defining a generic error type for globus which in turn contains a integer in it's instance data which is used for carrying the actual error type information.

Any program that uses Globus Generic Error functions must include "globus_common.h".

4.11 Error Construction

Collaboration diagram for Error Construction:



Create and initialize a Globus Generic Error object.

Construct Error

- globus_object_t ∗ globus_error_construct_error (globus_module_descriptor_t ∗base_source, globus_-object_t ∗base_cause, int type, const char ∗source_file, const char ∗source_func, int source_line, const char ∗short_desc_format,...)
- globus_object_t ∗ globus_error_v_construct_error (globus_module_descriptor_t ∗base_source, globus_-object_t ∗base_cause, const int type, const char ∗source_file, const char ∗source_func, int source_line, const char ∗short_desc_format, va_list ap)

Initialize Error

- globus_object_t ∗ globus_error_initialize_error (globus_object_t ∗error, globus_module_descriptor_-t ∗base_source, globus_object_t ∗base_cause, int type, const char ∗source_file, const char ∗source_func, int source_line, const char ∗short_desc_format, va_list ap)

Defines

- #define GLOBUS_ERROR_TYPE_GLOBUS

4.11.1 Detailed Description

Create and initialize a Globus Generic Error object.

This section defines operations to create and initialize Globus Generic Error objects.

4.11.2 Define Documentation

4.11.2.1 #define GLOBUS_ERROR_TYPE_GLOBUS

Error type definition.

4.11.3 Function Documentation

4.11.3.1 globus_object_t∗ globus_error_construct_error (globus_module_descriptor_t ∗ *base_source*, globus_object_t ∗ *base_cause*, int *type*, const char ∗ *source_file*, const char ∗ *source_func*, int *source_line*, const char ∗ *short_desc_format*, ...)

Allocate and initialize an error of type GLOBUS_ERROR_TYPE_GLOBUS.

Parameters:

base_source Pointer to the originating module.

base_cause The error object causing the error. If this is the original error this paramater may be NULL.

type The error type. We may reserve part of this namespace for common errors. Errors not in this space are assumed to be local to the originating module.

source_file Name of file. Use __FILE__

source_func Name of function. Use _globus_func_name and declare your func with GlobusFuncName(<name>)

source_line Line number. Use __LINE__

short_desc_format Short format string giving a succinct description of the error. To be passed on to the user.

... Arguments for the format string.

Returns:

The resulting error object. It is the user's responsibility to eventually free this object using globus_object_free(). A globus_result_t may be obtained by calling globus_error_put() on this object.

4.11.3.2 globus_object_t∗ globus_error_v_construct_error (globus_module_descriptor_t ∗ *base_source*, globus_object_t ∗ *base_cause*, const int *type*, const char ∗ *source_file*, const char ∗ *source_func*, int *source_line*, const char ∗ *short_desc_format*, va_list *ap*)

Allocate and initialize an error of type GLOBUS_ERROR_TYPE_GLOBUS.

Parameters:

base_source Pointer to the originating module.

base_cause The error object causing the error. If this is the original error this paramater may be NULL.

type The error type. We may reserve part of this namespace for common errors. Errors not in this space are assumed to be local to the originating module.

source_file Name of file. Use __FILE__

source_func Name of function. Use _globus_func_name and declare your func with GlobusFuncName(<name>)

source_line Line number. Use __LINE__

short_desc_format Short format string giving a succinct description of the error. To be passed on to the user.

ap Arguments for the format string.

Returns:

The resulting error object. It is the user's responsibility to eventually free this object using globus_object_free(). A globus_result_t may be obtained by calling globus_error_put() on this object.

4.11.3.3 globus_object_t∗ globus_error_initialize_error (globus_object_t ∗ *error*, globus_module_descriptor_t ∗ *base_source*, globus_object_t ∗ *base_cause*, int *type*, const char ∗ *source_file*, const char ∗ *source_func*, int *source_line*, const char ∗ *short_desc_format*, va_list *ap*)

Initialize a previously allocated error of type GLOBUS_ERROR_TYPE_GLOBUS.

Parameters:

error The previously allocated error object.

base_source Pointer to the originating module.

base_cause The error object causing the error. If this is the original error this paramater may be NULL.

type The error type. We may reserve part of this namespace for common errors. Errors not in this space are assumed to be local to the originating module.

source_file Name of file. Use __FILE__

source_func Name of function. Use _globus_func_name and declare your func with GlobusFuncName(<name>)

source_line Line number. Use __LINE__

short_desc_format Short format string giving a succinct description of the error. To be passed on to the user.

ap Arguments for the format string.

Returns:

The resulting error object. You may have to call globus_error_put() on this object before passing it on.

4.12 Error Data Accessors and Modifiers

Collaboration diagram for Error Data Accessors and Modifiers:

Globus Generic Error API
Error Data Accessors and Modifiers

Get and set data in a Globus Generic Error object.

Get Source

- globus_module_descriptor_t ∗ globus_error_get_source (globus_object_t ∗error)

Set Source

- void globus_error_set_source (globus_object_t ∗error, globus_module_descriptor_t ∗source_module)

Get Cause

- globus_object_t ∗ globus_error_get_cause (globus_object_t ∗error)

Set Cause

- void globus_error_set_cause (globus_object_t ∗error, globus_object_t ∗causal_error)

Get Type

- int globus_error_get_type (globus_object_t ∗error)

Set Type

- void globus_error_set_type (globus_object_t ∗error, const int type)

Get Short Description

- char ∗ globus_error_get_short_desc (globus_object_t ∗error)

Set Short Description

- void globus_error_set_short_desc (globus_object_t ∗error, const char ∗short_desc_format,...)

Get Long Description

- char ∗ globus_error_get_long_desc (globus_object_t ∗error)

Set Long Description

- void globus_error_set_long_desc (globus_object_t ∗error, const char ∗long_desc_format,...)

4.12.1 Detailed Description

Get and set data in a Globus Generic Error object.

This section defines operations for accessing and modifying data in a Globus Generic Error object.

4.12.2 Function Documentation

4.12.2.1 globus_module_descriptor_t∗ globus_error_get_source (globus_object_t ∗ *error*)

Retrieve the originating module descriptor from a error object.

Parameters:
  error The error from which to retrieve the module descriptor

Returns:
  The originating module descriptor.

4.12.2.2 void globus_error_set_source (globus_object_t $*$ *error*, globus_module_descriptor_t $*$ *source_-module*)

Set the originating module descriptor in a error object.

Parameters:

error The error object for which to set the causative error

source_module The originating module descriptor

Returns:

void

4.12.2.3 globus_object_t$*$ globus_error_get_cause (globus_object_t $*$ *error*)

Retrieve the underlying error from a error object.

Parameters:

error The error from which to retrieve the causative error.

Returns:

The underlying error object if it exists, NULL if it doesn't.

4.12.2.4 void globus_error_set_cause (globus_object_t $*$ *error*, globus_object_t $*$ *causal_error*)

Set the causative error in a error object.

Parameters:

error The error object for which to set the causative error.

causal_error The causative error.

Returns:

void

4.12.2.5 int globus_error_get_type (globus_object_t $*$ *error*)

Retrieve the error type from a generic globus error object.

Parameters:

error The error from which to retrieve the error type

Returns:

The error type of the object

4.12.2.6 void globus_error_set_type (globus_object_t $*$ *error*, const int *type*)

Set the error type in a generic globus error object.

Parameters:

error The error object for which to set the error type

type The error type

Returns:

void

4.12.2.7 char∗ globus_error_get_short_desc (globus_object_t ∗ *error*)

Retrieve the short error description from a generic globus error object.

Parameters:

error The error from which to retrieve the description

Returns:

The short error description of the object

4.12.2.8 void globus_error_set_short_desc (globus_object_t ∗ *error*, const char ∗ *short_desc_format*, *...*)

Set the short error description in a generic globus error object.

Parameters:

error The error object for which to set the description

short_desc_format Short format string giving a succinct description of the error. To be passed on to the user.

... Arguments for the format string.

Returns:

void

4.12.2.9 char∗ globus_error_get_long_desc (globus_object_t ∗ *error*)

Retrieve the long error description from a generic globus error object.

Parameters:

error The error from which to retrieve the description

Returns:

The long error description of the object

4.12.2.10 void globus_error_set_long_desc (globus_object_t ∗ *error*, const char ∗ *long_desc_format*, *...*)

Set the long error description in a generic globus error object.

Parameters:

error The error object for which to set the description

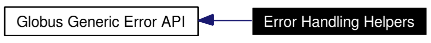
long_desc_format Longer format string giving a more detailed explanation of the error.

Returns:

void

4.13 Error Handling Helpers

Collaboration diagram for Error Handling Helpers:



Helper functions for dealing with Globus Generic Error objects.

Error Match

- globus_bool_t globus_error_match (globus_object_t ∗error, globus_module_descriptor_t ∗module, int type)

Print Error Chain

- char ∗ globus_error_print_chain (globus_object_t ∗error)

Print User Friendly Error Message

- char ∗ globus_error_print_friendly (globus_object_t ∗error)

4.13.1 Detailed Description

Helper functions for dealing with Globus Generic Error objects.

This section defines utility functions for dealing with Globus Generic Error objects.

4.13.2 Function Documentation

4.13.2.1 globus_bool_t globus_error_match (globus_object_t ∗ *error*, globus_module_descriptor_t ∗ *module*, int *type*)

Check whether the error originated from a specific module and is of a specific type.

This function checks whether the error or any of it's causative errors originated from a specific module and is of a specific type. If the module descriptor is left unspecified this function will check for any error of the specified type and vice versa.

Parameters:

error The error object for which to perform the check

module The module descriptor to check for

type The type to check for

Returns:

GLOBUS_TRUE - the error matched the module and type GLOBUS_FALSE - the error failed to match the module and type

4.13.2.2 char∗ globus_error_print_chain (globus_object_t ∗ *error*)

Return a string containing all printable errors found in a error object and it's causative error chain.

If the GLOBUS_ERROR_VERBOSE env is set, file, line and function info will also be printed (where available). Otherwise, only the module name will be printed.

Parameters:

error The error to print

Returns:

A string containing all printable errors. This string needs to be freed by the user of this function.

4.13.2.3 char∗ globus_error_print_friendly (globus_object_t ∗ *error*)

Return a string containing error messages from the top 1 and bottom 3 objects, and, if found, show a friendly error message.

The error chain will be searched from top to bottom until a friendly handler is found and a friendly message is created.

If the GLOBUS_ERROR_VERBOSE env is set, then the result from globus_error_print_chain() will be used.

Parameters:

error The error to print

Returns:

A string containing a friendly error message. This string needs to be freed by the user of this function.

4.14 Globus Thread API

Functions

- int globus_condattr_setspace (globus_condattr_t ∗attr, int space)
- int globus_condattr_getspace (globus_condattr_t ∗attr, int ∗space)

4.14.1 Function Documentation

4.14.1.1 int globus_condattr_setspace (globus_condattr_t ∗ *attr*, int *space*)

Use this function to associate a space with a cond attr.

This will allow globus_cond_wait to poll the appropriate space (if applicable)

A condattr's default space is GLOBUS_CALLBACK_GLOBAL_SPACE

Parameters:

attr attr to associate space with.

space a previously initialized space

Returns:

- 0 on success

See also:

Globus Callback Spaces

4.14.1.2 int globus_condattr_getspace (globus_condattr_t ∗ *attr*, int ∗ *space*)

Use this function to retrieve the space associated with a condattr.

Parameters:

attr attr to associate space with.

space storarage for the space to be passed back

Returns:

- 0 on success

See also:

Globus Callback Spaces

4.15 URL String Parser

The Globus URL functions provide a simple mechanism for parsing a URL string into a data structure, and for determining the scheme of an URL string.

Data Structures

- struct globus_url_t

  Parsed URLs.

Enumerations

- enum globus_url_scheme_t {
  GLOBUS_URL_SCHEME_FTP = 0,
  GLOBUS_URL_SCHEME_GSIFTP,
  GLOBUS_URL_SCHEME_HTTP,
  GLOBUS_URL_SCHEME_HTTPS,
  GLOBUS_URL_SCHEME_LDAP,
  GLOBUS_URL_SCHEME_FILE,
  GLOBUS_URL_SCHEME_X_NEXUS,
  GLOBUS_URL_SCHEME_X_GASS_CACHE,
  GLOBUS_URL_SCHEME_UNKNOWN ,
  GLOBUS_URL_NUM_SCHEMES }

Functions

- int globus_url_parse (const char ∗url_string, globus_url_t ∗url)
- int globus_url_parse_rfc1738 (const char ∗url_string, globus_url_t ∗url)
- int globus_url_parse_loose (const char ∗url_string, globus_url_t ∗url)
- int globus_url_destroy (globus_url_t ∗url)
- int globus_url_get_scheme (const char ∗url_string, globus_url_scheme_t ∗scheme_type)
- int globus_url_copy (globus_url_t ∗dst, const globus_url_t ∗src)

4.15.1 Detailed Description

The Globus URL functions provide a simple mechanism for parsing a URL string into a data structure, and for determining the scheme of an URL string.

These functions are part of the Globus common library. The GLOBUS_COMMON module must be activated in order to use them.

4.15.2 Enumeration Type Documentation

4.15.2.1 enum globus_url_scheme_t

URL Schemes.

The Globus URL library supports a set of URL schemes (protocols). This enumeration can be used to quickly dispatch a parsed URL based on a constant value.

See also:
globus_url_t::scheme_type

Enumerator:

GLOBUS_URL_SCHEME_FTP File Transfer Protocol.

GLOBUS_URL_SCHEME_GSIFTP GSI-enhanced File Transfer Protocol.

GLOBUS_URL_SCHEME_HTTP HyperText Transfer Protocol.

GLOBUS_URL_SCHEME_HTTPS Secure HyperText Transfer Protocol.

GLOBUS_URL_SCHEME_LDAP Lightweight Directory Access Protocol.

GLOBUS_URL_SCHEME_FILE File Location.

GLOBUS_URL_SCHEME_X_NEXUS Nexus endpoint.

GLOBUS_URL_SCHEME_X_GASS_CACHE GASS Cache Entry.

GLOBUS_URL_SCHEME_UNKNOWN Any other URL of the form <scheme>://<something>.

GLOBUS_URL_NUM_SCHEMES Total number of URL schemes supported.

4.15.3 Function Documentation

4.15.3.1 int globus_url_parse (const char ∗ *url_string*, globus_url_t ∗ *url*)

Parse a string containing a URL into a globus_url_t.

Parameters:

url_string String to parse

url Pointer to globus_url_t to be filled with the fields of the url

Return values:

GLOBUS_SUCCESS The string was successfully parsed.

GLOBUS_URL_ERROR_NULL_STRING The url_string was GLOBUS_NULL.

GLOBUS_URL_ERROR_NULL_URL The URL pointer was GLOBUS_NULL.

GLOBUS_URL_ERROR_BAD_SCHEME The URL scheme (protocol) contained invalid characters.

GLOBUS_URL_ERROR_BAD_USER The user part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_PASSWORD The password part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_HOST The host part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_PORT The port part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_PATH The path part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_DN -9 The DN part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_ATTRIBUTES -10 The attributes part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_SCOPE -11 The scope part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_FILTER -12 The filter part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_OUT_OF_MEMORY -13 The library was unable to allocate memory to create the the globus_url_t contents.

GLOBUS_URL_ERROR_INTERNAL_ERROR -14 Some unexpected error occurred parsing the URL.

4.15.3.2 int globus_url_parse_rfc1738 (const char ∗ *url_string*, globus_url_t ∗ *url*)

Parse a string containing a URL into a globus_url_t.

Parameters:

url_string String to parse

url Pointer to globus_url_t to be filled with the fields of the url

Return values:

GLOBUS_SUCCESS The string was successfully parsed.

GLOBUS_URL_ERROR_NULL_STRING The url_string was GLOBUS_NULL.

GLOBUS_URL_ERROR_NULL_URL The URL pointer was GLOBUS_NULL.

GLOBUS_URL_ERROR_BAD_SCHEME The URL scheme (protocol) contained invalid characters.

GLOBUS_URL_ERROR_BAD_USER The user part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_PASSWORD The password part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_HOST The host part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_PORT The port part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_PATH The path part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_DN -9 The DN part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_ATTRIBUTES -10 The attributes part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_SCOPE -11 The scope part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_FILTER -12 The filter part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_OUT_OF_MEMORY -13 The library was unable to allocate memory to create the the globus_url_t contents.

GLOBUS_URL_ERROR_INTERNAL_ERROR -14 Some unexpected error occurred parsing the URL.

4.15.3.3 int globus_url_parse_loose (const char ∗ *url_string*, globus_url_t ∗ *url*)

Parse a string containing a URL into a globus_url_t Looser restrictions on characters allowed in the path part of the URL.

Parameters:

url_string String to parse

url Pointer to globus_url_t to be filled with the fields of the url

Return values:

GLOBUS_SUCCESS The string was successfully parsed.

GLOBUS_URL_ERROR_NULL_STRING The url_string was GLOBUS_NULL.

GLOBUS_URL_ERROR_NULL_URL The URL pointer was GLOBUS_NULL.

GLOBUS_URL_ERROR_BAD_SCHEME The URL scheme (protocol) contained invalid characters.

GLOBUS_URL_ERROR_BAD_USER The user part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_PASSWORD The password part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_HOST The host part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_PORT The port part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_PATH The path part of the URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_DN -9 The DN part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_ATTRIBUTES -10 The attributes part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_SCOPE -11 The scope part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_BAD_FILTER -12 The filter part of an LDAP URL contained invalid characters.

GLOBUS_URL_ERROR_OUT_OF_MEMORY -13 The library was unable to allocate memory to create the the globus_url_t contents.

GLOBUS_URL_ERROR_INTERNAL_ERROR -14 Some unexpected error occurred parsing the URL.

4.15.3.4 int globus_url_destroy (globus_url_t ∗ *url*)

Destroy a globus_url_t structure.

This function frees all memory associated with a globus_url_t structure.

Parameters:

url The url structure to destroy

Return values:

GLOBUS_SUCCESS The URL was successfully destroyed.

4.15.3.5 int globus_url_get_scheme (const char ∗ *url_string*, globus_url_scheme_t ∗ *scheme_type*)

Get the scheme of an URL.

This function determines the scheme type of the url string, and populates the variable pointed to by second parameter with that value. This performs a less expensive parsing than globus_url_parse() and is suitable for applications which need only to choose a handler based on the URL scheme.

Parameters:

url_string The string containing the URL.

scheme_type A pointer to a globus_url_scheme_t which will be set to the scheme.

Return values:

GLOBUS_SUCCESS The URL scheme was recogized, and scheme_type has been updated.

GLOBUS_URL_ERROR_BAD_SCHEME The URL scheme was not recogized.

4.15.3.6 int globus_url_copy (globus_url_t ∗ *dst*, const globus_url_t ∗ *src*)

Create a copy of an URL structure.

This function copies the contents of a url structure into another.

Parameters:

dst The URL structure to be populated with a copy of the contents of src.

src The original URL.

Return values:

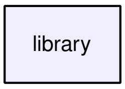
GLOBUS_SUCCESS The URL was successfully copied.

GLOBUS_URL_ERROR_NULL_URL One of the URLs was GLOBUS_NULL.

GLOBUS_URL_ERROR_OUT_OF_MEMORY; The library was unable to allocate memory to create the the globus_url_t contents.

5 globus common Directory Documentation

5.1 /builddir/build/BUILD/globus_common-11.2/library/ Directory Reference



Files

- file **closedir.c**
- file **freeaddrinfo.c**
- file **gai_strerror.c**
- file **getaddrinfo.c**
- file **getnameinfo.c**
- file **globus_args.c**
- file **globus_args.h**
- file **globus_callback.h**
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- file **globus_callback_threads.c**
- file **globus_common.c**
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- file **globus_i_thread.h**
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- file **globus_libtool_windows.h**
- file **globus_list.c**
- file **globus_list.h**
- file **globus_logging.c**
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- file **globus_memory.c**
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- file **globus_netos_libc.h**
- file **globus_object.c**
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- file **globus_object_hierarchy.c**
- file **globus_object_hierarchy.h**
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- file **globus_thread_windows.c**
- file **globus_thread_windows.h**
- file **globus_tilde_expand.c**
- file **globus_tilde_expand.h**
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- file **globus_url.c**
- file **globus_url.h**
- file **globus_uuid.c**
- file **globus_uuid.h**
- file **inet_addr.c**
- file **inet_pton.c**
- file **opendir.c**
- file **readdir.c**
- file **rewinddir.c**

6 globus common Data Structure Documentation

6.1 globus_url_t Struct Reference

Parsed URLs.

Data Fields

- char ∗ scheme
- globus_url_scheme_t scheme_type
- char ∗ user
- char ∗ password
- char ∗ host
- unsigned short port
- char ∗ url_path
- char ∗ dn
- char ∗ attributes
- char ∗ scope
- char ∗ filter
- char ∗ url_specific_part

6.1.1 Detailed Description

Parsed URLs.

This structure contains the fields which were parsed from an string representation of an URL. There are no methods to access fields of this structure.

6.1.2 Field Documentation

6.1.2.1 char∗ globus_url_t::scheme

A string containing the URL's scheme (http, ftp, etc).

6.1.2.2 globus_url_scheme_t globus_url_t::scheme_type

An enumerated scheme type.

This is derived from the scheme string

6.1.2.3 char∗ globus_url_t::user

The username portion of the URL.

[ftp, gsiftp]

6.1.2.4 char∗ globus_url_t::password

The user's password from the URL.

[ftp, gsiftp]

6.1.2.5 char∗ globus_url_t::host

The host name or IP address of the URL.

[ftp, gsiftp, http, https, ldap, x-nexus

6.1.2.6 unsigned short globus_url_t::port

The TCP port number of the service providing the URL [ftp, gsiftp, http, https, ldap, x-nexus].

6.1.2.7 char∗ globus_url_t::url_path

The path name of the resource on the service providing the URL.

[ftp, gsiftp, http, https]

6.1.2.8 char∗ globus_url_t::dn

The distinguished name for the base of an LDAP search.

[ldap]

6.1.2.9 char∗ globus_url_t::attributes

The list of attributes which should be returned from an LDAP search.

[ldap]

6.1.2.10 char∗ globus_url_t::scope

The scope of an LDAP search.

[ldap]

6.1.2.11 char∗ globus_url_t::filter

The filter to be applied to an LDAP search [ldap].

6.1.2.12 char* globus_url_t::url_specific_part

An unparsed string containing the remaining text after the optional host and port of an unknown URL, or the contents of a x-gass-cache URL [x-gass-cache, unknown].

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