globus ftp client

7.4

Generated by Doxygen 1.7.5

Tue Aug 28 2012 20:52:30

Contents

1 Globus FTP Client API

The Globus FTP Client library provides a convenient way of accessing files on remote FTP servers. In addition to supporting the basic FTP protocol, the FTP Client library supports several security and performance extensions to make FTP more suitable for Grid applications. These extensions are described in the Grid FTP Protocol document.

In addition to protocol support for grid applications, the FTP Client library provides a **plugin architecture** (p. 73) for installing application or grid-specific fault recovery and performance tuning algorithms within the library. Application writers may then target their code toward the FTP Client library, and by simply enabling the appropriate plugins, easily tune their application to run it on a different grid.

All applications which use the Globus FTP Client API must include the header file "globus_ftp_client.h" and activate the **GLOBUS_FTP_CLIENT_MODULE** (p. 2).

To use the Globus FTP Client API, one must create an **FTP Client handle** (p. 8). This structure contains context information about FTP operations which are being executed, a cache of FTP control and data connections, and information about plugins which are being used. The specifics of the connection caching and plugins are found in the "@ref globus_ftp_client_handleattr" section of this manual.

Once the handle is created, one may begin transferring files or doing other FTP operations by calling the functions in the "@ref globus_ftp_client_operations" section of this manual. In addition to whole-file transfers, the API supports partial file transfers, restarting transfers from a known point, and various FTP directory management commands. All FTP operations may have a set of attributes, defined in the "@ref globus_ftp_client_operationattr" section, associated with them to tune various FTP parameters. The data structures and functions needed to restart a file transfer are described in the "@ref globus_ftp_client_restart_marker" section of this manual. For operations which require the user to send to or receive data from an FTP server the must call the functions in the "@ref globus_ftp_client_data" section of the manual.

2 Bug List

Global globus_ftp_client_operationattr_set_control_protection (p. 53) (globus_ftp_client_operationattr_t *attr, globus_ftp_control_protection_t protection)

The clear and safe protection levels are treated identically, with the client integrity checking all commands. The confidential and private protection levels are treated identically, with the client encrypting all commands.

Global globus_ftp_client_operationattr_set_data_protection (p. 53) (globus_ftp_client_operationattr_t *attr, globus_ftp_control_protection_t protection)

Only safe and private protection levels are supported by gsiftp.

3 Module Index

3.1 Modules

Here is a list of all modules:

4 Data Structure Index

4.1 Data Structures

Here are the data structures with brief descriptions:

5 Module Documentation

5.1 Activation

Defines

- #define **GLOBUS_FTP_CLIENT_MODULE**

5.1.1 Detailed Description

The Globus FTP Client library uses the standard module activation and deactivation API to initialize its state. Before any FTP functions are called, the module must be activated

```
globus_module_activate(GLOBUS_FTP_CLIENT_MODULE);
```

This function returns GLOBUS_SUCCESS if the FTP library was successfully initialized. This may be called multiple times.

To deactivate the FTP library, the following must be called

```
globus_module_deactivate(GLOBUS_FTP_CLIENT_MODULE);
```

5.1.2 Define Documentation

5.1.2.1 #define GLOBUS_FTP_CLIENT_MODULE

Module descriptor.

5.2 Restart Markers

Data Structures

- union **globus_ftp_client_restart_marker_t**

  Restart marker.

Functions

- globus_result_t **globus_ftp_client_restart_marker_init** (**globus_ftp_client_restart_marker_t** ∗marker)
- globus_result_t **globus_ftp_client_restart_marker_copy** (**globus_ftp_client_restart_marker_t** ∗new_marker, **globus_ftp_client_restart_marker_t** ∗marker)
- globus_result_t **globus_ftp_client_restart_marker_destroy** (**globus_ftp_client_restart_marker_t** ∗marker)
- globus_result_t **globus_ftp_client_restart_marker_insert_range** (**globus_ftp_client_restart_marker_t** ∗marker, globus_off_t offset, globus_off_t end_offset)
- globus_result_t **globus_ftp_client_restart_marker_set_ascii_offset** (**globus_ftp_client_restart_marker_t** ∗marker, globus_off_t offset, globus_off_t ascii_offset)
- globus_result_t **globus_ftp_client_restart_marker_set_offset** (**globus_ftp_client_restart_marker_t** ∗marker, globus_off_t offset)
- globus_result_t **globus_ftp_client_restart_marker_get_total** (**globus_ftp_client_restart_marker_t** ∗marker, globus_off_t ∗total_bytes)
- globus_result_t **globus_ftp_client_restart_marker_to_string** (**globus_ftp_client_restart_marker_t** ∗marker, char ∗∗marker_string)
- globus_result_t **globus_ftp_client_restart_marker_from_string** (**globus_ftp_client_restart_marker_t** ∗marker, const char ∗marker_string)

5.2.1 Detailed Description

FTP Restart Markers. The Globus FTP Client library provides the ability to start a file transfer from a known location into the file. This is accomplished by passing a restart marker to the **globus_ftp_client_get()** (p. 35), **globus_ftp_client_put()** (p. 38), or **globus_ftp_client_third_party_transfer()** (p. 39) functions.

5.2.2 Function Documentation

5.2.2.1 globus_result_t globus_ftp_client_restart_marker_init (globus_ftp_client_restart_marker_t ∗ *marker*)

Initialize a restart marker.

Parameters

marker	New restart marker.

See also

globus_ftp_client_restart_marker_t (p. 117), **globus_ftp_client_restart_marker_destroy()** (p. 5)

5.2.2.2 globus_result_t globus_ftp_client_restart_marker_copy (globus_ftp_client_restart_marker_t ∗ *new_marker,* globus_ftp_client_restart_marker_t ∗ *marker*)

Create a copy of a restart marker.

This function copies the contents of marker to new_marker.

Parameters

new_marker	A pointer to a new restart marker.
marker	The marker to copy.

See also

globus_ftp_client_restart_marker_init() (p. 4), **globus_ftp_client_restart_marker_destroy()** (p. 5)

5.2.2.3 globus_result_t globus_ftp_client_restart_marker_destroy (globus_ftp_client_restart_marker_t * *marker*)

Destroy a restart marker.

Parameters

marker	Restart marker. This marker must be initialized by either calling **globus_ftp_client_restart_marker_init()** (p. 4) or **globus_ftp_client_restart_marker_copy()** (p. 4)

See also

globus_ftp_client_restart_marker_t (p. 117), **globus_ftp_client_restart_marker_init()** (p. 4), **globus_ftp_client_restart_marker_copy()** (p. 4)

5.2.2.4 globus_result_t globus_ftp_client_restart_marker_insert_range (globus_ftp_client_restart_marker_t * *marker,* globus_off_t *offset,* globus_off_t *end_offset*)

Insert a range into a restart marker

This function updates a restart marker with a new byte range, suitable for using to restart an extended block mode transfer.

Adjacent ranges within the marker will be combined into a single entry in the marker.

The marker must first be initialized by calling **globus_ftp_client_restart_marker_init()** (p. 4) or **globus_ftp_client_restart_marker_copy()** (p. 4).

A marker can only hold a range list or a stream offset. Calling this function after calling **globus_ftp_client_restart_marker_set_offset()** (p. 6) will result in a marker suitable only for use restarting an extended block mode transfer.

Parameters

marker	A restart marker
offset	The starting offset of the range.
end_offset	The ending offset of the range.

See also

globus_ftp_client_restart_marker_set_offset() (p. 6) **globus_ftp_client_operationattr_set_mode()** (p. 51)

5.2.2.5 globus_result_t globus_ftp_client_restart_marker_set_ascii_offset (globus_ftp_client_restart_marker_t * *marker,* globus_off_t *offset,* globus_off_t *ascii_offset*)

Set the offset for a restart marker.

This function modifies a restart marker to contain a stream offset, suitable for using to restart a steam mode transfer.

The marker must first be initialized by calling **globus_ftp_client_restart_marker_init()** (p. 4) or **globus_ftp_client_restart_marker_copy()** (p. 4).

A marker can only hold a range list or a stream offset. Calling this function after calling **globus_ftp_client_restart_marker_insert_range()** (p. 5) will delete the ranges associated with the marker, and replace it with a marker suitable only for use restarting a stream mode transfer.

When restarting an ASCII type transfer, use **globus_ftp_client_restart_marker_set_ascii_offset()** (p. 5) to set both the offset used in the local representation of an ACSII file, and the network representation of the ASCII file. For UNIX systems, the former includes counts newlines as one character towards the file offset, and the latter counts them as 2 characters (CRLF).

Parameters

marker	A restart marker
offset	The local stream offset.
ascii_offset	The network ascii representation of the offset.

See also

globus_ftp_client_restart_marker_insert_range() (p. 5), **globus_ftp_client_restart_marker_set_offset()** (p. 6), **globus_ftp_client_operationattr_set_mode()** (p. 51), **globus_ftp_client_operationattr_set_type()** (p. 51)

5.2.2.6 globus_result_t globus_ftp_client_restart_marker_set_offset (globus_ftp_client_restart_marker_t * *marker*, globus_off_t *offset*)

Set the offset for a restart marker.

This function modifies a restart marker to contain a stream offset, suitable for using to restart a steam mode transfer.

The marker must first be initialized by calling **globus_ftp_client_restart_marker_init()** (p. 4) or **globus_ftp_client_restart_marker_copy()** (p. 4).

A marker can only hold a range list or a stream offset. Calling this function after calling **globus_ftp_client_restart_marker_insert_range()** (p. 5) will delete the ranges associated with the marker, and replace it with a marker suitable only for use restarting a stream mode transfer.

When restarting an ASCII type transfer, the offset must take into account the additional carriage return characters added to the data stream.

Parameters

marker	A restart marker
offset	The stream offset

See also

globus_ftp_client_restart_marker_insert_range() (p. 5), **globus_ftp_client_operationattr_set_mode()** (p. 51), **globus_ftp_client_operationattr_set_type()** (p. 51)

5.2.2.7 globus_result_t globus_ftp_client_restart_marker_get_total (globus_ftp_client_restart_marker_t * *marker*, globus_off_t * *total_bytes*)

Get total bytes accounted for in restart marker

This funtion will return the sum of all bytes accounted for in a restart marker.

If this restart marker contains a stream offset then this value is the same as the offset (not the ascii offset) that it was set with. If it is a range list, it a sum of all the bytes in the ranges.

Parameters

marker	A previously initialized or copied restart marker
total_bytes	pointer to storage for total bytes in marker

Returns

- Error on NULL marker or total bytes
- <possible return>=""></possible return>

5.2.2.8 globus_result_t globus_ftp_client_restart_marker_to_string (globus_ftp_client_restart_marker_t * *marker,* char ** *marker_string*)

Create a string representation of a restart marker.

This function sets the *marker_string* parameter to point to a freshly allocated string suitable for sending as an argument to the FTP REST command, or for a later call to **globus_ftp_client_restart_marker_from_string()** (p. 7).

The string pointed to by marker_string must be freed by the caller.

Parameters

marker	An initialized FTP client restart marker.
marker_string	A pointer to a char * to be set to a freshly allocated marker string.

See also

Restart Markers (p. 4)

5.2.2.9 globus_result_t globus_ftp_client_restart_marker_from_string (globus_ftp_client_restart_marker_t * *marker,* const char * *marker_string*)

Initialize a restart marker from a string.

This function initializes a new restart, *marker*, based on the *marker_string* parameter. The string may be either a single offset for a stream-mode restart marker, or a comma-separated list of start-end ranges.

Parameters

marker	The restart marker to be unitialized.
marker_string	The string containing a textual representation of a restart marker.

See also

Restart Markers (p. 4)

5.3 Handle Management

Typedefs

- typedef struct globus_i_ftp_client_handle_t * **globus_ftp_client_handle_t**

Initialize

- globus_result_t **globus_ftp_client_handle_init** (**globus_ftp_client_handle_t** *handle, **globus_ftp_client_handleattr_t** *attr)

Destroy

- globus_result_t **globus_ftp_client_handle_destroy** (**globus_ftp_client_handle_t** *handle)

URL Caching

- globus_result_t **globus_ftp_client_handle_cache_url_state** (**globus_ftp_client_handle_t** *handle, const char *url)
- globus_result_t **globus_ftp_client_handle_flush_url_state** (**globus_ftp_client_handle_t** *handle, const char *url)

User Pointer

- globus_result_t **globus_ftp_client_handle_set_user_pointer** (**globus_ftp_client_handle_t** *handle, void *user_pointer)
- globus_result_t **globus_ftp_client_handle_get_user_pointer** (const **globus_ftp_client_handle_t** *handle, void **user_pointer)

Plugins

- globus_result_t **globus_ftp_client_handle_add_plugin** (**globus_ftp_client_handle_t** *handle, **globus_ftp_client_plugin_t** *plugin)
- globus_result_t **globus_ftp_client_handle_remove_plugin** (**globus_ftp_client_handle_t** *handle, **globus_ftp_client_plugin_t** *plugin)

5.3.1 Detailed Description

Create/Destroy/Modify an FTP Client Handle. Within the Globus FTP Client Library, all FTP operations require a handle parameter. Currently, only one FTP operation may be in progress at once per FTP handle. FTP connections may be cached between FTP operations, for improved performance.

This section defines operations to create and destroy FTP Client handles, as well as to modify handles' connection caches.

5.3.2 Typedef Documentation

5.3.2.1 typedef struct globus_i_ftp_client_handle_t* globus_ftp_client_handle_t

FTP Client Handle.

An FTP client handle is used to associate state with a group of operations. Handles can have **attributes** (p. 13) associated with them. All FTP **operations** (p. 20) take a handle pointer as a parameter.

See also

globus_ftp_client_handle_init() (p. 9), **globus_ftp_client_handle_destroy()** (p. 9), **globus_ftp_client_handleattr_t** (p. 13)

5.3.3 Function Documentation

5.3.3.1 globus_result_t globus_ftp_client_handle_init (globus_ftp_client_handle_t * *handle*, globus_ftp_client_handleattr_t * *attr*)

Initialize a client FTP handle.

Initialize an FTP handle which can be used in subsequent get, put, or transfer requests. A handle may have at most one get, put, or third-party transfer in progress.

Parameters

handle	The handle to be initialized.
attr	Initial attributes to be used to create this handle.

See also

globus_ftp_client_handle_destroy() (p. 9)

5.3.3.2 globus_result_t globus_ftp_client_handle_destroy (globus_ftp_client_handle_t * *handle*)

Destroy a client FTP handle.

A FTP client handle may not be destroyed if a get, put, or third-party transfer is in progress.

Parameters

handle	The handle to be destroyed.

See also

globus_ftp_client_handle_init() (p. 9)

5.3.3.3 globus_result_t globus_ftp_client_handle_cache_url_state (globus_ftp_client_handle_t * *handle*, const char * *url*)

Cache connections to an FTP server.

Explicitly cache connections to URL server in an FTP handle. When an URL is cached, the client library will not close the connection to the URL server after a file transfer completes.

Parameters

handle	Handle which will contain a cached connection to the URL server.
url	The URL of the FTP or GSIFTP server to cache.

See also

globus_ftp_client_flush_url_state()

5.3.3.4 globus_result_t globus_ftp_client_handle_flush_url_state (globus_ftp_client_handle_t * *handle*, const char * *url*)

Remove a cached connection from the FTP client handle.

Explicitly remove a cached connection to an FTP server from the FTP handle. If an idle connection to an FTP server exists, it will be closed.

Parameters

handle	Handle which will contain a cached connection to the URL server.
url	The URL of the FTP or GSIFTP server to cache.

5.3.3.5 globus_result_t globus_ftp_client_handle_set_user_pointer (globus_ftp_client_handle_t * *handle*, void * *user_pointer*)

Set/Get the user pointer field from an ftp client handle.

The user pointer is provided to all the user of the FTP client library to assocate a pointer to any application-specific data to an FTP client handle. This pointer is never internally used by the client library.

Parameters

handle	The FTP client handle to set or query.
user_pointer	The value of the user pointer field.

Note

Access to the user_pointer are not synchronized, the user must take care to make sure that multiple threads are not modifying it's value.

5.3.3.6 globus_result_t globus_ftp_client_handle_add_plugin (globus_ftp_client_handle_t * *handle*, globus_ftp_client_plugin_t * *plugin*)

Add a plugin to an FTP client handle.

This function adds a plugin to an FTP client handle after it has been created. Plugins may be added to an ftp client handle whenever an operation is not in progress. The plugin will be appended to the list of plugins present in the handle, and will be invoked during any subsequent operations processed with this handle.

Only one instance of a particular plugin may be added to a particular handle.

Plugins may be removed from a handle by calling globus_ftp_client_remove_plugin().

Parameters

handle	The FTP client handle to set or query.
plugin	A pointer to the plugin structure to add to this handle.

See also

globus_ftp_client_remove_plugin(), globus_ftp_clent_handleattr_add_plugin(), globus_ftp_clent_handleattr_remove_plugin()

5.3.3.7 globus_result_t globus_ftp_client_handle_remove_plugin (globus_ftp_client_handle_t * *handle*, globus_ftp_client_plugin_t * *plugin*)

Remove a plugin to an FTP client handle.

This function removes a plugin from an FTP client handle after it has been created. Plugins may be removed from an ftp client handle whenever an operation is not in progress. The plugin will be removed from the list of plugins, and will not be used during any subsequent operations processed with this handle.

This function can remove plugins which were added at **handle initialization time** (p. 9) or by calling **globus_ftp_client_handle_add_plugin()** (p. 10).

Parameters

handle	The FTP client handle to set or query.
plugin	A pointer to the plugin structure to remove from this handle.

See also

globus_ftp_client_add_plugin(), globus_ftp_clent_handleattr_add_plugin(), globus_ftp_clent_handleattr_remove_plugin()

5.3.3.8 globus_result_t globus_ftp_client_handle_get_user_pointer (const globus_ftp_client_handle_t * *handle*, void ** *user_pointer*)

Set/Get the user pointer field from an ftp client handle.

The user pointer is provided to all the user of the FTP client library to assocate a pointer to any application-specific data to an FTP client handle. This pointer is never internally used by the client library.

Parameters

handle	The FTP client handle to set or query.
user_pointer	The value of the user pointer field.

Note

Access to the user_pointer are not synchronized, the user must take care to make sure that multiple threads are not modifying it's value.

5.4 Handle Attributes

Typedefs

- typedef struct globus_i_ftp_client_handleattr_t * **globus_ftp_client_handleattr_t**

Initialize

- globus_result_t **globus_ftp_client_handleattr_init** (**globus_ftp_client_handleattr_t** *attr)

Destroy

- globus_result_t **globus_ftp_client_handleattr_destroy** (**globus_ftp_client_handleattr_t** *attr)

Copy

- globus_result_t **globus_ftp_client_handleattr_copy** (**globus_ftp_client_handleattr_t** *dest, **globus_ftp_client_handleattr_t** *src)

Connection Caching

- globus_result_t **globus_ftp_client_handleattr_set_cache_all** (**globus_ftp_client_handleattr_t** *attr, globus_bool_t cache_all)
- globus_result_t **globus_ftp_client_handleattr_get_cache_all** (const **globus_ftp_client_handleattr_t** *attr, globus_bool_t *cache_all)

Non-root relative URLs

- globus_result_t **globus_ftp_client_handleattr_set_rfc1738_url** (**globus_ftp_client_handleattr_t** *attr, globus_bool_t rfc1738_url)
- globus_result_t **globus_ftp_client_handleattr_get_rfc1738_url** (const **globus_ftp_client_handleattr_t** *attr, globus_bool_t *rfc1738_url)

Client Info

- globus_result_t **globus_ftp_client_handleattr_set_clientinfo** (**globus_ftp_client_handleattr_t** *attr, const char *app_name, const char *app_version, const char *other)
- globus_result_t **globus_ftp_client_handleattr_get_clientinfo** (**globus_ftp_client_handleattr_t** *attr, char **app_name, char **app_version, char **other)

GridFTP2 support

- globus_result_t **globus_ftp_client_handleattr_set_gridftp2** (**globus_ftp_client_handleattr_t** *attr, globus_bool_t gridftp2)
- globus_result_t **globus_ftp_client_handleattr_get_gridftp2** (const **globus_ftp_client_handleattr_t** *attr, globus_bool_t *gridftp2)

Command Pipelining

- globus_result_t **globus_ftp_client_handleattr_set_pipeline** (**globus_ftp_client_handleattr_t** *attr, globus_size_t outstanding_commands, globus_ftp_client_pipeline_callback_t pipeline_callback, void *pipeline_arg)
- globus_result_t **globus_ftp_client_handleattr_get_pipeline** (const **globus_ftp_client_handleattr_t** *attr, globus_size_t *outstanding_commands, globus_ftp_client_pipeline_callback_t *pipeline_callback, void **pipeline_arg)

URL Caching

- globus_result_t **globus_ftp_client_handleattr_add_cached_url** (**globus_ftp_client_handleattr_t** *attr, const char *url)
- globus_result_t **globus_ftp_client_handleattr_remove_cached_url** (**globus_ftp_client_handleattr_t** *attr, const char *url)

Netlogger management

- globus_result_t **globus_ftp_client_handleattr_set_netlogger** (**globus_ftp_client_handleattr_t** *attr, globus_netlogger_handle_t *nl_handle)
- globus_result_t **globus_ftp_client_handleattr_set_netlogger_ftp_io** (**globus_ftp_client_handleattr_t** *attr, globus_netlogger_handle_t *nl_handle, globus_bool_t ftp, globus_bool_t io)

Plugin Management

- globus_result_t **globus_ftp_client_handleattr_add_plugin** (**globus_ftp_client_handleattr_t** *attr, **globus_ftp_client_plugin_t** *plugin)
- globus_result_t **globus_ftp_client_handleattr_remove_plugin** (**globus_ftp_client_handleattr_t** *attr, **globus_ftp_client_plugin_t** *plugin)

5.4.1 Detailed Description

Handle attributes are used to control additional features of the FTP Client handle. These features are operation independent.

The attribute which can currently set on a handle concern the connection caching behavior of the handle, and the associations of plugins with a handle.

See also

globus_ftp_client_handle_t (p. 8)

5.4.2 Typedef Documentation

5.4.2.1 typedef struct globus_i_ftp_client_handleattr_t* globus_ftp_client_handleattr_t

Handle Attributes.

Handle attributes are used to control the caching behavior of the ftp client handle, and to implement the plugin features for reliability and performance tuning.

See also

globus_ftp_client_handle_t (p. 8), **Handle Attributes** (p. 12)

5.4.3 Function Documentation

5.4.3.1 globus_result_t globus_ftp_client_handleattr_init (globus_ftp_client_handleattr_t * *attr*)

Initialize an FTP client handle attribute set.

This function creates an empty FTP Client handle attribute set. This function must be called on each attribute set before any of the other functions in this section may be called.

Parameters

attr	The new handle attribute.

See also

globus_ftp_client_handleattr_destroy() (p. 14)

5.4.3.2 globus_result_t globus_ftp_client_handleattr_destroy (globus_ftp_client_handleattr_t * *attr*)

Destroy an FTP client handle attribute set.

This function destroys an ftp client handle attribute set. All attributes on this set will be lost. The user must call **globus_ftp_client_handleattr_init()** (p. 14) again on this attribute set before calling any other handle attribute functions on it.

Parameters

attr	The attribute set to destroy.

5.4.3.3 globus_result_t globus_ftp_client_handleattr_copy (globus_ftp_client_handleattr_t * *dest,* globus_ftp_client_handleattr_t * *src*)

Create a duplicate of a handle attribute set.

The duplicated attribute set has a deep copy of all data in the attribute set, so the original may be destroyed while the copy is still valid.

Parameters

dest	The attribute set to be initialized to the same values as src.
src	The original attribute set to duplicate.

5.4.3.4 globus_result_t globus_ftp_client_handleattr_set_cache_all (globus_ftp_client_handleattr_t * *attr,* globus_bool_t *cache_all*)

Set/Get the cache all connections attribute for an ftp client handle attribute set.

This attribute allows the user to cause all control connections to be cached between ftp operations. When this is enabled, the user skips the authentication handshake and connection establishment overhead for multiple subsequent ftp operations to the same server.

Memory and network connections associated with the caching will be used until the handle is destroyed. If fine grained caching is needed, then the user should disable this attribute and explicitly cache specific URLs.

Parameters

attr	Attribute to query or modify.
cache_all	Value of the cache_all attribute.

See also

globus_ftp_client_handleattr_add_cached_url() (p. 16), **globus_ftp_client_handleattr_remove_cached_url()** (p. 16), **globus_ftp_client_handle_cache_url_state()** (p. 9) **globus_ftp_client_handle_flush_url_state()** (p. 10)

5.4.3.5 globus_result_t globus_ftp_client_handleattr_set_rfc1738_url (globus_ftp_client_handleattr_t * *attr*, globus_bool_t *rfc1738_url*)

Enable/Disable rfc1738 support for non-root relative URLs.

Parameters

attr	Attribute to modify
rfc1738_url	Set to GLOBUS_TRUE to enable non-root relative URLs. Default of GLOBUS_FALSE specifies root-relative URLs.

5.4.3.6 globus_result_t globus_ftp_client_handleattr_set_clientinfo (globus_ftp_client_handleattr_t * *attr*, const char * *app_name*, const char * *app_version*, const char * *other*)

Set/Get client info reported to server.

Parameters

attr	Attribute to modify
app_name	Name of client application.
app_version	Client application specific version string.
other	Additional client info to be reported to the server. This may be used to pass custom info to a custom server module. The format of the string must be: key1="value1";key2="value2";[keyn="valuen";]

Any parameter may be NULL. By default, generic library info will be reported to the server -- set all NULL to disable this.

5.4.3.7 globus_result_t globus_ftp_client_handleattr_set_gridftp2 (globus_ftp_client_handleattr_t * *attr*, globus_bool_t *gridftp2*)

Enable/Disable GridFTP2 [GFD.41] support for servers supporting it.

This currently only applies to the GET/PUT command.

Parameters

attr	Attribute to modify
gridftp2	Set to GLOBUS_FALSE to disable GridFTP2 support. GridFTP2 support is enabled by default for servers that support it.

5.4.3.8 globus_result_t globus_ftp_client_handleattr_set_pipeline (globus_ftp_client_handleattr_t * *attr*, globus_size_t *outstanding_commands*, globus_ftp_client_pipeline_callback_t *pipeline_callback*, void * *pipeline_arg*)

Enable/Disable command queueing for pipelined transfers.

Parameters

attr	Attribute to modify
outstanding_commands	Set to the number of commands to have sent without receiving a reply. Use 0 for the library default.

pipeline_callback	Set to a function of type globus_ftp_client_pipeline_callback_t to enable command pipelining. This function will be called during a transfer operation to request the next urls to be transferred.
pipeline_arg	User data that will be passed in the pipeline_callback.

5.4.3.9 globus_result_t globus_ftp_client_handleattr_add_cached_url (globus_ftp_client_handleattr_t * *attr*, const char * *url*)

Enable/Disable caching for a specific URL.

This function adds/removes the specified URL into the default cache for a handle attribute. Handles initialized with this attr will keep connections to FTP servers associated with the URLs in its cache open between **operations** (p. 20).

Parameters

attr	Attribute to modify
url	URL string to cache

5.4.3.10 globus_result_t globus_ftp_client_handleattr_remove_cached_url (globus_ftp_client_handleattr_t * *attr*, const char * *url*)

Enable/Disable caching for a specific URL.

This function adds/removes the specified URL into the default cache for a handle attribute. Handles initialized with this attr will keep connections to FTP servers associated with the URLs in its cache open between **operations** (p. 20).

Parameters

attr	Attribute to modify
url	URL string to cache

5.4.3.11 globus_result_t globus_ftp_client_handleattr_set_netlogger (globus_ftp_client_handleattr_t * *attr*, globus_netlogger_handle_t * *nl_handle*)

Set the netlogger handle used with this transfer.

Each handle can have a netlogger handle associated with it for logging its data.

Only 1 netlogger handle can be associated with a client handle.

Parameters

attr	The attribute set to modify.
nl_handle	The open netlogger handle to be associated with this attribute set.

5.4.3.12 globus_result_t globus_ftp_client_handleattr_add_plugin (globus_ftp_client_handleattr_t * *attr*, globus_ftp_client_plugin_t * *plugin*)

Add/Remove a plugin to a handle attribute set.

Each handle attribute set contains a list of plugins associated with it. When a handle is created with a particular attribute set, it will be associated with a copy of those plugins.

Only one instance of a specific plugin may be added to an attribute set. Each plugin must have a different name.

A copy of the plugin is created via the plugins 'copy' method when it is added to an attribute set. Thus, any changes

to a particular plugin must be done before the plugin is added to an attribute set, and before the attribute set is used to create handles.

Parameters

attr	The attribute set to modify.
plugin	The plugin to add or remove from the list.

5.4.3.13 globus_result_t globus_ftp_client_handleattr_get_cache_all (const globus_ftp_client_handleattr_t * *attr*, globus_bool_t * *cache_all*)

Set/Get the cache all connections attribute for an ftp client handle attribute set.

This attribute allows the user to cause all control connections to be cached between ftp operations. When this is enabled, the user skips the authentication handshake and connection establishment overhead for multiple subsequent ftp operations to the same server.

Memory and network connections associated with the caching will be used until the handle is destroyed. If fine grained caching is needed, then the user should disable this attribute and explicitly cache specific URLs.

Parameters

attr	Attribute to query or modify.
cache_all	Value of the cache_all attribute.

See also

globus_ftp_client_handleattr_add_cached_url() (p. 16), **globus_ftp_client_handleattr_remove_cached_url()** (p. 16), **globus_ftp_client_handle_cache_url_state()** (p. 9) **globus_ftp_client_handle_flush_url_state()** (p. 10)

5.4.3.14 globus_result_t globus_ftp_client_handleattr_get_rfc1738_url (const globus_ftp_client_handleattr_t * *attr*, globus_bool_t * *rfc1738_url*)

Enable/Disable rfc1738 support for non-root relative URLs.

Parameters

attr	Attribute to modify
rfc1738_url	Set to GLOBUS_TRUE to enable non-root relative URLs. Default of GLOBUS_FALSE specifies root-relative URLs.

5.4.3.15 globus_result_t globus_ftp_client_handleattr_get_clientinfo (globus_ftp_client_handleattr_t * *attr*, char ** *app_name*, char ** *app_version*, char ** *other*)

Set/Get client info reported to server.

Parameters

attr	Attribute to modify
app_name	Name of client application.
app_version	Client application specific version string.
other	Additional client info to be reported to the server. This may be used to pass custom info to a custom server module. The format of the string must be: key1="value1";key2="value2";[keyn="valuen";]

Any parameter may be NULL. By default, generic library info will be reported to the server -- set all NULL to disable this.

5.4.3.16 globus_result_t globus_ftp_client_handleattr_get_gridftp2 (const globus_ftp_client_handleattr_t * *attr*, globus_bool_t * *gridftp2*)

Enable/Disable GridFTP2 [GFD.41] support for servers supporting it.

This currently only applies to the GET/PUT command.

Parameters

attr	Attribute to modify
gridftp2	Set to GLOBUS_FALSE to disable GridFTP2 support. GridFTP2 support is enabled by default for servers that support it.

5.4.3.17 globus_result_t globus_ftp_client_handleattr_get_pipeline (const globus_ftp_client_handleattr_t * *attr*, globus_size_t * *outstanding_commands*, globus_ftp_client_pipeline_callback_t * *pipeline_callback*, void ** *pipeline_arg*)

Enable/Disable command queueing for pipelined transfers.

Parameters

attr	Attribute to modify
outstanding_commands	Set to the number of commands to have sent without receiving a reply. Use 0 for the library default.
pipeline_callback	Set to a function of type globus_ftp_client_pipeline_callback_t to enable command pipelining. This function will be called during a transfer operation to request the next urls to be transferred.
pipeline_arg	User data that will be passed in the pipeline_callback.

5.4.3.18 globus_result_t globus_ftp_client_handleattr_set_netlogger_ftp_io (globus_ftp_client_handleattr_t * *attr*, globus_netlogger_handle_t * *nl_handle*, globus_bool_t *ftp*, globus_bool_t *io*)

Set the netlogger handle used with this transfer.

Each handle can have a netlogger handle associated with it for logging its data.

Only 1 netlogger handle can be associated with a client handle.

Parameters

attr	The attribute set to modify.
nl_handle	The open netlogger handle to be associated with this attribute set.

5.4.3.19 globus_result_t globus_ftp_client_handleattr_remove_plugin (globus_ftp_client_handleattr_t * *attr*, globus_ftp_client_plugin_t * *plugin*)

Add/Remove a plugin to a handle attribute set.

Each handle attribute set contains a list of plugins associated with it. When a handle is created with a particular attribute set, it will be associated with a copy of those plugins.

Only one instance of a specific plugin may be added to an attribute set. Each plugin must have a different name.

A copy of the plugin is created via the plugins 'copy' method when it is added to an attribute set. Thus, any changes to a particular plugin must be done before the plugin is added to an attribute set, and before the attribute set is used to create handles.

Parameters

attr	The attribute set to modify.
plugin	The plugin to add or remove from the list.

5.5 FTP Operations

Typedefs

- typedef void(∗ **globus_ftp_client_complete_callback_t**)(void ∗user_arg, **globus_ftp_client_handle_t** ∗handle, globus_object_t ∗error)
- typedef struct globus_i_ftp_client_features_s ∗ **globus_ftp_client_features_t**

Enumerations

- enum **globus_ftp_client_tristate_t**
- enum **globus_ftp_client_probed_feature_t**

Functions

- globus_result_t **globus_ftp_client_machine_list** (**globus_ftp_client_handle_t** ∗u_handle, const char ∗url, **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_client_complete_callback_t** complete_callback, void ∗callback_arg)
- globus_result_t **globus_ftp_client_recursive_list** (**globus_ftp_client_handle_t** ∗u_handle, const char ∗url, **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_client_complete_callback_t** complete_callback, void ∗callback_arg)

File or Directory Existence

- globus_result_t **globus_ftp_client_exists** (**globus_ftp_client_handle_t** ∗u_handle, const char ∗url, **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_client_complete_callback_t** complete_callback, void ∗callback_arg)

Features

- globus_result_t **globus_ftp_client_features_init** (**globus_ftp_client_features_t** ∗u_features)
- globus_result_t **globus_ftp_client_features_destroy** (**globus_ftp_client_features_t** ∗u_features)
- globus_result_t **globus_ftp_client_feat** (**globus_ftp_client_handle_t** ∗u_handle, char ∗url, **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_client_features_t** ∗u_features, **globus_ftp_client_complete_callback_t** complete_callback, void ∗callback_arg)
- globus_result_t **globus_ftp_client_is_feature_supported** (const **globus_ftp_client_features_t** ∗u_features, **globus_ftp_client_tristate_t** ∗answer, **globus_ftp_client_probed_feature_t** feature)

Make Directory

- globus_result_t **globus_ftp_client_mkdir** (**globus_ftp_client_handle_t** ∗u_handle, const char ∗url, **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_client_complete_callback_t** complete_callback, void ∗callback_arg)

Remove Directory

- globus_result_t **globus_ftp_client_rmdir** (**globus_ftp_client_handle_t** ∗u_handle, const char ∗url, **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_client_complete_callback_t** complete_callback, void ∗callback_arg)

Change Working Directory

- globus_result_t **globus_ftp_client_cwd** (**globus_ftp_client_handle_t** *u_handle, const char *url, **globus_ftp_client_operationattr_t** *attr, globus_byte_t **cwd_buffer, globus_size_t *cwd_buffer_length, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

Delete

- globus_result_t **globus_ftp_client_delete** (**globus_ftp_client_handle_t** *u_handle, const char *url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

List

- globus_result_t **globus_ftp_client_list** (**globus_ftp_client_handle_t** *u_handle, const char *url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)
- globus_result_t **globus_ftp_client_verbose_list** (**globus_ftp_client_handle_t** *u_handle, const char *url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

STAT

- globus_result_t **globus_ftp_client_stat** (**globus_ftp_client_handle_t** *u_handle, const char *url, **globus_ftp_client_operationattr_t** *attr, globus_byte_t **stat_buffer, globus_size_t *stat_buffer_length, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

MLST

- globus_result_t **globus_ftp_client_mlst** (**globus_ftp_client_handle_t** *u_handle, const char *url, **globus_ftp_client_operationattr_t** *attr, globus_byte_t **mlst_buffer, globus_size_t *mlst_buffer_length, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

Move

- globus_result_t **globus_ftp_client_move** (**globus_ftp_client_handle_t** *u_handle, const char *source_url, const char *dest_url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

chmod

- globus_result_t **globus_ftp_client_chmod** (**globus_ftp_client_handle_t** *u_handle, const char *url, int mode, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

chgrp

- globus_result_t **globus_ftp_client_chgrp** (**globus_ftp_client_handle_t** *u_handle, const char *url, const char *group, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

utime

- globus_result_t **globus_ftp_client_utime** (**globus_ftp_client_handle_t** *u_handle, const char *url, const struct tm *utime_time, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

symlink

- globus_result_t **globus_ftp_client_symlink** (**globus_ftp_client_handle_t** *u_handle, const char *source_url, const char *link_url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

Get

- globus_result_t **globus_ftp_client_get** (**globus_ftp_client_handle_t** *handle, const char *url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_restart_marker_t** *restart, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)
- globus_result_t **globus_ftp_client_partial_get** (**globus_ftp_client_handle_t** *handle, const char *url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_restart_marker_t** *restart, globus_off_t partial_offset, globus_off_t partial_end_offset, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)
- globus_result_t **globus_ftp_client_extended_get** (**globus_ftp_client_handle_t** *handle, const char *url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_restart_marker_t** *restart, const char *eret_alg_str, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

Put

- globus_result_t **globus_ftp_client_put** (**globus_ftp_client_handle_t** *handle, const char *url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_restart_marker_t** *restart, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)
- globus_result_t **globus_ftp_client_partial_put** (**globus_ftp_client_handle_t** *handle, const char *url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_restart_marker_t** *restart, globus_off_t partial_offset, globus_off_t partial_end_offset, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)
- globus_result_t **globus_ftp_client_extended_put** (**globus_ftp_client_handle_t** *handle, const char *url, **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_restart_marker_t** *restart, const char *esto_alg_str, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

3rd Party Transfer

- globus_result_t **globus_ftp_client_third_party_transfer** (**globus_ftp_client_handle_t** *handle, const char *source_url, **globus_ftp_client_operationattr_t** *source_attr, const char *dest_url, **globus_ftp_client_operationattr_t** *dest_attr, **globus_ftp_client_restart_marker_t** *restart, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)
- globus_result_t **globus_ftp_client_partial_third_party_transfer** (**globus_ftp_client_handle_t** *handle, const char *source_url, **globus_ftp_client_operationattr_t** *source_attr, const char *dest_url, **globus_ftp_client_operationattr_t** *dest_attr, **globus_ftp_client_restart_marker_t** *restart, globus_off_t partial_offset, globus_off_t partial_end_offset, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)
- globus_result_t **globus_ftp_client_extended_third_party_transfer** (**globus_ftp_client_handle_t** *handle, const char *source_url, **globus_ftp_client_operationattr_t** *source_attr, const char *eret_alg_str, const char *dest_url, **globus_ftp_client_operationattr_t** *dest_attr, const char *esto_alg_str, **globus_ftp_client_restart_marker_t** *restart, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

Modification Time

- globus_result_t **globus_ftp_client_modification_time** (**globus_ftp_client_handle_t** *u_handle, const char *url, **globus_ftp_client_operationattr_t** *attr, globus_abstime_t *modification_time, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

Size

- globus_result_t **globus_ftp_client_size** (**globus_ftp_client_handle_t** *u_handle, const char *url, **globus_ftp_client_operationattr_t** *attr, globus_off_t *size, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

Cksm

- globus_result_t **globus_ftp_client_cksm** (**globus_ftp_client_handle_t** *u_handle, const char *url, **globus_ftp_client_operationattr_t** *attr, char *cksm, globus_off_t offset, globus_off_t length, const char *algorithm, **globus_ftp_client_complete_callback_t** complete_callback, void *callback_arg)

Abort

- globus_result_t **globus_ftp_client_abort** (**globus_ftp_client_handle_t** *u_handle)

5.5.1 Detailed Description

Initiate an FTP operation. This module contains the API functions for a user to request a get, put, third-party transfer, or other FTP file operation.

5.5.2 Typedef Documentation

5.5.2.1 typedef void(* globus_ftp_client_complete_callback_t)(void *user_arg, globus_ftp_client_handle_t *handle, globus_object_t *error)

Operation complete callback.

Every FTP Client operation (get, put, transfer, mkdir, etc) is asynchronous. A callback of this type is passed to each of the operation function calls to let the user know when the operation is complete. The completion callback is called only once per operation, after all other callbacks for the operation have returned.

Parameters

user_arg	The user_arg parameter passed to the operation.
handle	The handle on which the operation was done.
error	A Globus error object indicating any problem which occurred, or GLOBUS_SUCCESS, if the operation completed successfully.

5.5.2.2 typedef struct globus_i_ftp_client_features_s* globus_ftp_client_features_t

Feature Handle

Handle used to associate state with feature operations.

See also

globus_ftp_client_feat (p. 25), **globus_ftp_client_features_init** (p. 24), **globus_ftp_client_features_destroy** (p. 25)

5.5.3 Enumeration Type Documentation

5.5.3.1 enum globus_ftp_client_tristate_t

Types for feature existence

FALSE and TRUE are known to be fact that a feature does or does not exist MAYBE means that the feature may exist.

5.5.3.2 enum globus_ftp_client_probed_feature_t

Types of features.

5.5.4 Function Documentation

5.5.4.1 globus_result_t globus_ftp_client_exists (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Check for the existence of a file or directory on an FTP server.

This function attempts to determine whether the specified URL points to a valid file or directory. The *complete_callback* will be invoked with the result of the existence check passed as a globus error object, or GLOBUS_SUCCESS.

Parameters

u_handle	An FTP Client handle to use for the existence check operation.
url	The URL of the directory or file to check. The URL may be an ftp or gsiftp URL.
attr	Attributes to use for this operation.
complete_callback	Callback to be invoked once the existence operation is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- u_handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.2 globus_result_t globus_ftp_client_features_init (globus_ftp_client_features_t * *u_features*)

Initialize the feature set, to be later used by **globus_ftp_client_feat()** (p. 25).

Each feature gets initial value GLOBUS_FTP_CLIENT_MAYBE.

Note

Structure initialized by this function must be destroyed using **globus_ftp_client_features_destroy()** (p. 25)

Returns

GLOBUS_SUCCESS on success, otherwise error.

5.5.4.3 globus_result_t globus_ftp_client_features_destroy (globus_ftp_client_features_t * *u_features*)

Destroy the feature set.

Note

Structure passed to this function must have been previously initialized by **globus_ftp_client_features_init()** (p. 24).

Returns

GLOBUS_SUCCESS on success, otherwise error.

5.5.4.4 globus_result_t globus_ftp_client_feat (globus_ftp_client_handle_t * *u_handle,* char * *url,* globus_ftp_client_operationattr_t * *attr,* globus_ftp_client_features_t * *u_features,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Check the features supported by the server (FTP FEAT command).

After this procedure completes, the features set (parameter u_features) represents the features supported by the server. Prior to calling this procedure, the structure should have been initialized by **globus_ftp_client_features_init()** (p. 24); afterwards, it should be destroyed by **globus_ftp_client_features_destroy()** (p. 25). After **globus_ftp_client_feat()** (p. 25) returns, each feature in the list has one of the values: GLOBUS_FTP_CLIENT_TRUE, GLOBUS_FTP_CLIENT_FALSE, or GLOBUS_FTP_CLIENT_MAYBE. The first two denote the server supporting, or not supporting, the given feature. The last one means that the test has not been performed. This is not necessarily caused by error; there might have been no reason to check for this particular feature.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL to list. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
u_features	A pointer to a globus_ftp_client_features_t to be filled with the feature set supported by the server.
complete_callback	Callback to be invoked once the size check is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- u_handle is GLOBUS_NULL
- source_url is GLOBUS_NULL
- source_url cannot be parsed
- source_url is not a ftp or gsiftp url
- u_features is GLOBUS_NULL or badly initialized

- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.5 globus_result_t globus_ftp_client_is_feature_supported (const globus_ftp_client_features_t * *u_features*, globus_ftp_client_tristate_t * *answer*, globus_ftp_client_probed_feature_t *feature*)

Check if the feature is supported by the server.

After the function completes, parameter answer contains the state of the server support of the given function. It can have one of the values: GLOBUS_FTP_CLIENT_TRUE, GLOBUS_FTP_CLIENT_FALSE, or GLOBUS_FTP_CLIENT_MAYBE.

Parameters

u_features	list of features, as returned by **globus_ftp_client_feat()** (p. 25)
answer	this variable will contain the answer
feature	feature number, 0 <= feature < GLOBUS_FTP_CLIENT_FEATURE_MAX

Returns

error when any of the parameters is null or badly initialized

5.5.4.6 globus_result_t globus_ftp_client_mkdir (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Make a directory on an FTP server.

This function starts a mkdir operation on a FTP server.

When the response to the mkdir request has been received the complete_callback will be invoked with the result of the mkdir operation.

Parameters

u_handle	An FTP Client handle to use for the mkdir operation.
url	The URL for the directory to create. The URL may be an ftp or gsiftp URL.
attr	Attributes for this operation.
complete_callback	Callback to be invoked once the mkdir is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- u_handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.7 globus_result_t globus_ftp_client_rmdir (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Make a directory on an FTP server.

This function starts a rmdir operation on a FTP server.

When the response to the rmdir request has been received the complete_callback will be invoked with the result of the rmdir operation.

Parameters

u_handle	An FTP Client handle to use for the rmdir operation.
url	The URL for the directory to create. The URL may be an ftp or gsiftp URL.
attr	Attributes for this operation.
complete_callback	Callback to be invoked once the rmdir is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- u_handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.8 globus_result_t globus_ftp_client_cwd (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_byte_t ** *cwd_buffer*, globus_size_t * *cwd_buffer_length*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Make a directory on an FTP server.

This function starts a cwd operation on a FTP server.

When the response to the cwd request has been received the complete_callback will be invoked with the result of the cwd operation.

Parameters

u_handle	An FTP Client handle to use for the cwd operation.
url	The URL for the directory to cd into. The URL may be an ftp or gsiftp URL.
attr	Attributes for this operation.
cwd_buffer	A pointer to a globus_byte_t * to be allocated and filled with the directory name returned by the CWD, if it succeeds. Otherwise, the value pointed to by it is undefined. It is up the user to free this memory.
cwd_buffer_length	A pointer to a globus_size_t to be filled with the length of the data in cwd_buffer.
complete_callback	Callback to be invoked once the cwd is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- u_handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- cwd_buffer is GLOBUS_NULL
- cwd_buffer_length is GLOBUS_NULL
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.9 globus_result_t globus_ftp_client_delete (globus_ftp_client_handle_t * *u_handle,* const char * *url,* globus_ftp_client_operationattr_t * *attr,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Delete a file on an FTP server.

This function starts a delete operation on a FTP server. Note that this functions will only delete files, not directories.

When the response to the delete request has been received the complete_callback will be invoked with the result of the delete operation.

Parameters

u_handle	An FTP Client handle to use for the delete operation.
url	The URL for the file to delete. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
complete_callback	Callback to be invoked once the delete is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- u_handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.10 globus_result_t globus_ftp_client_list (globus_ftp_client_handle_t * *u_handle,* const char * *url,* globus_ftp_client_operationattr_t * *attr,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Get a file listing from an FTP server.

This function starts a "NLST" transfer from an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_read()** (p. 64) to retrieve the data associated with this listing.

When all of the data associated with the listing is retrieved, and all of the data callbacks have been called, or if the list request is aborted, the complete_callback will be invoked with the final status of the list.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL to list. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
complete_callback	Callback to be invoked once the "list" is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

See also

globus_ftp_client_register_read() (p. 64)

5.5.4.11 globus_result_t globus_ftp_client_verbose_list (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Get a file listing from an FTP server.

This function starts a "LIST" transfer from an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_read()** (p. 64) to retrieve the data associated with this listing.

When all of the data associated with the listing is retrieved, and all of the data callbacks have been called, or if the list request is aborted, the complete_callback will be invoked with the final status of the list.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL to list. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
complete_callback	Callback to be invoked once the "list" is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL

- handle already has an operation in progress

See also

globus_ftp_client_register_read() (p. 64)

5.5.4.12 globus_result_t globus_ftp_client_stat (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_byte_t ** *stat_buffer*, globus_size_t * *stat_buffer_length*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Get information about a file or directory from a FTP server.

This function requests the STAT listing of a file or directory from an FTP server.

When the STAT request is completed or aborted, the complete_callback will be invoked with the final status of the operation. If the callback is returns without an error, the STAT fact string will be stored in the globus_byte_t * pointed to by the stat_buffer parameter to this function.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL of a file or directory to list. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
stat_buffer	A pointer to a globus_byte_t * to be allocated and filled with the STAT listing of the file, if it exists. Otherwise, the value pointed to by it is undefined. It is up to the user to free this memory.
stat_buffer_length	A pointer to a globus_size_t to be filled with the length of the data in stat_buffer.
complete_callback	Callback to be invoked once the STAT command is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- stat_buffer is GLOBUS_NULL
- stat_buffer_length is GLOBUS_NULL
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.13 globus_result_t globus_ftp_client_machine_list (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Get a machine parseable file listing from an FTP server.

This function starts a "MLSD" transfer from an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_read()** (p. 64) to retrieve the data associated with this listing.

When all of the data associated with the listing is retrieved, and all of the data callbacks have been called, or if the list request is aborted, the complete_callback will be invoked with the final status of the list.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL to list. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
complete_callback	Callback to be invoked once the "list" is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

See also

globus_ftp_client_register_read() (p. 64)

5.5.4.14 globus_result_t globus_ftp_client_recursive_list (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Get a machine parseable recursive file listing from an FTP server.

This function starts a "MLSR" transfer from an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_read()** (p. 64) to retrieve the data associated with this listing.

When all of the data associated with the listing is retrieved, and all of the data callbacks have been called, or if the list request is aborted, the complete_callback will be invoked with the final status of the list.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL to list. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
complete_callback	Callback to be invoked once the "list" is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL

- handle already has an operation in progress

See also

globus_ftp_client_register_read() (p. 64)

5.5.4.15 globus_result_t globus_ftp_client_mlst (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_byte_t ** *mlst_buffer*, globus_size_t * *mlst_buffer_length*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Get information about a file or directory from a FTP server.

This function requests the MLST fact string of a file or directory from an FTP server.

When the MLST request is completed or aborted, the complete_callback will be invoked with the final status of the operation. If the callback is returns without an error, the MLST fact string will be stored in the globus_byte_t * pointed to by the mlst_buffer parameter to this function.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL of a file or directory to list. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
mlst_buffer	A pointer to a globus_byte_t * to be allocated and filled with the MLST fact string of the file, if it exists. Otherwise, the value pointed to by it is undefined. It is up to the user to free this memory.
mlst_buffer_length	A pointer to a globus_size_t to be filled with the length of the data in mlst_buffer.
complete_callback	Callback to be invoked once the MLST command is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- mlst_buffer is GLOBUS_NULL
- mlst_buffer_length is GLOBUS_NULL
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.16 globus_result_t globus_ftp_client_move (globus_ftp_client_handle_t * *u_handle*, const char * *source_url*, const char * *dest_url*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Move a file on an FTP server.

This function starts a move (rename) operation on an FTP server. Note that this function does not move files between FTP servers and that the host:port part of the destination url is ignored.

When the response to the move request has been received the complete_callback will be invoked with the result of the move operation.

Parameters

u_handle	An FTP Client handle to use for the move operation.
source_url	The URL for the file to move.
dest_url	The URL for the target of the move. The host:port part of this URL is ignored.
attr	Attributes for this operation.
complete_callback	Callback to be invoked once the move is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- source_url is GLOBUS_NULL
- source_url cannot be parsed
- source_url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.17 globus_result_t globus_ftp_client_chmod (globus_ftp_client_handle_t * *u_handle*, const char * *url*, int *mode*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Change permissions on a file.

This function changes file permissions

When the response to the move request has been received the complete_callback will be invoked with the result of the operation.

Parameters

u_handle	An FTP Client handle to use for the move operation.
url	The URL of the file to modify permissions.
mode	The integer file mode to change to. Be sure that the integer is in the proper base, i.e. 0777 (octal) vs 777 (decimal).
attr	Attributes for this operation.
complete_callback	Callback to be invoked once the move is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.18 globus_result_t globus_ftp_client_chgrp (globus_ftp_client_handle_t * *u_handle*, const char * *url*, const char * *group*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Change group membership on a file.

This function changes file group membership

When the response to the group change request has been received the complete_callback will be invoked with the result of the operation.

Parameters

u_handle	An FTP Client handle to use for the change operation.
url	The URL of the file to modify group membership.
group	The group name or numeric identifier for the group that the file should become a member of.
attr	Attributes for this operation.
complete_callback	Callback to be invoked once the change is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.19 globus_result_t globus_ftp_client_utime (globus_ftp_client_handle_t * *u_handle*, const char * *url*, const struct tm * *utime_time*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Set the modification time on a file.

This function changes file modification time

When the response to the modification time request has been received the complete_callback will be invoked with the result of the operation.

Parameters

u_handle	An FTP Client handle to use for the change operation.
url	The URL of the file to modify group membership.
utime_time	The absolute time to which the file's modification time should be set.
attr	Attributes for this operation.
complete_callback	Callback to be invoked once the change is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL

- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.20 globus_result_t globus_ftp_client_symlink (globus_ftp_client_handle_t * *u_handle,* const char * *source_url,* const char * *link_url,* globus_ftp_client_operationattr_t * *attr,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Create a symbolic link on the FTP server.

This function creates a symbolic link on the FTP server pointing to a given path. Note that this function does not link files between FTP servers and that the host:port part of the link url is ignored.

When the response to the symlink request has been received the complete_callback will be invoked with the result of the move operation.

Parameters

u_handle	An FTP Client handle to use for the move operation.
source_url	The URL for the symbolic link to create.
link_url	The URL for the target of the link. The host:port part of this URL is ignored.
attr	Attributes for this operation.
complete_callback	Callback to be invoked once the symlink is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- source_url is GLOBUS_NULL
- source_url cannot be parsed
- source_url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.21 globus_result_t globus_ftp_client_get (globus_ftp_client_handle_t * *handle,* const char * *url,* globus_ftp_client_operationattr_t * *attr,* globus_ftp_client_restart_marker_t * *restart,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Get a file from an FTP server.

This function starts a "get" file transfer from an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_read()** (p. 64) to retrieve the data associated with this URL.

When all of the data associated with this URL is retrieved, and all of the data callbacks have been called, or if the get request is aborted, the complete_callback will be invoked with the final status of the get.

Parameters

handle	An FTP Client handle to use for the get operation.
url	The URL to download. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
restart	Pointer to a restart marker.
complete_callback	Callback to be invoked once the "get" is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

See also

globus_ftp_client_register_read() (p. 64)

5.5.4.22 globus_result_t globus_ftp_client_partial_get (globus_ftp_client_handle_t * *handle,* const char * *url,* globus_ftp_client_operationattr_t * *attr,* globus_ftp_client_restart_marker_t * *restart,* globus_off_t *partial_offset,* globus_off_t *partial_end_offset,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Get a file from an FTP server.

This function starts a "get" file transfer from an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_read()** (p. 64) to retrieve the data associated with this URL.

When all of the data associated with this URL is retrieved, and all of the data callbacks have been called, or if the get request is aborted, the complete_callback will be invoked with the final status of the get.

Parameters

handle	An FTP Client handle to use for the get operation.
url	The URL to download. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
restart	Pointer to a restart marker.
partial_offset	Starting offset for a partial file get.
partial_end_offset	Ending offset for a partial file get. Use -1 for EOF.
complete_callback	Callback to be invoked once the "get" is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.23 globus_result_t globus_ftp_client_extended_get (globus_ftp_client_handle_t * *handle,* const char * *url,* globus_ftp_client_operationattr_t * *attr,* globus_ftp_client_restart_marker_t * *restart,* const char * *eret_alg_str,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Get a file from an FTP server with server-side processing.

This function starts a "get" file transfer from an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_read()** (p. 64) to retrieve the data associated with this URL.

When all of the data associated with this URL is retrieved, and all of the data callbacks have been called, or if the get request is aborted, the complete_callback will be invoked with the final status of the get.

This function differs from the **globus_ftp_client_get()** (p. 35) function by allowing the user to invoke server-side data processing algorithms. GridFTP servers may support support algorithms for data reduction or other customized data storage requirements. There is no client-side verification done on the algorithm string provided by the user. If the server does not understand the requested algorithm, the transfer will fail.

Parameters

handle	An FTP Client handle to use for the get operation.
url	The URL to download. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
restart	Pointer to a restart marker.
eret_alg_str	The ERET algorithm string. This string contains information needed to invoke a server-specific data reduction algorithm on the file being retrieved.
complete_callback	Callback to be invoked once the "get" is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

See also

globus_ftp_client_register_read() (p. 64)

5.5.4.24 globus_result_t globus_ftp_client_put (globus_ftp_client_handle_t * *handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_restart_marker_t * *restart*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Store a file on an FTP server.

This function starts a "put" file transfer to an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_write()** (p. 64) to send the data associated with this URL.

When all of the data associated with this URL is sent, and all of the data callbacks have been called, or if the put request is aborted, the complete_callback will be invoked with the final status of the put.

Parameters

handle	An FTP Client handle to use for the put operation.
url	The URL to store the data to. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
restart	Pointer to a restart marker.
complete_callback	Callback to be invoked once the "put" is completed.
callback_arg	Argument to be passed to the complete_callback.

See also

globus_ftp_client_register_write() (p. 64)

5.5.4.25 globus_result_t globus_ftp_client_partial_put (globus_ftp_client_handle_t * *handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_restart_marker_t * *restart*, globus_off_t *partial_offset*, globus_off_t *partial_end_offset*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Store a file on an FTP server.

This function starts a "put" file transfer to an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_write()** (p. 64) to send the data associated with this URL.

When all of the data associated with this URL is sent, and all of the data callbacks have been called, or if the put request is aborted, the complete_callback will be invoked with the final status of the put.

Parameters

handle	An FTP Client handle to use for the put operation.
url	The URL to store the data to. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
restart	Pointer to a restart marker.
partial_offset	Starting offset for a partial file put.
partial_end_offset	Ending offset for a partial file put.
complete_callback	Callback to be invoked once the "put" is completed.
callback_arg	Argument to be passed to the complete_callback.

See also

globus_ftp_client_register_write() (p. 64)

5.5.4.26 globus_result_t globus_ftp_client_extended_put (globus_ftp_client_handle_t * *handle,* const char * *url,* globus_ftp_client_operationattr_t * *attr,* globus_ftp_client_restart_marker_t * *restart,* const char * *esto_alg_str,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Store a file on an FTP server with server-side processing.

This function starts a "put" file transfer to an FTP server. If this function returns GLOBUS_SUCCESS, then the user may immediately begin calling **globus_ftp_client_register_write()** (p. 64) to send the data associated with this URL.

When all of the data associated with this URL is sent, and all of the data callbacks have been called, or if the put request is aborted, the complete_callback will be invoked with the final status of the put.

This function differs from the **globus_ftp_client_put()** (p. 38) function by allowing the user to invoke server-side data processing algorithms. GridFTP servers may support algorithms for data reduction or other customized data storage requirements. There is no client-side verification done on the alogirhtm string provided by the user. if the server does not understand the requested algorithm, the transfer will fail.

Parameters

handle	An FTP Client handle to use for the put operation.
url	The URL to store the data to. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
restart	Pointer to a restart marker.
esto_alg_str	
complete_callback	Callback to be invoked once the "put" is completed.
callback_arg	Argument to be passed to the complete_callback.

See also

globus_ftp_client_register_write() (p. 64)

5.5.4.27 globus_result_t globus_ftp_client_third_party_transfer (globus_ftp_client_handle_t * *handle,* const char * *source_url,* globus_ftp_client_operationattr_t * *source_attr,* const char * *dest_url,* globus_ftp_client_operationattr_t * *dest_attr,* globus_ftp_client_restart_marker_t * *restart,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Transfer a file between two FTP servers.

This function starts up a third-party file transfer between FTP server. This function returns immediately.

When the transfer is completed or if the transfer is aborted, the complete_callback will be invoked with the final status of the transfer.

Parameters

handle	An FTP Client handle to use for the get operation.
source_url	The URL to transfer. The URL may be an ftp or gsiftp URL.
source_attr	Attributes for the souce URL.
dest_url	The destination URL for the transfer. The URL may be an ftp or gsiftp URL.
dest_attr	Attributes for the destination URL.
restart	Pointer to a restart marker.
complete_callback	Callback to be invoked once the "put" is completed.
callback_arg	Argument to be passed to the complete_callback.

Note

The source_attr and dest_attr MUST be compatible. For example, the MODE and TYPE should match for both the source and destination.

5.5.4.28 globus_result_t globus_ftp_client_partial_third_party_transfer (globus_ftp_client_handle_t * *handle*, const char * *source_url*, globus_ftp_client_operationattr_t * *source_attr*, const char * *dest_url*, globus_ftp_client_operationattr_t * *dest_attr*, globus_ftp_client_restart_marker_t * *restart*, globus_off_t *partial_offset*, globus_off_t *partial_end_offset*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Transfer a file between two FTP servers.

This function starts up a third-party file transfer between FTP server. This function returns immediately.

When the transfer is completed or if the transfer is aborted, the complete_callback will be invoked with the final status of the transfer.

Parameters

handle	An FTP Client handle to use for the get operation.
source_url	The URL to transfer. The URL may be an ftp or gsiftp URL.
source_attr	Attributes for the souce URL.
dest_url	The destination URL for the transfer. The URL may be an ftp or gsiftp URL.
dest_attr	Attributes for the destination URL.
restart	Pointer to a restart marker.
partial_offset	Starting offset for a partial file get.
partial_end_offset	Ending offset for a partial file get. Use -1 for EOF.
complete_callback	Callback to be invoked once the "put" is completed.
callback_arg	Argument to be passed to the complete_callback.

Note

The source_attr and dest_attr MUST be compatible. For example, the MODE and TYPE should match for both the source and destination.

5.5.4.29 globus_result_t globus_ftp_client_extended_third_party_transfer (globus_ftp_client_handle_t * *handle*, const char * *source_url*, globus_ftp_client_operationattr_t * *source_attr*, const char * *eret_alg_str*, const char * *dest_url*, globus_ftp_client_operationattr_t * *dest_attr*, const char * *esto_alg_str*, globus_ftp_client_restart_marker_t * *restart*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Transfer a file between two FTP servers with server-side processing.

This function starts up a third-party file transfer between FTP server. This function returns immediately.

When the transfer is completed or if the transfer is aborted, the complete_callback will be invoked with the final status of the transfer.

This function differes from the **globus_ftp_client_third_party_transfer()** (p. 39) funciton by allowing the user to invoke server-side data processing algorithms. GridFTP servers may support algorithms for data reduction or other customized data storage requirements. There is no client-side verification done on the alogirhtm string provided by the user. if the server does not understand * the requested algorithm, the transfer will fail.

Parameters

handle	An FTP Client handle to use for the get operation.
source_url	The URL to transfer. The URL may be an ftp or gsiftp URL.
source_attr	Attributes for the souce URL.
eret_alg_str	
dest_url	The destination URL for the transfer. The URL may be an ftp or gsiftp URL.
dest_attr	Attributes for the destination URL.
esto_alg_str	
restart	Pointer to a restart marker.
complete_callback	Callback to be invoked once the "put" is completed.
callback_arg	Argument to be passed to the complete_callback.

Note

The source_attr and dest_attr MUST be compatible. For example, the MODE and TYPE should match for both the source and destination.

5.5.4.30 globus_result_t globus_ftp_client_modification_time (globus_ftp_client_handle_t * *u_handle,* const char * *url,* globus_ftp_client_operationattr_t * *attr,* globus_abstime_t * *modification_time,* globus_ftp_client_complete_callback_t *complete_callback,* void * *callback_arg*)

Get a file's modification time from an FTP server.

This function requests the modification time of a file from an FTP server.

When the modification time request is completed or aborted, the complete_callback will be invoked with the final status of the operation. If the callback is returns without an error, the modification time will be stored in the globus_abstime_t value pointed to by the modification_time parameter to this function.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL to list. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
modification_time	A pointer to a globus_abstime_t to be filled with the modification time of the file, if it exists. Otherwise, the value pointed to by it is undefined.
complete_callback	Callback to be invoked once the modification time check is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- modification time is GLOBUS_NULL
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.31 globus_result_t globus_ftp_client_size (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, globus_off_t * *size*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Get a file's size from an FTP server.

This function requests the size of a file from an FTP server.

When the size request is completed or aborted, the complete_callback will be invoked with the final status of the operation. If the callback is returns without an error, the size will be stored in the globus_off_t value pointed to by the size parameter to this function.

Note

In ASCII mode, the size will be the size of the file after conversion to ASCII mode. The actual amount of data which is returned in the data callbacks may be less than this amount.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL to list. The URL may be an ftp or gsiftp URL.
attr	Attributes for this file transfer.
size	A pointer to a globus_off_t to be filled with the total size of the file, if it exists. Otherwise, the value pointed to by it is undefined.
complete_callback	Callback to be invoked once the size check is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- size is GLOBUS_NULL
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.32 globus_result_t globus_ftp_client_cksm (globus_ftp_client_handle_t * *u_handle*, const char * *url*, globus_ftp_client_operationattr_t * *attr*, char * *cksm*, globus_off_t *offset*, globus_off_t *length*, const char * *algorithm*, globus_ftp_client_complete_callback_t *complete_callback*, void * *callback_arg*)

Get a file's checksum from an FTP server.

This function requests the checksum of a file from an FTP server.

When the request is completed or aborted, the complete_callback will be invoked with the final status of the operation. If the callback is returns without an error, the checksum will be stored in the char * buffer provided in the 'checksum' parameter to this function. The buffer must be large enough to hold the expected checksum result.

Parameters

u_handle	An FTP Client handle to use for the list operation.
url	The URL to list. The URL may be an ftp or gsiftp URL.

attr	Attributes for this file transfer.
cksm	A pointer to a buffer to be filled with the checksum of the file. On error the buffer contents are undefined.
offset	File offset to start calculating checksum.
length	Length of data to read from the starting offset. Use -1 to read the entire file.
algorithm	A pointer to a string to specifying the desired algorithm Currently, GridFTP servers only support the MD5 algorithm.
complete_callback	Callback to be invoked once the checksum is completed.
callback_arg	Argument to be passed to the complete_callback.

Returns

This function returns an error when any of these conditions are true:

- handle is GLOBUS_NULL
- url is GLOBUS_NULL
- url cannot be parsed
- url is not a ftp or gsiftp url
- size is GLOBUS_NULL
- complete_callback is GLOBUS_NULL
- handle already has an operation in progress

5.5.4.33 globus_result_t globus_ftp_client_abort (globus_ftp_client_handle_t * *u_handle*)

Abort the operation currently in progress.

Parameters

u_handle	Handle which to abort.

5.6 FTP Operation Attributes

Typedefs

- typedef struct globus_i_ftp_client_operationattr_t * **globus_ftp_client_operationattr_t**

Functions

- globus_result_t **globus_ftp_client_operationattr_init** (**globus_ftp_client_operationattr_t** *attr)
- globus_result_t **globus_ftp_client_operationattr_destroy** (**globus_ftp_client_operationattr_t** *attr)
- globus_result_t **globus_ftp_client_operationattr_set_delayed_pasv** (const **globus_ftp_client_operationattr_t** *attr, globus_bool_t delayed_pasv)
- globus_result_t **globus_ftp_client_operationattr_copy** (**globus_ftp_client_operationattr_t** *dst, const **globus_ftp_client_operationattr_t** *src)

Storage Module

- globus_result_t **globus_ftp_client_operationattr_set_storage_module** (**globus_ftp_client_operationattr_t** *attr, const char *module_name, const char *module_args)
- globus_result_t **globus_ftp_client_operationattr_get_storage_module** (const **globus_ftp_client_operationattr_t** *attr, char **module_name, char **module_args)

Custom Data Channel Driver Stack

- globus_result_t **globus_ftp_client_operationattr_set_net_stack** (**globus_ftp_client_operationattr_t** *attr, const char *driver_list)
- globus_result_t **globus_ftp_client_operationattr_get_net_stack** (const **globus_ftp_client_operationattr_t** *attr, char **driver_list)

Custom Server File Driver Stack

- globus_result_t **globus_ftp_client_operationattr_set_disk_stack** (**globus_ftp_client_operationattr_t** *attr, const char *driver_list)
- globus_result_t **globus_ftp_client_operationattr_get_disk_stack** (const **globus_ftp_client_operationattr_t** *attr, char **driver_list)

Parallelism

- globus_result_t **globus_ftp_client_operationattr_set_parallelism** (**globus_ftp_client_operationattr_t** *attr, const **globus_ftp_control_parallelism_t** *parallelism)
- globus_result_t **globus_ftp_client_operationattr_get_parallelism** (const **globus_ftp_client_operationattr_t** *attr, **globus_ftp_control_parallelism_t** *parallelism)

allocate

- globus_result_t **globus_ftp_client_operationattr_set_allocate** (**globus_ftp_client_operationattr_t** *attr, const globus_off_t allocated_size)
- globus_result_t **globus_ftp_client_operationattr_get_allocate** (const **globus_ftp_client_operationattr_t** *attr, globus_off_t *allocated_size)

authz_assert

- globus_result_t **globus_ftp_client_operationattr_set_authz_assert** (**globus_ftp_client_operationattr_t** ∗attr, const char ∗authz_assert, globus_bool_t cache_authz_assert)
- globus_result_t **globus_ftp_client_operationattr_get_authz_assert** (const **globus_ftp_client_operationattr_t** ∗attr, char ∗∗authz_assert, globus_bool_t ∗cache_authz_assert)

Striped Data Movement

- globus_result_t **globus_ftp_client_operationattr_set_striped** (**globus_ftp_client_operationattr_t** ∗attr, globus_bool_t striped)
- globus_result_t **globus_ftp_client_operationattr_get_striped** (const **globus_ftp_client_operationattr_t** ∗attr, globus_bool_t ∗striped)

Striped File Layout

- globus_result_t **globus_ftp_client_operationattr_set_layout** (**globus_ftp_client_operationattr_t** ∗attr, const **globus_ftp_control_layout_t** ∗layout)
- globus_result_t **globus_ftp_client_operationattr_get_layout** (const **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_layout_t** ∗layout)

TCP Buffer

- globus_result_t **globus_ftp_client_operationattr_set_tcp_buffer** (**globus_ftp_client_operationattr_t** ∗attr, const **globus_ftp_control_tcpbuffer_t** ∗tcp_buffer)
- globus_result_t **globus_ftp_client_operationattr_get_tcp_buffer** (const **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_tcpbuffer_t** ∗tcp_buffer)

File Type

- globus_result_t **globus_ftp_client_operationattr_set_type** (**globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_type_t** type)
- globus_result_t **globus_ftp_client_operationattr_get_type** (const **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_type_t** ∗type)

Transfer Mode

- globus_result_t **globus_ftp_client_operationattr_set_mode** (**globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_mode_t** mode)
- globus_result_t **globus_ftp_client_operationattr_get_mode** (const **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_mode_t** ∗mode)

- globus_result_t **globus_ftp_client_operationattr_set_list_uses_data_mode** (const **globus_ftp_client_operationattr_t** ∗attr, globus_bool_t list_uses_data_mode)
- globus_result_t **globus_ftp_client_operationattr_get_list_uses_data_mode** (const **globus_ftp_client_operationattr_t** ∗attr, globus_bool_t ∗list_uses_data_mode)

Authorization

- globus_result_t **globus_ftp_client_operationattr_set_authorization** (**globus_ftp_client_operationattr_t** ∗attr, gss_cred_id_t credential, const char ∗user, const char ∗password, const char ∗account, const char ∗subject)
- globus_result_t **globus_ftp_client_operationattr_get_authorization** (const **globus_ftp_client_operationattr_t** ∗attr, gss_cred_id_t ∗credential, char ∗∗user, char ∗∗password, char ∗∗account, char ∗∗subject)

Data Channel Authentication

- globus_result_t **globus_ftp_client_operationattr_set_dcau** (**globus_ftp_client_operationattr_t** ∗attr, const **globus_ftp_control_dcau_t** ∗dcau)
- globus_result_t **globus_ftp_client_operationattr_get_dcau** (const **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_dcau_t** ∗dcau)

Data Channel Protection

- globus_result_t **globus_ftp_client_operationattr_set_data_protection** (**globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_protection_t** protection)
- globus_result_t **globus_ftp_client_operationattr_get_data_protection** (const **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_protection_t** ∗protection)

Data Channel Security Context

- globus_result_t **globus_ftp_client_operationattr_set_data_security** (**globus_ftp_client_operationattr_t** ∗attr, int type, void ∗credential)
- globus_result_t **globus_ftp_client_operationattr_get_data_security** (const **globus_ftp_client_operationattr_t** ∗attr, int ∗type, void ∗∗credential)

Control Channel Protection

- globus_result_t **globus_ftp_client_operationattr_set_control_protection** (**globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_protection_t** protection)
- globus_result_t **globus_ftp_client_operationattr_get_control_protection** (const **globus_ftp_client_operationattr_t** ∗attr, **globus_ftp_control_protection_t** ∗protection)

Append

- globus_result_t **globus_ftp_client_operationattr_set_append** (**globus_ftp_client_operationattr_t** ∗attr, globus_bool_t append)
- globus_result_t **globus_ftp_client_operationattr_get_append** (const **globus_ftp_client_operationattr_t** ∗attr, globus_bool_t ∗append)

IPv6

- globus_result_t **globus_ftp_client_operationattr_set_allow_ipv6** (**globus_ftp_client_operationattr_t** ∗attr, globus_bool_t allow_ipv6)
- globus_result_t **globus_ftp_client_operationattr_get_allow_ipv6** (const **globus_ftp_client_operationattr_t** ∗attr, globus_bool_t ∗allow_ipv6)

Read into a Single Buffer

- globus_result_t **globus_ftp_client_operationattr_set_read_all** (**globus_ftp_client_operationattr_t** *attr, globus_bool_t read_all, **globus_ftp_client_data_callback_t** intermediate_callback, void *intermediate_callback_arg)
- globus_result_t **globus_ftp_client_operationattr_get_read_all** (const **globus_ftp_client_operationattr_t** *attr, globus_bool_t *read_all, **globus_ftp_client_data_callback_t** *intermediate_callback, void **intermediate_callback_arg)

5.6.1 Detailed Description

Operation attributes are used to control the security and performance of an FTP operation. These features are often dependent on the capabilities of the FTP server which you are going to access.

5.6.2 Typedef Documentation

5.6.2.1 typedef struct globus_i_ftp_client_operationattr_t* globus_ftp_client_operationattr_t

Operation Attributes.

FTP Client attributes are used to control the parameters needed to access an URL using the FTP protocol. - Attributes are created and manipulated using the functions in the **attributes** (p. 44) section of the library.

See also

globus_ftp_client_operationattr_init() (p. 47), **globus_ftp_client_operationattr_destroy()** (p. 47)

5.6.3 Function Documentation

5.6.3.1 globus_result_t globus_ftp_client_operationattr_init (globus_ftp_client_operationattr_t * *attr*)

Initialize an FTP client attribute set.

Parameters

attr	A pointer to the new attribute set.

5.6.3.2 globus_result_t globus_ftp_client_operationattr_destroy (globus_ftp_client_operationattr_t * *attr*)

Destroy an FTP client attribute set.

Parameters

attr	A pointer to the attribute to destroy.

5.6.3.3 globus_result_t globus_ftp_client_operationattr_set_storage_module (globus_ftp_client_operationattr_t * *attr,* const char * *module_name,* const char * *module_args*)

Set/Get the gridftp storage module (DSI).

This attribute allows the user to control what backend module they use with the gridftp server. The module MUST be implemented by the server or the transfer/get/put will result in an error.

This attribute is ignored in stream mode.

Parameters

attr	The attribute set to query or modify.
module_name	The backend storage module name
module_args	The backend storage module parameters

Note

This is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.4 globus_result_t globus_ftp_client_operationattr_set_net_stack (globus_ftp_client_operationattr_t * *attr*, const char * *driver_list*)

Set/Get the gridftp xio driver stack used for the data channel.

This attribute allows the user to control which xio drivers will be used for data transport. The driver MUST be installed and allowed by the server or the transfer/get/put will result in an error.

Parameters

attr	The attribute set to query or modify.
driver_list	driver list in the following format: driver1[:driver1opts][,driver2[:driver2opts]][...]. The string "default" will reset the stack list to the server default.

Note

This is a GridFTP extension, and may not be supported on all FTP servers.

5.6.3.5 globus_result_t globus_ftp_client_operationattr_set_disk_stack (globus_ftp_client_operationattr_t * *attr*, const char * *driver_list*)

Set/Get the gridftp xio driver stack used for the file storage.

This attribute allows the user to control which xio drivers will be used for file DSI only. This is an experimental feature of the gridftp server. Only works for third party transfers.

Parameters

attr	The attribute set to query or modify.
driver_list	driver list in the following format: driver1[:driver1opts][,driver2[:driver2opts]][...]. The string "default" will reset the stack list to the server default.

Note

This is a GridFTP extension, and may not be supported on all FTP servers.

5.6.3.6 globus_result_t globus_ftp_client_operationattr_set_parallelism (globus_ftp_client_operationattr_t * *attr*, const globus_ftp_control_parallelism_t * *parallelism*)

Set/Get the parallelism attribute for an ftp client attribute set.

This attribute allows the user to control the level of parallelism to be used on an extended block mode file transfer. Currently, only a "fixed" parallelism level is supported. This is interpreted by the FTP server as the number of parallel data connections to be allowed for each stripe of data. Currently, only the "fixed" parallelism type is

This attribute is ignored in stream mode.

Parameters

attr	The attribute set to query or modify.
parallelism	The value of parallelism attribute.

See also

globus_ftp_client_operationattr_set_layout() (p. 50), **globus_ftp_client_operationattr_set_mode()** (p. 51)

Note

This is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.7 globus_result_t globus_ftp_client_operationattr_set_allocate (globus_ftp_client_operationattr_t * *attr*, const globus_off_t *allocated_size*)

Set/Get the allocate attribute for an ftp client attribute set.

This attribute lets the user set a size to be passed to the server before a put operation.

This attribute is ignored for get operations.

Parameters

attr	The attribute set to query or modify.
allocated_size	The size to direct server to allocate.

5.6.3.8 globus_result_t globus_ftp_client_operationattr_set_authz_assert (globus_ftp_client_operationattr_t * *attr*, const char * *authz_assert*, globus_bool_t *cache_authz_assert*)

Set/Get the authz_assert attribute for an ftp client attribute set.

This attribute lets the user set an AUTHORIZATION assertion to be passed to the server

Parameters

attr	The attribute set to query or modify.
authz_assert	The AUTHORIZATION assertion.
cache_authz_assert	Boolean that specifies whether to cache this assertion for subsequent operations

5.6.3.9 globus_result_t globus_ftp_client_operationattr_set_striped (globus_ftp_client_operationattr_t * *attr*, globus_bool_t *striped*)

Set/Get the striped attribute for an ftp client attribute set.

This attribute allows the user to force the client library to used the FTP commands to do a striped data transfer, even when the user has not requested a specific file layout via the layout attribute. This is useful when transferring files between servers which use the server side processing commands ERET or ESTO to transform data and send it to particular stripes on the destination server.

The layout attribute is used only when the data is being stored the server (on a put or 3rd party transfer). This attribute is ignored for stream mode data transfers.

Parameters

attr	The attribute set to query or modify.
striped	The value of striped attribute.

See also

globus_ftp_client_operationattr_set_parallelism() (p. 48), **globus_ftp_client_operationattr_set_layout()** (p. 50) **globus_ftp_client_operationattr_set_mode()** (p. 51)

Note

This is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.10 globus_result_t globus_ftp_client_operationattr_set_layout (globus_ftp_client_operationattr_t * *attr,* const globus_ftp_control_layout_t * *layout*)

Set/Get the layout attribute for an ftp client attribute set.

This attribute allows the user to control the layout of a file being transfered to a striped Grid-FTP server. The striping layout defines what regions of a file will be stored on each stripe of a multiple-striped ftp server.

The layout attribute is used only when the data is being stored on the server (on a put or 3rd party transfer). This attribute is ignored for stream mode data transfers.

Parameters

attr	The attribute set to query or modify.
layout	The value of layout attribute.

See also

globus_ftp_client_operationattr_set_parallelism() (p. 48), **globus_ftp_client_operationattr_set_mode()** (p. 51)

Note

This is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.11 globus_result_t globus_ftp_client_operationattr_set_tcp_buffer (globus_ftp_client_operationattr_t * *attr,* const globus_ftp_control_tcpbuffer_t * *tcp_buffer*)

Set/Get the TCP buffer attribute for an ftp client attribute set.

This attribute allows the user to control the TCP buffer size used for all data channels used in a file transfer. The size of the TCP buffer can make a significant impact on the performance of a file transfer. The user may set the buffer to either a system-dependent default value, or to a fixed value.

The actual implementation of this attribute is designed to be as widely interoperable as possible. In addition to supporting the SBUF command described in the GridFTP protocol extensions document, it also supports other commands and site commands which are used by other servers to set TCP buffer sizes. These are

- SITE RETRBUFSIZE
- SITE RBUFSZ
- SITE RBUFSIZ
- SITE STORBUFIZE
- SITE SBUFSZ
- SITE SBUFSIZ

- SITE BUFSIZE

This attribute is affects any type of data transfer done with the ftp client library.

Parameters

attr	The attribute set to query or modify.
tcp_buffer	The value of tcp_buffer attribute.

5.6.3.12 globus_result_t globus_ftp_client_operationattr_set_type (globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_type_t *type*)

Set/Get the file representation type attribute for an ftp client attribute set.

This attribute allows the user to choose the file type used for an FTP file transfer. The file may be transferred as either ASCII or a binary image.

When transferring an ASCII file, the data will be transformed in the following way

- the high-order bit will be set to zero
- end-of line characters will be converted to a CRLF pair for the data transfer, and then converted to native format before being returned to the user's data callbacks.

The default type for the ftp client library is binary.

Parameters

attr	The attribute set to query or modify.
type	The value of type attribute.

5.6.3.13 globus_result_t globus_ftp_client_operationattr_set_mode (globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_mode_t *mode*)

Set/Get the file transfer mode attribute for an ftp client attribute set.

This attribute allows the user to choose the data channel protocol used to transfer a file. There are two modes supported by this library: stream mode and extended block mode.

Stream mode is a file transfer mode where all data is sent over a single TCP socket, without any data framing. In stream mode, data will arrive in sequential order. This mode is supported by nearly all FTP servers.

Extended block mode is a file transfer mode where data can be sent over multiple parallel connections and to multiple data storage nodes to provide a high-performance data transfer. In extended block mode, data may arrive out-of-order. ASCII type files are not supported in extended block mode.

Parameters

attr	The attribute set to query or modify.
mode	The value of mode attribute

See also

globus_ftp_client_operationattr_set_parallelism() (p. 48), **globus_ftp_client_operationattr_set_layout()** (p. 50)

Note

Extended block mode is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.14 globus_result_t globus_ftp_client_operationattr_set_list_uses_data_mode (const globus_ftp_client_operationattr_t * *attr*, globus_bool_t *list_uses_data_mode*)

Set/Get whether or not list data will use the current data mode

This attribute allows the user to allow list data to be transferred using the current data channel mode.

Parameters

attr	The attribute set to query or modify.
list_uses_data_mode	globus_bool_t

Note

List data transfers in nonstandard modes is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.15 globus_result_t globus_ftp_client_operationattr_set_delayed_pasv (const globus_ftp_client_operationattr_t * *attr*, globus_bool_t *delayed_pasv*)

Set/Get whether or not delayed passive should be used

This attribute allows the user to enable delayed passive so the server can provide the passive address after it knows the filename to be transferred.

Parameters

attr	The attribute set to query or modify.
delayed_pasv	globus_bool_t

Note

Delayed passive is a GridFTP extension, and may not be supported on all FTP servers.

5.6.3.16 globus_result_t globus_ftp_client_operationattr_set_authorization (globus_ftp_client_operationattr_t * *attr*, gss_cred_id_t *credential*, const char * *user*, const char * *password*, const char * *account*, const char * *subject*)

Set/Get the authorization attribute for an ftp client attribute set.

This attribute allows the user to pass authentication information to the ftp client library. This information is used to authenticate with the ftp server.

The Globus FTP client library supports authentication using either the GSSAPI, or standard plaintext username and passwords. The type of authentication is determined by the URL scheme which is used for the individual get, put, or 3rd party transfer calls.

Parameters

attr	The attribute set to query or modify.
credential	The credential to use for authenticating with a GSIFTP server. This may be GSS_C_NO_CREDENTIAL to use the default credential.
user	The user name to send to the FTP server. When doing a gsiftp transfer, this may be set to NULL, and the default globusmap entry for the user's GSI identity will be usd.

password	The password to send to the FTP server. When doing a gsiftp transfer, this may be set to NULL.
account	The account to use for the data transfer. Most FTP servers do not require this.
subject	The subject name of the FTP server. This is only used when doing a gsiftp transfer, and then only when the security subject name does not match the hostname of the server (ie, when the server is being run by a user).

5.6.3.17 globus_result_t globus_ftp_client_operationattr_set_dcau (globus_ftp_client_operationattr_t * *attr,* const globus_ftp_control_dcau_t * *dcau*)

Set/Get the data channel authentication attribute for an ftp client attribute set.

Data channel authentication is a GridFTP extension, and may not be supported by all servers. If a server supports it, then the default is to delegate a credential to the server, and authenticate all data channels with that delegated credential.

Parameters

attr	The attribute set to query or modify.
dcau	The value of data channel authentication attribute.

5.6.3.18 globus_result_t globus_ftp_client_operationattr_set_data_protection (globus_ftp_client_operationattr_t * *attr,* globus_ftp_control_protection_t *protection*)

Set/Get the data channel protection attribute for an ftp client attribute set.

Parameters

attr	The attribute set to query or modify.
protection	The value of data channel protection attribute.

Bug Only safe and private protection levels are supported by gsiftp.

5.6.3.19 globus_result_t globus_ftp_client_operationattr_set_data_security (globus_ftp_client_operationattr_t * *attr,* int *type,* void * *credential*)

Set/Get the data channel security context type and credential.

Parameters

attr	The attribute set to query or modify.
type	The type of credential. Currently only 'P' is supported, and requires a gss_cred_id_t for the credential.
credential	A credential appropriate for the type specified.

5.6.3.20 globus_result_t globus_ftp_client_operationattr_set_control_protection (globus_ftp_client_operationattr_t * *attr,* globus_ftp_control_protection_t *protection*)

Set/Get the control channel protection attribute for an ftp client attribute set.

The control channel protection attribute allows the user to decide whether to encrypt or integrity check the command session between the client and the FTP server. This attribute is only relevant if used with a gsiftp URL.

Parameters

attr	The attribute set to query or modify.
protection	The value of control channel protection attribute.

Bug The clear and safe protection levels are treated identically, with the client integrity checking all commands. The confidential and private protection levels are treated identically, with the client encrypting all commands.

5.6.3.21 globus_result_t globus_ftp_client_operationattr_set_append (globus_ftp_client_operationattr_t * *attr*, globus_bool_t *append*)

Set/Get the append attribute for an ftp client attribute set.

This attribute allows the user to append to a file on an FTP server, instead of replacing the existing file when doing a **globus_ftp_client_put()** (p. 38) or globus_ftp_client_transfer().

This attribute is ignored on the retrieving side of a transfer, or a **globus_ftp_client_get()** (p. 35).

Parameters

attr	The attribute set to query or modify.
append	The value of append attribute.

5.6.3.22 globus_result_t globus_ftp_client_operationattr_set_allow_ipv6 (globus_ftp_client_operationattr_t * *attr*, globus_bool_t *allow_ipv6*)

Set/Get the allow ipv6 attribute for an ftp client attribute set.

This attribute allows client library to make use of ipv6 when possible.

Use of this is currently very experimental.

Parameters

attr	The attribute set to query or modify.
allow_ipv6	GLOBUS_TRUE to allow ipv6 or GLOBUS_FALSE to disallow(default)

5.6.3.23 globus_result_t globus_ftp_client_operationattr_set_read_all (globus_ftp_client_operationattr_t * *attr*, globus_bool_t *read_all*, globus_ftp_client_data_callback_t *intermediate_callback*, void * *intermediate_callback_arg*)

Set/Get the read_all attribute for an ftp client attribute set.

This attribute allows the user to pass in a single buffer to receive all of the data for the current transfer. This buffer must be large enough to hold all of the data for the transfer. Only one buffer may be registered with **globus_ftp_client_register_read()** (p. 64) when this attribute is used for a get.

In extended block mode, this attribute will cause data to be stored directly into the buffer from multiple streams without any extra data copies.

If the user sets the intermediate callback to a non-null value, this function will be called whenever an intermediate sub-section of the data is received into the buffer.

This attribute is ignored for **globus_ftp_client_put()** (p. 38) or **globus_ftp_client_third_party_transfer()** (p. 39) operations.

Parameters

attr	The attribute set to query or modify.
read_all	The value of read_all attribute.

intermediate_callback	Callback to be invoked when a subsection of the data has been retreived. This callback may be GLOBUS_NULL, if the user only wants to be notified when the data transfer is completed.
intermediate_callback_arg	User data to be passed to the intermediate callback function.

5.6.3.24 globus_result_t globus_ftp_client_operationattr_copy (globus_ftp_client_operationattr_t * *dst*, const globus_ftp_client_operationattr_t * *src*)

Create a duplicate of an attribute set.

The duplicated attribute set has a deep copy of all data in the attribute set, so the original may be destroyed, while the copy is still valid.

Parameters

dst	The attribute set to be initialized to the same values as src.
src	The original attribute set to duplicate.

5.6.3.25 globus_result_t globus_ftp_client_operationattr_get_storage_module (const globus_ftp_client_operationattr_t * *attr*, char ** *module_name*, char ** *module_args*)

Set/Get the gridftp storage module (DSI).

This attribute allows the user to control what backend module they use with the gridftp server. The module MUST be implemented by the server or the transfer/get/put will result in an error.

This attribute is ignored in stream mode.

Parameters

attr	The attribute set to query or modify.
module_name	The backend storage module name
module_args	The backend storage module parameters

Note

This is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.26 globus_result_t globus_ftp_client_operationattr_get_net_stack (const globus_ftp_client_operationattr_t * *attr*, char ** *driver_list*)

Set/Get the gridftp xio driver stack used for the data channel.

This attribute allows the user to control which xio drivers will be used for data transport. The driver MUST be installed and allowed by the server or the transfer/get/put will result in an error.

Parameters

attr	The attribute set to query or modify.
driver_list	driver list in the following format: driver1[:driver1opts][,driver2[:driver2opts]][...]. The string "default" will reset the stack list to the server default.

Note

This is a GridFTP extension, and may not be supported on all FTP servers.

5.6.3.27 globus_result_t globus_ftp_client_operationattr_get_disk_stack (const globus_ftp_client_operationattr_t * *attr*, char ** *driver_list*)

Set/Get the gridftp xio driver stack used for the file storage.

This attribute allows the user to control which xio drivers will be used for file DSI only. This is an experimental feature of the gridftp server. Only works for third party transfers.

Parameters

attr	The attribute set to query or modify.
driver_list	driver list in the following format: driver1[:driver1opts][,driver2[:driver2opts]][...]. The string "default" will reset the stack list to the server default.

Note

This is a GridFTP extension, and may not be supported on all FTP servers.

5.6.3.28 globus_result_t globus_ftp_client_operationattr_get_parallelism (const globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_parallelism_t * *parallelism*)

Set/Get the parallelism attribute for an ftp client attribute set.

This attribute allows the user to control the level of parallelism to be used on an extended block mode file transfer. Currently, only a "fixed" parallelism level is supported. This is interpreted by the FTP server as the number of parallel data connections to be allowed for each stripe of data. Currently, only the "fixed" parallelism type is

This attribute is ignored in stream mode.

Parameters

attr	The attribute set to query or modify.
parallelism	The value of parallelism attribute.

See also

globus_ftp_client_operationattr_set_layout() (p. 50), **globus_ftp_client_operationattr_set_mode()** (p. 51)

Note

This is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.29 globus_result_t globus_ftp_client_operationattr_get_allocate (const globus_ftp_client_operationattr_t * *attr*, globus_off_t * *allocated_size*)

Set/Get the allocate attribute for an ftp client attribute set.

This attribute lets the user set a size to be passed to the server before a put operation.

This attribute is ignored for get operations.

Parameters

attr	The attribute set to query or modify.
allocated_size	The size to direct server to allocate.

5.6.3.30 globus_result_t globus_ftp_client_operationattr_get_authz_assert (const globus_ftp_client_operationattr_t * *attr*, char ** *authz_assert*, globus_bool_t * *cache_authz_assert*)

Set/Get the authz_assert attribute for an ftp client attribute set.

This attribute lets the user set an AUTHORIZATION assertion to be passed to the server

Parameters

attr	The attribute set to query or modify.
authz_assert	The AUTHORIZATION assertion.
cache_authz_assert	Boolean that specifies whether to cache this assertion for subsequent operations

5.6.3.31 globus_result_t globus_ftp_client_operationattr_get_striped (const globus_ftp_client_operationattr_t * *attr*, globus_bool_t * *striped*)

Set/Get the striped attribute for an ftp client attribute set.

This attribute allows the user to force the client library to used the FTP commands to do a striped data transfer, even when the user has not requested a specific file layout via the layout attribute. This is useful when transferring files between servers which use the server side processing commands ERET or ESTO to transform data and send it to particular stripes on the destination server.

The layout attribute is used only when the data is being stored the server (on a put or 3rd party transfer). This attribute is ignored for stream mode data transfers.

Parameters

attr	The attribute set to query or modify.
striped	The value of striped attribute.

See also

globus_ftp_client_operationattr_set_parallelism() (p. 48), **globus_ftp_client_operationattr_set_layout()** (p. 50) **globus_ftp_client_operationattr_set_mode()** (p. 51)

Note

This is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.32 globus_result_t globus_ftp_client_operationattr_get_layout (const globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_layout_t * *layout*)

Set/Get the layout attribute for an ftp client attribute set.

This attribute allows the user to control the layout of a file being transfered to a striped Grid-FTP server. The striping layout defines what regions of a file will be stored on each stripe of a multiple-striped ftp server.

The layout attribute is used only when the data is being stored on the server (on a put or 3rd party transfer). This attribute is ignored for stream mode data transfers.

Parameters

attr	The attribute set to query or modify.
layout	The value of layout attribute.

See also

globus_ftp_client_operationattr_set_parallelism() (p. 48), **globus_ftp_client_operationattr_set_mode()** (p. 51)

Note

This is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.33 globus_result_t globus_ftp_client_operationattr_get_tcp_buffer (const globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_tcpbuffer_t * *tcp_buffer*)

Set/Get the TCP buffer attribute for an ftp client attribute set.

This attribute allows the user to control the TCP buffer size used for all data channels used in a file transfer. The size of the TCP buffer can make a significant impact on the performance of a file transfer. The user may set the buffer to either a system-dependent default value, or to a fixed value.

The actual implementation of this attribute is designed to be as widely interoperable as possible. In addition to supporting the SBUF command described in the GridFTP protocol extensions document, it also supports other commands and site commands which are used by other servers to set TCP buffer sizes. These are

- SITE RETRBUFSIZE
- SITE RBUFSZ
- SITE RBUFSIZ
- SITE STORBUFIZE
- SITE SBUFSZ
- SITE SBUFSIZ
- SITE BUFSIZE

This attribute is affects any type of data transfer done with the ftp client library.

Parameters

attr	The attribute set to query or modify.
tcp_buffer	The value of tcp_buffer attribute.

5.6.3.34 globus_result_t globus_ftp_client_operationattr_get_type (const globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_type_t * *type*)

Set/Get the file representation type attribute for an ftp client attribute set.

This attribute allows the user to choose the file type used for an FTP file transfer. The file may be transferred as either ASCII or a binary image.

When transferring an ASCII file, the data will be transformed in the following way

- the high-order bit will be set to zero
- end-of line characters will be converted to a CRLF pair for the data transfer, and then converted to native format before being returned to the user's data callbacks.

The default type for the ftp client library is binary.

Parameters

attr	The attribute set to query or modify.
type	The value of type attribute.

5.6.3.35 globus_result_t globus_ftp_client_operationattr_get_mode (const globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_mode_t * *mode*)

Set/Get the file transfer mode attribute for an ftp client attribute set.

This attribute allows the user to choose the data channel protocol used to transfer a file. There are two modes supported by this library: stream mode and extended block mode.

Stream mode is a file transfer mode where all data is sent over a single TCP socket, without any data framing. In stream mode, data will arrive in sequential order. This mode is supported by nearly all FTP servers.

Extended block mode is a file transfer mode where data can be sent over multiple parallel connections and to multiple data storage nodes to provide a high-performance data transfer. In extended block mode, data may arrive out-of-order. ASCII type files are not supported in extended block mode.

Parameters

attr	The attribute set to query or modify.
mode	The value of mode attribute

See also

globus_ftp_client_operationattr_set_parallelism() (p. 48), **globus_ftp_client_operationattr_set_layout()** (p. 50)

Note

Extended block mode is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.36 globus_result_t globus_ftp_client_operationattr_get_list_uses_data_mode (const globus_ftp_client_operationattr_t * *attr*, globus_bool_t * *list_uses_data_mode*)

Set/Get whether or not list data will use the current data mode

This attribute allows the user to allow list data to be transferred using the current data channel mode.

Parameters

attr	The attribute set to query or modify.
list_uses_data_mode	globus_bool_t

Note

List data transfers in nonstandard modes is a Grid-FTP extension, and may not be supported on all FTP servers.

5.6.3.37 globus_result_t globus_ftp_client_operationattr_get_authorization (const globus_ftp_client_operationattr_t * *attr*, gss_cred_id_t * *credential*, char ** *user*, char ** *password*, char ** *account*, char ** *subject*)

Set/Get the authorization attribute for an ftp client attribute set.

This attribute allows the user to pass authentication information to the ftp client library. This information is used to authenticate with the ftp server.

The Globus FTP client library supports authentication using either the GSSAPI, or standard plaintext username and passwords. The type of authentication is determined by the URL scheme which is used for the individual get, put, or 3rd party transfer calls.

Parameters

attr	The attribute set to query or modify.
credential	The credential to use for authenticating with a GSIFTP server. This may be GSS_C_NO_CREDENTIAL to use the default credential.
user	The user name to send to the FTP server. When doing a gsiftp transfer, this may be set to NULL, and the default globusmap entry for the user's GSI identity will be usd.
password	The password to send to the FTP server. When doing a gsiftp transfer, this may be set to NULL.
account	The account to use for the data transfer. Most FTP servers do not require this.
subject	The subject name of the FTP server. This is only used when doing a gsiftp transfer, and then only when the security subject name does not match the hostname of the server (ie, when the server is being run by a user).

5.6.3.38 globus_result_t globus_ftp_client_operationattr_get_dcau (const globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_dcau_t * *dcau*)

Set/Get the data channel authentication attribute for an ftp client attribute set.

Data channel authentication is a GridFTP extension, and may not be supported by all servers. If a server supports it, then the default is to delegate a credential to the server, and authenticate all data channels with that delegated credential.

Parameters

attr	The attribute set to query or modify.
dcau	The value of data channel authentication attribute.

5.6.3.39 globus_result_t globus_ftp_client_operationattr_get_data_protection (const globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_protection_t * *protection*)

Set/Get the data channel protection attribute for an ftp client attribute set.

Parameters

attr	The attribute set to query or modify.
protection	The value of data channel protection attribute.

Bug Only safe and private protection levels are supported by gsiftp.

5.6.3.40 globus_result_t globus_ftp_client_operationattr_get_data_security (const globus_ftp_client_operationattr_t * *attr*, int * *type*, void ** *credential*)

Set/Get the data channel security context type and credential.

Parameters

attr	The attribute set to query or modify.
type	The type of credential. Currently only 'P' is supported, and requires a gss_cred_id_t for the credential.
credential	A credential appropriate for the type specified.

5.6.3.41 globus_result_t globus_ftp_client_operationattr_get_control_protection (const globus_ftp_client_operationattr_t * *attr*, globus_ftp_control_protection_t * *protection*)

Set/Get the control channel protection attribute for an ftp client attribute set.

The control channel protection attribute allows the user to decide whether to encrypt or integrity check the command session between the client and the FTP server. This attribute is only relevant if used with a gsiftp URL.

Parameters

attr	The attribute set to query or modify.
protection	The value of control channel protection attribute.

Bug The clear and safe protection levels are treated identically, with the client integrity checking all commands. The confidential and private protection levels are treated identically, with the client encrypting all commands.

5.6.3.42 globus_result_t globus_ftp_client_operationattr_get_append (const globus_ftp_client_operationattr_t * *attr*, globus_bool_t * *append*)

Set/Get the append attribute for an ftp client attribute set.

This attribute allows the user to append to a file on an FTP server, instead of replacing the existing file when doing a **globus_ftp_client_put()** (p. 38) or globus_ftp_client_transfer().

This attribute is ignored on the retrieving side of a transfer, or a **globus_ftp_client_get()** (p. 35).

Parameters

attr	The attribute set to query or modify.
append	The value of append attribute.

5.6.3.43 globus_result_t globus_ftp_client_operationattr_get_allow_ipv6 (const globus_ftp_client_operationattr_t * *attr*, globus_bool_t * *allow_ipv6*)

Set/Get the allow ipv6 attribute for an ftp client attribute set.

This attribute allows client library to make use of ipv6 when possible.

Use of this is currently very experimental.

Parameters

attr	The attribute set to query or modify.
allow_ipv6	GLOBUS_TRUE to allow ipv6 or GLOBUS_FALSE to disallow(default)

5.6.3.44 globus_result_t globus_ftp_client_operationattr_get_read_all (const globus_ftp_client_operationattr_t * *attr*, globus_bool_t * *read_all*, globus_ftp_client_data_callback_t * *intermediate_callback*, void ** *intermediate_callback_arg*)

Set/Get the read_all attribute for an ftp client attribute set.

This attribute allows the user to pass in a single buffer to receive all of the data for the current transfer. This buffer must be large enough to hold all of the data for the transfer. Only one buffer may be registered with **globus_ftp_client_register_read()** (p. 64) when this attribute is used for a get.

In extended block mode, this attribute will cause data to be stored directly into the buffer from multiple streams without any extra data copies.

If the user sets the intermediate callback to a non-null value, this function will be called whenever an intermediate

sub-section of the data is received into the buffer.

This attribute is ignored for **globus_ftp_client_put()** (p. 38) or **globus_ftp_client_third_party_transfer()** (p. 39) operations.

Parameters

attr	The attribute set to query or modify.
read_all	The value of read_all attribute.
intermediate_callback	Callback to be invoked when a subsection of the data has been retreived. This callback may be GLOBUS_NULL, if the user only wants to be notified when the data transfer is completed.
intermediate_callback_arg	User data to be passed to the intermediate callback function.

5.7 Reading and Writing Data

Typedefs

- typedef void(∗ **globus_ftp_client_data_callback_t**)(void ∗user_arg, **globus_ftp_client_handle_t** ∗handle, globus_object_t ∗error, globus_byte_t ∗buffer, globus_size_t length, globus_off_t offset, globus_bool_t eof)

Functions

- globus_result_t **globus_ftp_client_register_read** (**globus_ftp_client_handle_t** ∗handle, globus_byte_t ∗buffer, globus_size_t buffer_length, **globus_ftp_client_data_callback_t** callback, void ∗callback_arg)
- globus_result_t **globus_ftp_client_register_write** (**globus_ftp_client_handle_t** ∗handle, globus_byte_t ∗buffer, globus_size_t buffer_length, globus_off_t offset, globus_bool_t eof, **globus_ftp_client_data_callback_t** callback, void ∗callback_arg)

5.7.1 Detailed Description

Certain FTP client operations require the user to supply buffers for reading or writing data to an FTP server. These operations are **globus_ftp_client_get()** (p. 35), **globus_ftp_client_partial_get()** (p. 36), **globus_ftp_client_put()** (p. 38), **globus_ftp_client_partial_put()** (p. 38), **globus_ftp_client_list()** (p. 28), **globus_ftp_client_machine_list()** (p. 30), **globus_ftp_client_recursive_list()** (p. 31), and **globus_ftp_client_verbose_list()** (p. 29).

When doing these operations, the user must pass data buffers to the FTP Client library. Data is read or written directly from the data buffers, without any internal copies being done.

The functions in this section of the manual may be called as soon as the operation function has returned. Multiple data blocks may be registered with the FTP Client Library at once, and may be sent in parallel to or from the FTP server if the GridFTP protocol extensions are being used.

5.7.2 Typedef Documentation

5.7.2.1 typedef void(∗ globus_ftp_client_data_callback_t)(void ∗user_arg, globus_ftp_client_handle_t ∗handle, globus_object_t ∗error, globus_byte_t ∗buffer, globus_size_t length, globus_off_t offset, globus_bool_t eof)

Data Callback.

Each read or write operation in the FTP Client library is asynchronous. A callback of this type is passed to each of the data operation function calls to let the user know when the data block has been processed.

Parameters

user_arg	The user_arg parameter passed to the read or write function.
handle	The handle on which the data block operation was done.
error	A Globus error object indicating any problem which occurred processing this data block, or or GLOBUS_SUCCESS if the operation completed successfully.
buffer	The data buffer passed to the original read or write call.
length	The amount of data in the data buffer. When reading data, this may be smaller than original buffer's length.
offset	The offset into the file which this data block contains.
eof	GLOBUS_TRUE if EOF has been reached on this data transfer, GLOBUS_FALSE otherwise. This may be set to GLOBUS_TRUE for multiple callbacks.

5.7.3 Function Documentation

5.7.3.1 globus_result_t globus_ftp_client_register_read (globus_ftp_client_handle_t * *handle*, globus_byte_t * *buffer*, globus_size_t *buffer_length*, globus_ftp_client_data_callback_t *callback*, void * *callback_arg*)

Register a data buffer to handle a part of the FTP data transfer.

The data buffer will be associated with the current get being performed on this client handle.

Parameters

handle	A pointer to a FTP Client handle which contains state information about the get operation.
buffer	A user-supplied buffer into which data from the FTP server will be stored.
buffer_length	The maximum amount of data that can be stored into the buffer.
callback	The function to be called once the data has been read.
callback_arg	Argument passed to the callback function

See also

globus_ftp_client_operationattr_set_read_all() (p. 54)

5.7.3.2 globus_result_t globus_ftp_client_register_write (globus_ftp_client_handle_t * *handle*, globus_byte_t * *buffer*, globus_size_t *buffer_length*, globus_off_t *offset*, globus_bool_t *eof*, globus_ftp_client_data_callback_t *callback*, void * *callback_arg*)

Register a data buffer to handle a part of the FTP data transfer.

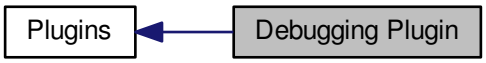
The data buffer will be associated with the current "put" being performed on this client handle. Multiple data buffers may be registered on a handle at once. There is no guaranteed ordering of the data callbacks in extended block mode.

Parameters

handle	A pointer to a FTP Client handle which contains state information about the put operation.
buffer	A user-supplied buffer containing the data to write to the server.
buffer_length	The size of the buffer to be written.
offset	The offset of the buffer to be written. In extended-block mode, the data does not need to be sent in order. In stream mode (the default), data must be sent in sequential order. The behavior is undefined if multiple writes overlap.
eof	
callback	The function to be called once the data has been written.
callback_arg	Argument passed to the callback function

5.8 Debugging Plugin

Collaboration diagram for Debugging Plugin:



Defines

- #define **GLOBUS_FTP_CLIENT_DEBUG_PLUGIN_MODULE** (&globus_i_ftp_client_debug_plugin_-module)

Functions

- globus_result_t **globus_ftp_client_debug_plugin_init** (**globus_ftp_client_plugin_t** ∗plugin, FILE ∗stream, const char ∗text)
- globus_result_t **globus_ftp_client_debug_plugin_destroy** (**globus_ftp_client_plugin_t** ∗plugin)

5.8.1 Detailed Description

The FTP Debugging plugin provides a way for the user to trace FTP protocol messages which occur while the GridFTP client library processes an FTP operation. This may be useful for debugging FTP configuration problems.

When this plugin is used for a GridFTP Client operation, information will be printed to the file stream associated with the plugin when a user begins an operation, for all data buffers which pass through while handling a data transfer, and for all protocol messages which are sent and received.

Example Usage:

The following example illustrates a typical use of the debug plugin. In this case, we configure a plugin instance to output log messages preceded by the process name and pid to a file named gridftp.log.

```
int main(int argc, char *argv[])
{
    globus_ftp_client_plugin_t restart_plugin;
    globus_ftp_client_handleattr_t handleattr;
    globus_ftp_client_handle_t handle;
    FILE * log;
    char text[256];

    /* Activate the necessary modules */
    globus_module_activate(GLOBUS_FTP_CLIENT_MODULE);
    globus_module_activate(GLOBUS_FTP_CLIENT_DEBUG_PLUGIN_MODULE);

    /* Configure plugin to show custom text, and send plugin data to
     * a custom log file
     */
    log = fopen("gridftp.log", "a");
    sprintf(text, "%s:%ld", argv[0], (long) getpid());

    globus_ftp_client_debug_plugin_init(&debug_plugin, log, text);
```

```
    /* Set up our client handle to use the new plugin */
    globus_ftp_client_handleattr_init(&handleattr);
    globus_ftp_client_handleattr_add_plugin(&handleattr, &debug_plugin);
    globus_ftp_client_handle_init(&handle, &handleattr);

    /* As this get is processed, data will be appended to our gridftp.log
     * file
     */
    globus_ftp_client_get(&handle,
                          "ftp://ftp.globus.org/pub/globus/README",
                          GLOBUS_NULL,
                          GLOBUS_NULL,
                          callback_fn,
                          GLOBUS_NULL);
}
```

5.8.2 Define Documentation

5.8.2.1 #define GLOBUS_FTP_CLIENT_DEBUG_PLUGIN_MODULE (&globus_i_ftp_client_debug_plugin_module)

Module descriptor.

5.8.3 Function Documentation

5.8.3.1 globus_result_t globus_ftp_client_debug_plugin_init (globus_ftp_client_plugin_t * *plugin,* FILE * *stream,* const char * *text*)

Initialize an instance of the GridFTP debugging plugin

This function will initialize the debugging plugin-specific instance data for this plugin, and will make the plugin usable for ftp client handle attribute and handle creation.

Parameters

plugin	A pointer to an uninitialized plugin. The plugin will be configured as a debugging plugin, with the default of sending debugging messages to stderr.
stream	
text	

Returns

This function returns an error if

- plugin is null

See also

globus_ftp_client_debug_plugin_destroy() (p. 66), **globus_ftp_client_handleattr_add_plugin()** (p. 16), **globus_ftp_client_handleattr_remove_plugin()** (p. 18), **globus_ftp_client_handle_init()** (p. 9)

5.8.3.2 globus_result_t globus_ftp_client_debug_plugin_destroy (globus_ftp_client_plugin_t * *plugin*)

Destroy an instance of the GridFTP debugging plugin

This function will free all debugging plugin-specific instance data from this plugin, and will make the plugin unusable for further ftp handle creation.

Existing FTP client handles and handle attributes will not be affected by destroying a plugin associated with them, as a local copy of the plugin is made upon handle initialization.

Parameters

plugin	A pointer to a GridFTP debugging plugin, previously initialized by calling **globus_ftp_client_debug_plugin_init()** (p. 66)

Returns

This function returns an error if

- plugin is null
- plugin is not a debugging plugin

See also

globus_ftp_client_debug_plugin_init() (p. 66), **globus_ftp_client_handleattr_add_plugin()** (p. 16), **globus_ftp_client_handleattr_remove_plugin()** (p. 18), **globus_ftp_client_handle_init()** (p. 9)

5.9 Performance Marker Plugin

Collaboration diagram for Performance Marker Plugin:

Defines

- #define **GLOBUS_FTP_CLIENT_PERF_PLUGIN_MODULE** (&globus_i_ftp_client_perf_plugin_module)

Typedefs

- typedef void(∗ **globus_ftp_client_perf_plugin_begin_cb_t**)(void ∗user_specific, **globus_ftp_client_handle_t** ∗handle, const char ∗source_url, const char ∗dest_url, globus_bool_t restart)
- typedef void(∗ **globus_ftp_client_perf_plugin_marker_cb_t**)(void ∗user_specific, **globus_ftp_client_handle_t** ∗handle, long time_stamp_int, char time_stamp_tength, int stripe_ndx, int num_stripes, globus_off_t nbytes)
- typedef void(∗ **globus_ftp_client_perf_plugin_complete_cb_t**)(void ∗user_specific, **globus_ftp_client_handle_t** ∗handle, globus_bool_t success)
- typedef void ∗(∗ **globus_ftp_client_perf_plugin_user_copy_cb_t**)(void ∗user_specific)
- typedef void(∗ **globus_ftp_client_perf_plugin_user_destroy_cb_t**)(void ∗user_specific)

Functions

- globus_result_t **globus_ftp_client_perf_plugin_init** (**globus_ftp_client_plugin_t** ∗plugin, **globus_ftp_client_perf_plugin_begin_cb_t** begin_cb, **globus_ftp_client_perf_plugin_marker_cb_t** marker_cb, **globus_ftp_client_perf_plugin_complete_cb_t** complete_cb, void ∗user_specific)
- globus_result_t **globus_ftp_client_perf_plugin_set_copy_destroy** (**globus_ftp_client_plugin_t** ∗plugin, **globus_ftp_client_perf_plugin_user_copy_cb_t** copy_cb, **globus_ftp_client_perf_plugin_user_destroy_cb_t** destroy_cb)
- globus_result_t **globus_ftp_client_perf_plugin_destroy** (**globus_ftp_client_plugin_t** ∗plugin)
- globus_result_t **globus_ftp_client_perf_plugin_get_user_specific** (**globus_ftp_client_plugin_t** ∗plugin, void ∗∗user_specific)

5.9.1 Detailed Description

The FTP Performance Marker plugin allows the user to obtain performance markers for all types of transfers except a third party transfer in which Extended Block mode is not enabled. These markers may be generated internally, or they may be received from a server ('put' or third_party_transfer' only).

Copy constructor and destructor callbacks are also provided to allow one to more easily layer other plugins on top of this one.

5.9.2 Define Documentation

5.9.2.1 #define GLOBUS_FTP_CLIENT_PERF_PLUGIN_MODULE (&globus_i_ftp_client_perf_plugin_module)

Module descriptor.

5.9.3 Typedef Documentation

5.9.3.1 typedef void(* globus_ftp_client_perf_plugin_begin_cb_t)(void *user_specific, globus_ftp_client_handle_t *handle, const char *source_url, const char *dest_url, globus_bool_t restart)

Transfer begin callback

This callback is called when a get, put, or third party transfer is started.

Note that it is possible for this callback to be made multiple times before ever receiving the complete callback... this would be the case if a transfer was restarted. The 'restart' will indicate whether or not we have been restarted.

Parameters

handle	this the client handle that this transfer will be occurring on
user_specific	this is user specific data either created by the copy method, or, if a copy method was not specified, the value passed to init
source_url	source of the transfer (GLOBUS_NULL if 'put')
dest_url	dest of the transfer (GLOBUS_NULL if 'get')
restart	boolean indicating whether this callback is result of a restart

Returns

- n/a

5.9.3.2 typedef void(* globus_ftp_client_perf_plugin_marker_cb_t)(void *user_specific, globus_ftp_client_handle_t *handle, long time_stamp_int, char time_stamp_tength, int stripe_ndx, int num_stripes, globus_off_t nbytes)

Performance marker received callback

This callback is called for all types of transfers except a third party in which extended block mode is not used (because 112 perf markers wont be sent in that case).

For extended mode 'put' and '3pt', actual 112 perf markers will be used and the frequency of this callback is dependent upon the frequency those messages are received. For 'put' in which extended block mode is not enabled and 'get' transfers, the information in this callback will be determined locally and the frequency of this callback will be at a maximum of one per second.

Parameters

handle	this the client handle that this transfer is occurring on
user_specific	this is user specific data either created by the copy method, or, if a copy method was not specified, the value passed to init
time_stamp	the timestamp at which the number of bytes is valid
stripe_ndx	the stripe index this data refers to
num_stripes	total number of stripes involved in this transfer
nbytes	the total bytes transfered on this stripe

Returns

- n/a

5.9.3.3 typedef void(* globus_ftp_client_perf_plugin_complete_cb_t)(void *user_specific, globus_ftp_client_handle_t *handle, globus_bool_t success)

Transfer complete callback

This callback will be called upon transfer completion (successful or otherwise)

Parameters

handle	this the client handle that this transfer was occurring on
user_specific	this is user specific data either created by the copy method, or, if a copy method was not specified, the value passed to init
success	indicates whether this transfer completed successfully or was interrupted (by error or abort)

Returns

- n/a

5.9.3.4 typedef void*(* globus_ftp_client_perf_plugin_user_copy_cb_t)(void *user_specific)

Copy constructor

This callback will be called when a copy of this plugin is made, it is intended to allow initialization of a new user_-specific data.

Parameters

user_specific	this is user specific data either created by this copy method, or the value passed to init

Returns

- a pointer to a user specific piece of data
- GLOBUS_NULL (does not indicate error)

5.9.3.5 typedef void(* globus_ftp_client_perf_plugin_user_destroy_cb_t)(void *user_specific)

Destructor

This callback will be called when a copy of this plugin is destroyed, it is intended to allow the user to free up any memory associated with the user specific data.

Parameters

user_specific	this is user specific data created by the copy method

Returns

- n/a

5.9.4 Function Documentation

5.9.4.1 globus_result_t globus_ftp_client_perf_plugin_init (globus_ftp_client_plugin_t * *plugin*, globus_ftp_client_perf_plugin_begin_cb_t *begin_cb*, globus_ftp_client_perf_plugin_marker_cb_t *marker_cb*, globus_ftp_client_perf_plugin_complete_cb_t *complete_cb*, void * *user_specific*)

Initialize a perf plugin

This function initializes a performance marker plugin.

Any params except for the plugin may be GLOBUS_NULL

Parameters

plugin	a pointer to a plugin type to be initialized
user_specific	a pointer to some user specific data that will be provided to all callbacks
begin_cb	the callback to be called upon the start of a transfer
marker_cb	the callback to be called with every performance marker received
complete_cb	the callback to be called to indicate transfer completion

Returns

- GLOBUS_SUCCESS
- Error on NULL plugin
- Error on init internal plugin

5.9.4.2 globus_result_t globus_ftp_client_perf_plugin_set_copy_destroy (globus_ftp_client_plugin_t * *plugin*, globus_ftp_client_perf_plugin_user_copy_cb_t *copy_cb*, globus_ftp_client_perf_plugin_user_destroy_cb_t *destroy_cb*)

Set user copy and destroy callbacks

Use this to have the plugin make callbacks any time a copy of this plugin is being made.

This will allow the user to keep state for different handles.

Parameters

plugin	plugin previously initialized with init (above)
copy_cb	func to be called when a copy is needed
destroy_cb	func to be called when a copy is to be destroyed

Returns

- Error on NULL arguments
- GLOBUS_SUCCESS

5.9.4.3 globus_result_t globus_ftp_client_perf_plugin_destroy (globus_ftp_client_plugin_t * *plugin*)

Destroy performance marker plugin

Frees up memory associated with plugin.

Parameters

plugin	plugin previously initialized with init (above)

Returns

- GLOBUS_SUCCESS
- Error on NULL plugin

5.9.4.4 globus_result_t globus_ftp_client_perf_plugin_get_user_specific (globus_ftp_client_plugin_t * *plugin*, void ** *user_specific*)

Retrieve user specific pointer.

Parameters

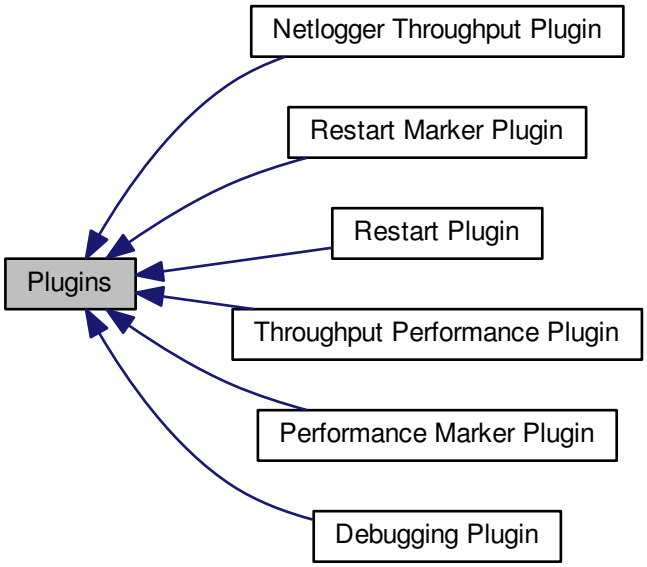
plugin	plugin previously initialized with init (above)
user_specific	pointer to storage for user_specific pointer

Returns

- GLOBUS_SUCCESS
- Error on NULL plugin
- Error on NULL user_specific

5.10 Plugins

Collaboration diagram for Plugins:



Modules

- **Debugging Plugin**
- **Performance Marker Plugin**
- **Restart Marker Plugin**
- **Restart Plugin**
- **Netlogger Throughput Plugin**
- **Throughput Performance Plugin**

Typedefs

- typedef struct globus_i_ftp_client_plugin_t * **globus_ftp_client_plugin_t**
- typedef **globus_ftp_client_plugin_t** *(* **globus_ftp_client_plugin_copy_t**)(**globus_ftp_client_plugin_t** *plugin_template, void *plugin_specific)
- typedef void(* **globus_ftp_client_plugin_destroy_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific)
- typedef void(* **globus_ftp_client_plugin_connect_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url)
- typedef void(* **globus_ftp_client_plugin_authenticate_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_control_auth_info_t** *auth_info)
- typedef void(* **globus_ftp_client_plugin_chmod_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, int mode, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)

- typedef void(* **globus_ftp_client_plugin_chgrp_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const char *group, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_utime_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const struct tm *utime_time, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_symlink_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const char *utime_time, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_cksm_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, globus_off_t offset, globus_off_t length, const char *algorithm, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_delete_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_feat_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_mkdir_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_rmdir_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_list_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_verbose_list_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_machine_list_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_recursive_list_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_mlst_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_stat_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_move_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *source_url, const char *dest_url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_get_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_put_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, globus_bool_t restart)
- typedef void(* **globus_ftp_client_plugin_third_party_transfer_t**)(**globus_ftp_client_plugin_t** *plugin, void *plugin_specific, **globus_ftp_client_handle_t** *handle, const char *source_url, const **globus_ftp_client_operationattr_t** *source_attr, const char *dest_url, const **globus_ftp_client_operationattr_t** *dest_attr, globus_bool_t restart)

- typedef void(∗ **globus_ftp_client_plugin_modification_time_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle, const char ∗url, const **globus_ftp_client_operationattr_t** ∗attr, globus_bool_t restart)
- typedef void(∗ **globus_ftp_client_plugin_size_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle, const char ∗url, const **globus_ftp_client_operationattr_t** ∗attr, globus_bool_t restart)
- typedef void(∗ **globus_ftp_client_plugin_abort_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle)
- typedef void(∗ **globus_ftp_client_plugin_read_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle, const globus_byte_t ∗buffer, globus_size_t buffer_length)
- typedef void(∗ **globus_ftp_client_plugin_write_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle, const globus_byte_t ∗buffer, globus_size_t buffer_length, globus_off_t offset, globus_bool_t eof)
- typedef void(∗ **globus_ftp_client_plugin_data_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle, globus_object_t ∗error, const globus_byte_t ∗buffer, globus_size_t length, globus_off_t offset, globus_bool_t eof)
- typedef void(∗ **globus_ftp_client_plugin_command_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle, const char ∗url, const char ∗command)
- typedef void(∗ **globus_ftp_client_plugin_response_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle, const char ∗url, globus_object_t ∗error, const globus_ftp_control_response_t ∗ftp_response)
- typedef void(∗ **globus_ftp_client_plugin_fault_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle, const char ∗url, globus_object_t ∗error)
- typedef void(∗ **globus_ftp_client_plugin_complete_t**)(**globus_ftp_client_plugin_t** ∗plugin, void ∗plugin_specific, **globus_ftp_client_handle_t** ∗handle)

Enumerations

- enum **globus_ftp_client_plugin_command_mask_t** { , **GLOBUS_FTP_CLIENT_CMD_MASK_CONTROL_ESTABLISHMENT** = 1<<0, **GLOBUS_FTP_CLIENT_CMD_MASK_DATA_ESTABLISHMENT** = 1<<1, **GLOBUS_FTP_CLIENT_CMD_MASK_TRANSFER_PARAMETERS** = 1<<2, **GLOBUS_FTP_CLIENT_CMD_MASK_TRANSFER_MODIFIERS** = 1<<3, **GLOBUS_FTP_CLIENT_CMD_MASK_FILE_ACTIONS** = 1<<4, **GLOBUS_FTP_CLIENT_CMD_MASK_INFORMATION** = 1<<5, **GLOBUS_FTP_CLIENT_CMD_MASK_MISC** = 1<<6, **GLOBUS_FTP_CLIENT_CMD_MASK_BUFFER** = 1<<7, **GLOBUS_FTP_CLIENT_CMD_MASK_ALL** = 0x7fffffff }

Functions

- globus_result_t **globus_ftp_client_plugin_restart_list** (**globus_ftp_client_handle_t** ∗handle, const char ∗url, const **globus_ftp_client_operationattr_t** ∗attr, const globus_abstime_t ∗when)
- globus_result_t **globus_ftp_client_plugin_restart_verbose_list** (**globus_ftp_client_handle_t** ∗handle, const char ∗url, const **globus_ftp_client_operationattr_t** ∗attr, const globus_abstime_t ∗when)
- globus_result_t **globus_ftp_client_plugin_restart_machine_list** (**globus_ftp_client_handle_t** ∗handle, const char ∗url, const **globus_ftp_client_operationattr_t** ∗attr, const globus_abstime_t ∗when)
- globus_result_t **globus_ftp_client_plugin_restart_recursive_list** (**globus_ftp_client_handle_t** ∗handle, const char ∗url, const **globus_ftp_client_operationattr_t** ∗attr, const globus_abstime_t ∗when)
- globus_result_t **globus_ftp_client_plugin_restart_mlst** (**globus_ftp_client_handle_t** ∗handle, const char ∗url, const **globus_ftp_client_operationattr_t** ∗attr, const globus_abstime_t ∗when)
- globus_result_t **globus_ftp_client_plugin_restart_stat** (**globus_ftp_client_handle_t** ∗handle, const char ∗url, const **globus_ftp_client_operationattr_t** ∗attr, const globus_abstime_t ∗when)
- globus_result_t **globus_ftp_client_plugin_restart_chmod** (**globus_ftp_client_handle_t** ∗handle, const char ∗url, int mode, const **globus_ftp_client_operationattr_t** ∗attr, const globus_abstime_t ∗when)

- globus_result_t **globus_ftp_client_plugin_restart_chgrp** (**globus_ftp_client_handle_t** *handle, const char *url, const char *group, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_utime** (**globus_ftp_client_handle_t** *handle, const char *url, const struct tm *utime_time, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_symlink** (**globus_ftp_client_handle_t** *handle, const char *url, const char *link_url, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_cksm** (**globus_ftp_client_handle_t** *handle, const char *url, globus_off_t offset, globus_off_t length, const char *algorithm, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_delete** (**globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_feat** (**globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_mkdir** (**globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_rmdir** (**globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_move** (**globus_ftp_client_handle_t** *handle, const char *source_url, const char *dest_url, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_get** (**globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_restart_marker_t** *restart_marker, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_put** (**globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, **globus_ftp_client_restart_marker_t** *restart_marker, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_third_party_transfer** (**globus_ftp_client_handle_t** *handle, const char *source_url, const **globus_ftp_client_operationattr_t** *source_attr, const char *dest_url, const **globus_ftp_client_operationattr_t** *dest_attr, **globus_ftp_client_restart_marker_t** *restart_marker, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_size** (**globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_modification_time** (**globus_ftp_client_handle_t** *handle, const char *url, const **globus_ftp_client_operationattr_t** *attr, const globus_abstime_t *when)
- globus_result_t **globus_ftp_client_plugin_restart_get_marker** (**globus_ftp_client_handle_t** *handle, **globus_ftp_client_restart_marker_t** *marker)
- globus_result_t **globus_ftp_client_plugin_abort** (**globus_ftp_client_handle_t** *handle)
- globus_result_t **globus_ftp_client_plugin_add_data_channels** (**globus_ftp_client_handle_t** *handle, unsigned int num_channels, unsigned int stripe)
- globus_result_t **globus_ftp_client_plugin_remove_data_channels** (**globus_ftp_client_handle_t** *handle, unsigned int num_channels, unsigned int stripe)

5.10.1 Detailed Description

Plugin API. A plugin is a way to implement application-independent reliability and performance tuning behavior. Plugins are written using the API described in this document.

A plugin is created by defining a globus_ftp_client_plugin_t which contains the function pointers and plugin-specific data needed for the plugin's operation. It is recommended that a plugin define a a globus_module_descriptor_t and plugin initialization functions, to ensure that the plugin is properly initialized.

The functions pointed to in a plugin are called when significant events in the life of an FTP Client operation occur. Note that plugins will only be called when the plugin has the function pointer for both the operation (get, put, list, etc), and the event (connect, authenticate, command, etc), are defined. The command and response functions are filtered based on the command_mask defined in the plugin structure.

Every plugin must define **copy** (p. 77) and **destroy** (p. 77) functions. The copy function is called when the plugin is added to an attribute set or a handle is initialized with an attribute set containing the plugin. The destroy function is called when the handle or attribute set is destroyed.

5.10.2 Typedef Documentation

5.10.2.1 typedef struct globus_i_ftp_client_plugin_t* globus_ftp_client_plugin_t

FTP Client plugin

An FTP Client plugin is used to add restart, monitoring, and performance tuning operations to the FTP Client library, without modifying the base API.

Multiple plugins may be associated with a globus_ftp_client_handle_t.

See also

globus_ftp_client_handle_init() (p. 9), **globus_ftp_client_handle_destroy()** (p. 9), **globus_ftp_client_handleattr_t** (p. 13), **Debugging Plugin** (p. 65)

5.10.2.2 typedef globus_ftp_client_plugin_t*(* globus_ftp_client_plugin_copy_t)(globus_ftp_client_plugin_t *plugin_template, void *plugin_specific)

Plugin copy function.

This function is used to create a new copy or reference count a plugin. This function is called by the FTP Client library when a plugin is added to a handle attribute set, or when a handle is initialized with an attribute which contains the plugin.

A plugin may not call any of the plugin API functions from it's instantiate method.

Parameters

plugin_template	A plugin previously initialized by a call to the plugin-specific initialization function. by the user.
plugin_specific	Plugin-specific data.

Returns

A pointer to a plugin. This plugin copy must remain valid until the copy's **destroy** (p. 77) function is called on the copy.

See also

globus_ftp_client_plugin_destroy_t (p. 77)

5.10.2.3 typedef void(* globus_ftp_client_plugin_destroy_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific)

Plugin destroy function.

This function is used to free or unreference a copy of a plugin which was allocated by calling the instantiate function from the plugin.

Parameters

plugin	The plugin, created by the create function, which is to be destroyed.
plugin_specific	Plugin-specific data.

5.10.2.4 typedef void(∗ globus_ftp_client_plugin_connect_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url)

Plugin connection begin function.

This callback is used to notify a plugin that connection establishment is being done for this client handle. This notification can occur when a new request is made or when a restart is done by a plugin.

If a response_callback is defined by a plugin, then that will be once the connection establishment has completed (successfully or unsuccessfully).

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the connection.

Note

This function will not be called for a get, put, or third-party transfer operation when a cached connection is used.

5.10.2.5 typedef void(∗ globus_ftp_client_plugin_authenticate_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const globus_ftp_control_auth_info_t ∗auth_info)

Plugin authentication notification callback.

This callback is used to notify a plugin that an authentication handshake is being done for this client handle. This notification can occur when a new request is made or when a hard restart is done by a plugin.

If a response_callback is defined by a plugin, then that will be once the authentication has completed (successfully or unsuccessfully).

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the connection.
url	The URL of the server to connect to.
auth_info	Authentication and authorization info being used to authenticate with the FTP or GridFTP server.

5.10.2.6 typedef void(∗ globus_ftp_client_plugin_chmod_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, int mode, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin chmod notification callback.

This callback is used to notify a plugin that a chmod is being requested on a client handle. This notification happens both when the user requests a chmod, and when a plugin restarts the currently active chmod request.

If this function is not defined by the plugin, then no plugin callbacks associated with the chmod will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the delete operation.
url	The url to chmod.
mode	The file mode to be applied.
attr	The attributes to be used during this operation.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current delete operation; otherwise, this is set to GLOBUS_FALSE.

5.10.2.7 typedef void(∗ globus_ftp_client_plugin_chgrp_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const char ∗group, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin chgrp notification callback.

This callback is used to notify a plugin that a chgrp is being requested on a client handle. This notification happens both when the user requests a chgrp, and when a plugin restarts the currently active chgrp request.

If this function is not defined by the plugin, then no plugin callbacks associated with the chgrp will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the delete operation.
url	The url to chgrp.
group	The group name or ID to change to.
attr	The attributes to be used during this operation.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current delete operation; otherwise, this is set to GLOBUS_FALSE.

5.10.2.8 typedef void(∗ globus_ftp_client_plugin_utime_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const struct tm ∗utime_time, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin utime notification callback.

This callback is used to notify a plugin that a utime is being requested on a client handle. This notification happens both when the user requests a utime, and when a plugin restarts the currently active utime request.

If this function is not defined by the plugin, then no plugin callbacks associated with the utime will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the utime operation.
url	The url to utime.
utime_time	The modification time to change the file to.
attr	The attributes to be used during this operation.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current utime operation; otherwise, this is set to GLOBUS_FALSE.

5.10.2.9 typedef void(* globus_ftp_client_plugin_symlink_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, const char *utime_time, const globus_ftp_client_operationattr_t *attr, globus_bool_t restart)

Plugin symlink notification callback.

This callback is used to notify a plugin that a symlink is being requested on a client handle. This notification happens both when the user requests a symlink, and when a plugin restarts the currently active symlink request.

If this function is not defined by the plugin, then no plugin callbacks associated with the symlink will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the symlink operation.
url	The url of the new link.
link_url	The url to which the new link should point.
attr	The attributes to be used during this operation.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current utime operation; otherwise, this is set to GLOBUS_FALSE.

5.10.2.10 typedef void(* globus_ftp_client_plugin_cksm_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, globus_off_t offset, globus_off_t length, const char *algorithm, const globus_ftp_client_operationattr_t *attr, globus_bool_t restart)

Plugin cksm notification callback.

This callback is used to notify a plugin that a cksm is being requested on a client handle. This notification happens both when the user requests a cksm, and when a plugin restarts the currently active cksm request.

If this function is not defined by the plugin, then no plugin callbacks associated with the cksm will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the delete operation.
url	The url to cksm.
offset	File offset to start calculating checksum.
length	Length of data to read from the starting offset. Use -1 to read the entire file.
algorithm	A pointer to a string to be filled with the checksum of the file. On error the value pointed to by it is undefined.
attr	The attributes to be used during this operation.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current delete operation; otherwise, this is set to GLOBUS_FALSE.

5.10.2.11 typedef void(* globus_ftp_client_plugin_delete_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, const globus_ftp_client_operationattr_t *attr, globus_bool_t restart)

Plugin delete notification callback.

This callback is used to notify a plugin that a delete is being requested on a client handle. This notification happens both when the user requests a delete, and when a plugin restarts the currently active delete request.

If this function is not defined by the plugin, then no plugin callbacks associated with the delete will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the delete operation.
url	The url to be deleted.
attr	The attributes to be used during this operation.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current delete operation; otherwise, this is set to GLOBUS_FALSE.

5.10.2.12 typedef void(∗ globus_ftp_client_plugin_feat_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin feat notification callback.

This callback is used to notify a plugin that a feat is being requested on a client handle. This notification happens both when the user requests a feat, and when a plugin restarts the currently active feat request.

If this function is not defined by the plugin, then no plugin callbacks associated with the feat will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the feat operation.
url	The url to be feat'd.
attr	The attributes to be used during this operation.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current feat operation; otherwise, this is set to GLOBUS_FALSE.

5.10.2.13 typedef void(∗ globus_ftp_client_plugin_mkdir_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin mkdir notification callback.

This callback is used to notify a plugin that a mkdir is being requested on a client handle. This notification happens both when the user requests a mkdir, and when a plugin restarts the currently active mkdir request.

If this function is not defined by the plugin, then no plugin callbacks associated with the mkdir will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the mkdir operation.
url	The url of the directory to create.
attr	The attributes to be used during this operation.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current mkdir operation; otherwise, this is set to GLOBUS_FALSE.

5.10.2.14 typedef void(∗ globus_ftp_client_plugin_rmdir_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin rmdir notification callback.

This callback is used to notify a plugin that a rmdir is being requested on a client handle. This notification happens both when the user requests a rmdir, and when a plugin restarts the currently active rmdir request.

If this function is not defined by the plugin, then no plugin callbacks associated with the rmdir will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the rmdir operation.
url	The url of the rmdir operation.
attr	The attributes to be used during this operation.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current rmdir operation; otherwise, this is set to GLOBUS_FALSE.

5.10.2.15 typedef void(∗ globus_ftp_client_plugin_list_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin list notification callback.

This callback is used to notify a plugin that a list is being requested on a client handle. This notification happens both when the user requests a list, and when a plugin restarts the currently active list request.

If this function is not defined by the plugin, then no plugin callbacks associated with the list will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the list operation.
url	The url of the list operation.
attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current list transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.16 typedef void(∗ globus_ftp_client_plugin_verbose_list_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin verbose list notification callback.

This callback is used to notify a plugin that a list is being requested on a client handle. This notification happens both when the user requests a list, and when a plugin restarts the currently active list request.

If this function is not defined by the plugin, then no plugin callbacks associated with the list will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the list operation.
url	The url of the list operation.
attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current list transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.17 typedef void(* globus_ftp_client_plugin_machine_list_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, const globus_ftp_client_operationattr_t *attr, globus_bool_t restart)

Plugin machine list notification callback.

This callback is used to notify a plugin that a list is being requested on a client handle. This notification happens both when the user requests a list, and when a plugin restarts the currently active list request.

If this function is not defined by the plugin, then no plugin callbacks associated with the list will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the list operation.
url	The url of the list operation.
attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current list transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.18 typedef void(* globus_ftp_client_plugin_recursive_list_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, const globus_ftp_client_operationattr_t *attr, globus_bool_t restart)

Plugin recursive list notification callback.

This callback is used to notify a plugin that a list is being requested on a client handle. This notification happens both when the user requests a list, and when a plugin restarts the currently active list request.

If this function is not defined by the plugin, then no plugin callbacks associated with the list will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the list operation.
url	The url of the list operation.
attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current list transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.19 typedef void(* globus_ftp_client_plugin_mlst_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, const globus_ftp_client_operationattr_t *attr, globus_bool_t restart)

Plugin mlst notification callback.

This callback is used to notify a plugin that a mlst is being requested on a client handle. This notification happens both when the user requests a list, and when a plugin restarts the currently active list request.

If this function is not defined by the plugin, then no plugin callbacks associated with the list will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the list operation.
url	The url of the list operation.

attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current list transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.20 typedef void(∗ globus_ftp_client_plugin_stat_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin stat notification callback.

This callback is used to notify a plugin that a stat is being requested on a client handle. This notification happens both when the user requests a list, and when a plugin restarts the currently active list request.

If this function is not defined by the plugin, then no plugin callbacks associated with the list will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the list operation.
url	The url of the list operation.
attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current list transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.21 typedef void(∗ globus_ftp_client_plugin_move_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗source_url, const char ∗dest_url, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin move notification callback.

This callback is used to notify a plugin that a move is being requested on a client handle. This notification happens both when the user requests a move, and when a plugin restarts the currently active move request.

If this function is not defined by the plugin, then no plugin callbacks associated with the move will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the move operation.
source_url	The source url of the move operation.
dest_url	The destination url of the move operation.
attr	The attributes to be used during this move.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current move transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.22 typedef void(∗ globus_ftp_client_plugin_get_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin get notification callback.

This callback is used to notify a plugin that a get is being requested on a client handle. This notification happens both when the user requests a get, and when a plugin restarts the currently active get request.

If this function is not defined by the plugin, then no plugin callbacks associated with the get will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the get operation.
url	The url of the get operation.
attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current get transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.23 typedef void(∗ globus_ftp_client_plugin_put_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗url, const globus_ftp_client_operationattr_t ∗attr, globus_bool_t restart)

Plugin put notification callback.

This callback is used to notify a plugin that a put is being requested on a client handle. This notification happens both when the user requests a put, and when a plugin restarts the currently active put request.

If this function is not defined by the plugin, then no plugin callbacks associated with the put will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the put operation.
url	The url of the put operation.
attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current put transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.24 typedef void(∗ globus_ftp_client_plugin_third_party_transfer_t)(globus_ftp_client_plugin_t ∗plugin, void ∗plugin_specific, globus_ftp_client_handle_t ∗handle, const char ∗source_url, const globus_ftp_client_operationattr_t ∗source_attr, const char ∗dest_url, const globus_ftp_client_operationattr_t ∗dest_attr, globus_bool_t restart)

Plugin third-party transfer notification callback.

This callback is used to notify a plugin that a transfer is being requested on a client handle. This notification happens both when the user requests a transfer, and when a plugin restarts the currently active transfer request.

If this function is not defined by the plugin, then no plugin callbacks associated with the third-party transfer will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the transfer operation.
source_url	The source url of the transfer operation.
source_attr	The attributes to be used during this transfer on the source.
dest_url	The destination url of the third-party transfer operation.
dest_attr	The attributes to be used during this transfer on the destination.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current transfer transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.25 typedef void(* globus_ftp_client_plugin_modification_time_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, const globus_ftp_client_operationattr_t *attr, globus_bool_t restart)

Plugin modification time notification callback.

This callback is used to notify a plugin that a modification time check is being requested on a client handle. This notification happens both when the user requests the modification time of a file, and when a plugin restarts the currently active request.

If this function is not defined by the plugin, then no plugin callbacks associated with the modification time request will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the list operation.
url	The url of the list operation.
attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current list transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.26 typedef void(* globus_ftp_client_plugin_size_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, const globus_ftp_client_operationattr_t *attr, globus_bool_t restart)

Plugin size notification callback.

This callback is used to notify a plugin that a size check is being requested on a client handle. This notification happens both when the user requests the size of a file, and when a plugin restarts the currently active request.

If this function is not defined by the plugin, then no plugin callbacks associated with the size request will be called.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the list operation.
url	The url of the list operation.
attr	The attributes to be used during this transfer.
restart	This value is set to GLOBUS_TRUE when this callback is caused by a plugin restarting the current list transfer; otherwise, this is set to GLOBUS_FALSE.

5.10.2.27 typedef void(* globus_ftp_client_plugin_abort_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle)

Plugin abort notification callback.

This callback is used to notify a plugin that an abort is being requested on a client handle. This notification happens both when the user aborts a request and when a plugin aborts the currently active request.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the request.

5.10.2.28 typedef void(* globus_ftp_client_plugin_read_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const globus_byte_t *buffer, globus_size_t buffer_length)

Plugin read registration callback.

This callback is used to notify a plugin that the client API has registered a buffer with the FTP control API for reading when processing a get.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the request.
buffer	The data buffer to read into.
buffer_length	The maximum amount of data to read into the buffer.

5.10.2.29 typedef void(* globus_ftp_client_plugin_write_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const globus_byte_t *buffer, globus_size_t buffer_length, globus_off_t offset, globus_bool_t eof)

Plugin write registration callback.

This callback is used to notify a plugin that the client API has registered a buffer with the FTP control API for writing when processing a put.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the request.
buffer	The buffer which is being written.
buffer_length	The amount of data in the buffer.
offset	The offset within the file where the buffer is to be written.
eof	This value is set to GLOBUS_TRUE if this is the last data buffer to be sent for this put request.

5.10.2.30 typedef void(* globus_ftp_client_plugin_data_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, globus_object_t *error, const globus_byte_t *buffer, globus_size_t length, globus_off_t offset, globus_bool_t eof)

Plugin data callback handler.

This callback is used to notify a plugin that a read or write operation previously registered has completed. The buffer pointer will match that of a previous plugin read or write registration callback.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the request.
buffer	The buffer which was successfully transferred over the network.
length	The amount of data to read or written.
offset	The offset into the file where this data buffer belongs.
eof	This value is set to GLOBUS_TRUE if end-of-file is being processed for this transfer.

5.10.2.31 typedef void(* globus_ftp_client_plugin_command_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, const char *command)

Command callback.

This callback is used to notify a plugin that a FTP control command is being sent. The client library will only call this function for response callbacks associated with a command which is in the plugin's command mask, and associated with one of the other ftp operations with a defined callback in the plugin.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the request.
url	The URL which this command is being sent to.
command	A string containing the command which is being sent to the server (TYPE I, for example).

5.10.2.32 typedef void(* globus_ftp_client_plugin_response_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, globus_object_t *error, const globus_ftp_control_response_t *ftp_response)

Response callback.

This callback is used to notify a plugin that a FTP control response has occurred on a control connection. FTP response callbacks will come back to the user in the order which the commands were executed. The client library will only call this function for response callbacks associated with a command which is in the plugin's command mask, or associated with one of the other ftp operations with a defined callback in the plugin.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the request.
url	The URL which this response came from.
error	An error which occurred while processing this command/response pair.
ftp_response	The response structure from the ftp control library.

5.10.2.33 typedef void(* globus_ftp_client_plugin_fault_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle, const char *url, globus_object_t *error)

Fault notification callback.

This callback is used to notify a plugin that a fault occurred while processing the request. The fault may be internally generated, or come from a call to another library.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the request.
url	The url being processed when the fault ocurred.
error	An error object describing the fault.

5.10.2.34 typedef void(* globus_ftp_client_plugin_complete_t)(globus_ftp_client_plugin_t *plugin, void *plugin_specific, globus_ftp_client_handle_t *handle)

Completion notification callback.

This callback is used to notify a plugin that an operation previously begun has completed. The plugin may not call any other plugin operation on this handle after this has occurred. This is the final callback for the plugin while processing the operation. The plugin may free any internal state associated with the operation at this point.

Parameters

plugin	The plugin which is being notified.
plugin_specific	Plugin-specific data.
handle	The handle associated with the operation.

5.10.3 Enumeration Type Documentation

5.10.3.1 enum globus_ftp_client_plugin_command_mask_t

Command Mask.

This enumeration includes the types of commands which the plugin is interested in.

Enumerator:

GLOBUS_FTP_CLIENT_CMD_MASK_CONTROL_ESTABLISHMENT connect, authenticate

GLOBUS_FTP_CLIENT_CMD_MASK_DATA_ESTABLISHMENT PASV, PORT, SPOR, SPAS.

GLOBUS_FTP_CLIENT_CMD_MASK_TRANSFER_PARAMETERS MODE, TYPE, STRU, OPTS RETR, - DCAU.

GLOBUS_FTP_CLIENT_CMD_MASK_TRANSFER_MODIFIERS ALLO, REST.

GLOBUS_FTP_CLIENT_CMD_MASK_FILE_ACTIONS STOR, RETR, ESTO, ERET, APPE, LIST, NLST, - MLSD, MLSR, GET, PUT.

GLOBUS_FTP_CLIENT_CMD_MASK_INFORMATION HELP, SITE HELP, FEAT, STAT, SYST, SIZE.

GLOBUS_FTP_CLIENT_CMD_MASK_MISC SITE, NOOP.

GLOBUS_FTP_CLIENT_CMD_MASK_BUFFER SBUF, ABUF.

GLOBUS_FTP_CLIENT_CMD_MASK_ALL All possible commands.

5.10.4 Function Documentation

5.10.4.1 globus_result_t globus_ftp_client_plugin_restart_list (globus_ftp_client_handle_t * *handle,* const char * *url,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing list.

This function will cause the currently executing transfer operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in list events will receive a list callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the list.
url	The destination URL of the transfer. This may be different than the original list's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new transfer. This may be a modified version of the original list's attribute set.
when	Absolute time for when to restart the list. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.2 globus_result_t globus_ftp_client_plugin_restart_verbose_list (globus_ftp_client_handle_t * *handle*, const char * *url*, const globus_ftp_client_operationattr_t * *attr*, const globus_abstime_t * *when*)

Restart an existing verbose list.

This function will cause the currently executing transfer operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in list events will receive a list callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the list.
url	The destination URL of the transfer. This may be different than the original list's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new transfer. This may be a modified version of the original list's attribute set.
when	Absolute time for when to restart the list. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.3 globus_result_t globus_ftp_client_plugin_restart_machine_list (globus_ftp_client_handle_t * *handle*, const char * *url*, const globus_ftp_client_operationattr_t * *attr*, const globus_abstime_t * *when*)

Restart an existing machine list.

This function will cause the currently executing transfer operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in list events will receive a list callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the list.
url	The destination URL of the transfer. This may be different than the original list's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new transfer. This may be a modified version of the original list's attribute set.
when	Absolute time for when to restart the list. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.4 globus_result_t globus_ftp_client_plugin_restart_recursive_list (globus_ftp_client_handle_t * *handle*, const char * *url*, const globus_ftp_client_operationattr_t * *attr*, const globus_abstime_t * *when*)

Restart an existing recursive list.

This function will cause the currently executing transfer operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in list events will receive a list callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the list.
source_url	The destination URL of the transfer. This may be different than the original list's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
source_attr	The attributes to use for the new transfer. This may be a modified version of the original list's attribute set.
when	Absolute time for when to restart the list. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.5 globus_result_t globus_ftp_client_plugin_restart_mlst (globus_ftp_client_handle_t * *handle*, const char * *url*, const globus_ftp_client_operationattr_t * *attr*, const globus_abstime_t * *when*)

Restart an existing MLST.

This function will cause the currently executing transfer operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in list events will receive a list callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the list.
url	The destination URL of the transfer. This may be different than the original list's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new transfer. This may be a modified version of the original list's attribute set.
when	Absolute time for when to restart the list. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.6 globus_result_t globus_ftp_client_plugin_restart_stat (globus_ftp_client_handle_t * *handle*, const char * *url*, const globus_ftp_client_operationattr_t * *attr*, const globus_abstime_t * *when*)

Restart an existing STAT.

This function will cause the currently executing transfer operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in list events will receive a list callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the list.
url	The destination URL of the transfer. This may be different than the original list's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new transfer. This may be a modified version of the original list's attribute set.
when	Absolute time for when to restart the list. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.7 globus_result_t globus_ftp_client_plugin_restart_chmod (globus_ftp_client_handle_t * *handle,* const char * *url,* int *mode,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing chmod.

This function will cause the currently executing chmod operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in chmod events will receive a chmod callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the chmod.
url	The destination URL of the transfer. This may be different than the original chmod's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
mode	The file mode that will be applied. Must be an octal number repre- senting the bit pattern for the new permissions.
attr	The attributes to use for the new transfer. This may be a modified version of the original chmod's attribute set.
when	Absolute time for when to restart the chmod. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.8 globus_result_t globus_ftp_client_plugin_restart_chgrp (globus_ftp_client_handle_t * *handle,* const char * *url,* const char * *group,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing chgrp.

This function will cause the currently executing chgrp operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in chgrp events will receive a chgrp callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the chgrp.
url	The destination URL of the transfer. This may be different than the original chgrp's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
group	The group name or ID to change the file to.
attr	The attributes to use for the new transfer. This may be a modified version of the original chgrp's attribute set.
when	Absolute time for when to restart the chgrp. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.9 globus_result_t globus_ftp_client_plugin_restart_utime (globus_ftp_client_handle_t * *handle,* const char * *url,* const struct tm * *utime_time,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing utime.

This function will cause the currently executing utime operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers

which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in utime events will receive a utime callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the chgrp.
url	The destination URL of the transfer. This may be different than the original utime's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
utime_time	The time value to change the file to.
attr	The attributes to use for the new transfer. This may be a modified version of the original utime's attribute set.
when	Absolute time for when to restart the utime. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.10 globus_result_t globus_ftp_client_plugin_restart_symlink (globus_ftp_client_handle_t * *handle,* const char * *url,* const char * *link_url,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing symlink.

This function will cause the currently executing symlink operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in chgrp events will receive a chgrp callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the chgrp.
url	The destination URL of the transfer. This may be different than the original symlink's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
link_url	The URL to symbolically link the file to.
attr	The attributes to use for the new transfer. This may be a modified version of the original symlink's attribute set.
when	Absolute time for when to restart the symlink. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.11 globus_result_t globus_ftp_client_plugin_restart_cksm (globus_ftp_client_handle_t * *handle,* const char * *url,* globus_off_t *offset,* globus_off_t *length,* const char * *algorithm,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing cksm.

This function will cause the currently executing cksm operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in cksm events will receive a cksm callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the cksm.
url	The destination URL of the transfer. This may be different than the original cksm's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
offset	File offset to start calculating checksum.
length	Length of data to read from the starting offset. Use -1 to read the entire file.
algorithm	A pointer to a string to be filled with the checksum of the file. On error the value pointed to by it is undefined.
attr	The attributes to use for the new transfer. This may be a modified version of the original cksm's attribute set.
when	Absolute time for when to restart the cksm. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.12 globus_result_t globus_ftp_client_plugin_restart_delete (globus_ftp_client_handle_t * *handle,* const char * *url,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing delete.

This function will cause the currently executing delete operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in delete events will receive a delete callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the delete.
url	The destination URL of the transfer. This may be different than the original delete's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new transfer. This may be a modified version of the original delete's attribute set.
when	Absolute time for when to restart the delete. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.13 globus_result_t globus_ftp_client_plugin_restart_feat (globus_ftp_client_handle_t * *handle,* const char * *url,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing feat.

This function will cause the currently executing feat operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in feat events will receive a feat callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the feat.
url	The destination URL of the transfer. This may be different than the original feat's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.

attr	The attributes to use for the new transfer. This may be a modified version of the original feat's attribute set.
when	Absolute time for when to restart the feat. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.14 globus_result_t globus_ftp_client_plugin_restart_mkdir (globus_ftp_client_handle_t * *handle,* const char * *url,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing mkdir.

This function will cause the currently executing operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in mkdir events will receive a mkdir callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the mkdir.
url	The destination URL of the transfer. This may be different than the original mkdir's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new transfer. This may be a modified version of the original mkdir's attribute set.
when	Absolute time for when to restart the mkdir. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.15 globus_result_t globus_ftp_client_plugin_restart_rmdir (globus_ftp_client_handle_t * *handle,* const char * *url,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart an existing rmdir.

This function will cause the currently executing operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in rmdir events will receive a rmdir callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the rmdir.
url	The destination URL of the transfer. This may be different than the original rmdir's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new transfer. This may be a modified version of the original rmdir's attribute set.
when	Absolute time for when to restart the rmdir. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.16 globus_result_t globus_ftp_client_plugin_restart_move (globus_ftp_client_handle_t * *handle*, const char * *source_url*, const char * *dest_url*, const globus_ftp_client_operationattr_t * *attr*, const globus_abstime_t * *when*)

Restart an existing move.

This function will cause the currently executing move operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially new URLs and attributes.

The user will not receive any notification that a restart has happened. Each plugin which is interested in get events will receive a move callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the move.
source_url	The source URL of the move. This may be different than the original get's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
dest_url	The destination URL of the move. This may be different than the original get's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL. Note that only the path component of this URL is used.
attr	The attributes to use for the new transfer. This may be a modified version of the original move's attribute set. This may be useful when the plugin wishes to send restart markers to the FTP server to prevent re-sending the data which has already been sent.
when	Absolute time for when to restart the move. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.17 globus_result_t globus_ftp_client_plugin_restart_get (globus_ftp_client_handle_t * *handle*, const char * *url*, const globus_ftp_client_operationattr_t * *attr*, globus_ftp_client_restart_marker_t * *restart_marker*, const globus_abstime_t * *when*)

Restart an existing get.

This function will cause the currently executing transfer operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued will be cleared and reused once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in get events will receive a get callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the get.
url	The source URL of the transfer. This may be different than the original get's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new transfer. This may be a modified version of the original get's attribute set. This may be useful when the plugin wishes to send restart markers to the FTP server to prevent re-sending the data which has already been sent.
restart_marker	Plugin-provided restart marker for resuming at a non-default restart point. This may be used to implement a persistent restart across process invocations. The default behavior if this is NULL is to use any restart information which has been received by the ftp client library while processing this operation when restarted.
when	Absolute time for when to restart the get. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.18 globus_result_t globus_ftp_client_plugin_restart_put (globus_ftp_client_handle_t * *handle,* const char * *url,* const globus_ftp_client_operationattr_t * *attr,* globus_ftp_client_restart_marker_t * *restart_marker,* const globus_abstime_t * *when*)

Restart an existing put.

This function will cause the currently executing transfer operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes. Any data buffers which are currently queued but not called back will be resent once the connection is re-established.

The user will not receive any notification that a restart has happened. Each plugin which is interested in get events will receive a put callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the put.
url	The URL of the transfer. This may be different than the original put's URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL. If the put is restarted with a different URL, the plugin must re-send any data which has already been acknowledged by it's callback.
attr	The attributes to use for the new transfer. This may be a modified version of the original put's attribute set. This may be useful when the plugin wishes to send restart markers to the FTP server to prevent re-sending the data which has already been sent.
restart_marker	Plugin-provided restart marker for resuming at a non-default restart point. This may be used to implement a persistent restart across process invocations. The default behavior if this is NULL is to use any restart information which has been received by the ftp client library while processing this operation when restarted.
when	Absolute time for when to restart the put. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.19 globus_result_t globus_ftp_client_plugin_restart_third_party_transfer (globus_ftp_client_handle_t * *handle,* const char * *source_url,* const globus_ftp_client_operationattr_t * *source_attr,* const char * *dest_url,* const globus_ftp_client_operationattr_t * *dest_attr,* globus_ftp_client_restart_marker_t * *restart_marker,* const globus_abstime_t * *when*)

Restart an existing third-party transfer.

This function will cause the currently executing transfer operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URLs and attributes.

The user will not receive any notification that a restart has happened. Each plugin which is interested in third-party transfer events will receive a transfer callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the transfer.
source_url	The source URL of the transfer. This may be different than the original URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL
source_attr	The attributes to use for the new transfer. This may be a modified version of the original transfer's attribute set. This may be useful when the plugin wishes to send restart markers to the FTP server to prevent re-sending the data which has already been sent.
dest_url	The destination URL of the transfer. This may be different than the original destination URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
dest_attr	The attributes to use for the new transfer. This may be a modified version of the original transfer's attribute set. This may be useful when the plugin wishes to send restart markers to the FTP server to prevent re-sending the data which has already been sent.

restart_marker	Plugin-provided restart marker for resuming at a non-default restart point. This may be used to implement a persistent restart across process invocations. The default behavior if this is NULL is to use any restart information which has been received by the ftp client library while processing this operation when restarted.
when	Absolute time for when to restart the transfer. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.20 globus_result_t globus_ftp_client_plugin_restart_size (globus_ftp_client_handle_t * *handle,* const char * *url,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart a size check operation.

This function will cause the currently executing size check operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes.

The user will not receive any notification that a restart has happened. Each plugin which is interested in size operations will receive a size callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the operation.
url	The source URL of the size check. This may be different than the original operations URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new operation. This may be a modified version of the original operations's attribute set.
when	Absolute time for when to restart the size check. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.21 globus_result_t globus_ftp_client_plugin_restart_modification_time (globus_ftp_client_handle_t * *handle,* const char * *url,* const globus_ftp_client_operationattr_t * *attr,* const globus_abstime_t * *when*)

Restart a modification time check operation.

This function will cause the currently executing modification time check operation to be restarted. When a restart happens, the operation will be silently aborted, and then restarted with potentially a new URL and attributes.

The user will not receive any notification that a restart has happened. Each plugin which is interested in modification time operations will receive a modification time callback with the restart boolean set to GLOBUS_TRUE.

Parameters

handle	The handle which is associated with the operation.
url	The source URL of the modification time check. This may be different than the original operations URL, if the plugin decides to redirect to another FTP server due to performance or reliability problems with the original URL.
attr	The attributes to use for the new operation. This may be a modified version of the original operations's attribute set.
when	Absolute time for when to restart the modification time check. The current control and data connections will be stopped immediately. If this completes before **when**, then the restart will be delayed until that time. Otherwise, it will be immediately restarted.

5.10.4.22 globus_result_t globus_ftp_client_plugin_restart_get_marker (globus_ftp_client_handle_t * *handle,* globus_ftp_client_restart_marker_t * *marker*)

Get restart marker

This function will allow this user to get the restart marker associated with a restarted file transfer.

This function may only be called within the get, put, or third party transfer callback in which the 'restart' argument is GLOBUS_TRUE

Parameters

handle	The handle which is associated with the transfer.
marker	Pointer to an uninitialized restart marker type

Returns

- Error on NULL handle or marker
- Error on invalid use of function
- GLOBUS_SUCCESS (marker will be populated)

5.10.4.23 globus_result_t globus_ftp_client_plugin_abort (globus_ftp_client_handle_t * *handle*)

Abort a transfer operation.

This function will cause the currently executing transfer operation to be aborted. When this happens, all plugins will be notified by their abort callbacks. Once those are processed, the complete callback will be called for all plugins, and then for the user's callback.

The complete callback will indicate that the transfer did not complete successfully.

Parameters

handle	The handle which is associated with the transfer.

5.10.4.24 globus_result_t globus_ftp_client_plugin_add_data_channels (globus_ftp_client_handle_t * *handle,* unsigned int *num_channels,* unsigned int *stripe*)

Add data channels to an existing put transfer.

This function will cause the currently executing transfer operation to have additional data channels acquired if the attribute set allows it.

Parameters

handle	The handle which is associated with the transfer.
num_channels	The number of channels to add to the transfer.
stripe	The stripe number to have the channels added to.

Note

Do the plugins need to be notified when this happens?

5.10.4.25 globus_result_t globus_ftp_client_plugin_remove_data_channels (globus_ftp_client_handle_t * *handle,* unsigned int *num_channels,* unsigned int *stripe*)

Remove data channels from an existing put transfer.

This function will cause the currently executing transfer operation to have data channels removed, if the attribute set allows it.

Parameters

handle	The handle which is associated with the transfer.
num_channels	The number of channels to remove from the transfer.
stripe	The stripe number to have the channels removed from.

Note

Do the plugins need to be notified when this happens?

5.11 Restart Marker Plugin

Collaboration diagram for Restart Marker Plugin:

Defines

- #define **GLOBUS_FTP_CLIENT_RESTART_MARKER_PLUGIN_MODULE** (&globus_i_ftp_client_restart_marker_plugin_module)

Typedefs

- typedef globus_bool_t(∗ **globus_ftp_client_restart_marker_plugin_begin_cb_t**)(void ∗user_arg, **globus_ftp_client_handle_t** ∗handle, const char ∗source_url, const char ∗dest_url, **globus_ftp_client_restart_marker_t** ∗user_saved_marker)
- typedef void(∗ **globus_ftp_client_restart_marker_plugin_marker_cb_t**)(void ∗user_arg, **globus_ftp_client_handle_t** ∗handle, **globus_ftp_client_restart_marker_t** ∗marker)
- typedef void(∗ **globus_ftp_client_restart_marker_plugin_complete_cb_t**)(void ∗user_arg, **globus_ftp_client_handle_t** ∗handle, globus_object_t ∗error, const char ∗error_url)

Functions

- globus_result_t **globus_ftp_client_restart_marker_plugin_init** (**globus_ftp_client_plugin_t** ∗plugin, **globus_ftp_client_restart_marker_plugin_begin_cb_t** begin_cb, **globus_ftp_client_restart_marker_plugin_marker_cb_t** marker_cb, **globus_ftp_client_restart_marker_plugin_complete_cb_t** complete_cb, void ∗user_arg)
- globus_result_t **globus_ftp_client_restart_marker_plugin_destroy** (**globus_ftp_client_plugin_t** ∗plugin)

5.11.1 Detailed Description

This plugin is intended to allow users to make restart markers persistent. During a transfer, every marker received will result in the user's 'marker' callback being called with the new restart marker that can be stored. If the application were to prematurely terminate (while transferring), the user (after restarting the application) could pass this stored marker back to the plugin via the 'begin' callback to force the transfer to be restarted from the last marked point.

5.11.2 Define Documentation

5.11.2.1 #define GLOBUS_FTP_CLIENT_RESTART_MARKER_PLUGIN_MODULE (&globus_i_ftp_client_restart_marker_plugin_module)

Module descriptor.

5.11.3 Typedef Documentation

5.11.3.1 typedef globus_bool_t(* globus_ftp_client_restart_marker_plugin_begin_cb_t)(void *user_arg, globus_ftp_client_handle_t *handle, const char *source_url, const char *dest_url, globus_ftp_client_restart_marker_t *user_saved_marker)

Transfer begin callback

This callback is called when a get, put, or third party transfer is started.

The intended use for this callback is for the user to use the transfer urls to locate a restart marker in some persistent storage. If one is found, it should be copied into 'user_saved_marker' and the callback should return GLOBUS_TRUE. This will cause the transfer to be restarted using that restart marker. If one is not found, return GLOBUS_FALSE to indicate that the transfer should proceed from the beginning.

In any case, this is also an opportunity for the user to set up any storage in anticipation of restart markers for this transfer.

Parameters

handle	this the client handle that this transfer will be occurring on
user_arg	this is the user_arg passed to the init func
source_url	source of the transfer (GLOBUS_NULL if 'put')
dest_url	dest of the transfer (GLOBUS_NULL if 'get')
user_saved_marker	pointer to an unitialized restart marker

Returns

- GLOBUS_TRUE to indicate that the plugin should use 'user_saved_marker' to restart the transfer (and subsequently, destroy the marker)
- GLOBUS_FALSE to indicate that 'user_saved_marker' has not been modified, and that the transfer should proceed normally

5.11.3.2 typedef void(* globus_ftp_client_restart_marker_plugin_marker_cb_t)(void *user_arg, globus_ftp_client_handle_t *handle, globus_ftp_client_restart_marker_t *marker)

Restart marker received callback

This callback will be called every time a restart marker is available.

To receive restart markers in a 'put' or 'third_party_transfer', the transfer must be in Extended Block mode. 'get' transfers will have their markers generated internally. Markers generated internally will be 'sent' at most, once per second.

The intended use for this callback is to allow the user to store this marker (most likely in place of any previous marker) in a format that the 'begin_cb' can parse and pass back.

Parameters

handle	this the client handle that this transfer is occurring on
user_arg	this is the user_arg passed to the init func
marker	the restart marker that has been received. Thsi marker is owned by the caller. The user must use the copy method to keep it. Note: this restart marker currently contains all ranges received as of yet. Should I instead only pass a marker with the ranges just made available? If so, the user may need a way to combine restart markers (globus_ftp_client_restart_marker_combine)

Returns

- n/a

5.11.3.3 typedef void(* globus_ftp_client_restart_marker_plugin_complete_cb_t)(void *user_arg, globus_ftp_client_handle_t *handle, globus_object_t *error, const char *error_url)

Transfer complete callback

This callback will be called upon transfer completion (successful or otherwise)

Parameters

handle	this the client handle that this transfer was occurring on
user_arg	this is the user_arg passed to the init func
error	the error object indicating what went wrong (GLOBUS_NULL on success)
error_url	the url which is the source of the above error (GLOBUS_NULL on success)

Returns

- n/a

5.11.4 Function Documentation

5.11.4.1 globus_result_t globus_ftp_client_restart_marker_plugin_init (globus_ftp_client_plugin_t * *plugin*, globus_ftp_client_restart_marker_plugin_begin_cb_t *begin_cb*, globus_ftp_client_restart_marker_plugin_marker_cb_t *marker_cb*, globus_ftp_client_restart_marker_plugin_complete_cb_t *complete_cb*, void * *user_arg*)

Initialize a restart marker plugin

This function initializes a restart marker plugin.

Any params except for the plugin may be GLOBUS_NULL

Parameters

plugin	a pointer to a plugin type to be initialized
user_arg	a pointer to some user specific data that will be provided to all callbacks
begin_cb	the callback to be called upon the start of a transfer
marker_cb	the callback to be called with every restart marker received
complete_cb	the callback to be called to indicate transfer completion

Returns

- GLOBUS_SUCCESS
- Error on NULL plugin
- Error on init internal plugin

5.11.4.2 globus_result_t globus_ftp_client_restart_marker_plugin_destroy (globus_ftp_client_plugin_t * *plugin*)

Destroy restart marker plugin

Frees up memory associated with plugin.

Parameters

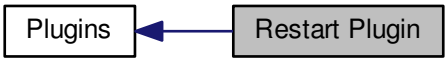
plugin	plugin previously initialized with init (above)

Returns

- GLOBUS_SUCCESS
- Error on NULL plugin

5.12 Restart Plugin

Collaboration diagram for Restart Plugin:



Defines

- #define **GLOBUS_FTP_CLIENT_RESTART_PLUGIN_MODULE** (&globus_i_ftp_client_restart_plugin_module)

Functions

- globus_result_t **globus_ftp_client_restart_plugin_init** (**globus_ftp_client_plugin_t** *plugin, int max_retries, globus_reltime_t *interval, globus_abstime_t *deadline)
- globus_result_t **globus_ftp_client_restart_plugin_destroy** (**globus_ftp_client_plugin_t** *plugin)

5.12.1 Detailed Description

The restart plugin implements one scheme for providing reliability functionality for the FTP Client library. Other plugins may be developed to provide other methods of reliability.

The specific functionality of this plugin is to restart any FTP operation when a fault occurs. The plugin's operation is parameterized to control how often and when to attempt to restart the operation.

This restart plugin will restart an FTP operation if a noticeable fault has occurred---a connection timing out, a failure by the server to process a command, a protocol error, an authentication error.

This plugin has three user-configurable parameters; these are the maximum number of retries to attempt, the interval to wait between retries, and the deadline after which no further retries will be attempted. These are set by initializing a restart plugin instance with the function **globus_ftp_client_restart_plugin_init()** (p. 106).

Example Usage

The following example illustrates a typical use of the restart plugin. In this case, we configure a plugin instance to restart the operation for up to an hour, using an exponential back-off between retries.

```
#include "globus_ftp_client.h"
#include "globus_ftp_client_restart_plugin.h"
#include "globus_time.h"

int
main(int argc, char *argv[])
{
    globus_ftp_client_plugin_t restart_plugin;
    globus_ftp_client_handleattr_t handleattr;
    globus_ftp_client_handle_t handle;
    globus_abstime_t deadline;
```

```
    globus_module_activate(GLOBUS_FTP_CLIENT_MODULE);
    globus_module_activate(GLOBUS_FTP_CLIENT_RESTART_PLUGIN_MODULE);

    /* Set a deadline to be now + 1 hour */
    GlobusAbstimeSet(deadline, 60 * 60, 0);

    /* initialize a plugin with this deadline */
    globus_ftp_client_restart_plugin_init(
        &restart_plugin,
        0,                          /* # retry limit (0 means don't limit) */
        GLOBUS_NULL,                /* interval between retries--null means
                                     * exponential backoff
                                     */
        &deadline);

    /* Set up our handle to use the new plugin */
    globus_ftp_client_handleattr_init(&handleattr);
    globus_ftp_client_handleattr_add_plugin(&handleattr, &restart_plugin);
    globus_ftp_client_handle_init(&handle, &handleattr);

    /*
     * Now, if a fault occurs processing this get, the plugin will restart
     * it with an exponential back-off, and will bail if a fault occurs
     * after 1 hour of retrying
     */
    globus_ftp_client_get(&handle,
                          "ftp://ftp.globus.org/pub/globus/README",
                          GLOBUS_NULL,
                          GLOBUS_NULL,
                          callback_fn,
                          GLOBUS_NULL);
}
```

5.12.2 Define Documentation

5.12.2.1 #define GLOBUS_FTP_CLIENT_RESTART_PLUGIN_MODULE (&globus_i_ftp_client_restart_plugin_module)

Module descriptor.

5.12.3 Function Documentation

5.12.3.1 globus_result_t globus_ftp_client_restart_plugin_init (globus_ftp_client_plugin_t * *plugin*, int *max_retries*, globus_reltime_t * *interval*, globus_abstime_t * *deadline*)

Initialize an instance of the GridFTP restart plugin

This function will initialize the plugin-specific instance data for this plugin, and will make the plugin usable for ftp client handle attribute and handle creation.

Parameters

plugin	A pointer to an uninitialized plugin. The plugin will be configured as a restart plugin.
max_retries	The maximum number of times to retry the operation before giving up on the transfer. If this value is less than or equal to 0, then the restart plugin will keep trying to restart the operation until it completes or the deadline is reached with an unsuccessful operation.
interval	The interval to wait after a failures before retrying the transfer. If the interval is 0 seconds or GLOBUS_NULL, then an exponential backoff will be used.
deadline	An absolute timeout. If the deadline is GLOBUS_NULL then the retry will never timeout.

Returns

This function returns an error if

- plugin is null

See also

globus_ftp_client_restart_plugin_destroy() (p. 107), **globus_ftp_client_handleattr_add_plugin()** (p. 16), **globus_ftp_client_handleattr_remove_plugin()** (p. 18), **globus_ftp_client_handle_init()** (p. 9)

5.12.3.2 globus_result_t globus_ftp_client_restart_plugin_destroy (globus_ftp_client_plugin_t * *plugin*)

Destroy an instance of the GridFTP restart plugin

This function will free all restart plugin-specific instance data from this plugin, and will make the plugin unusable for further ftp handle creation.

Existing FTP client handles and handle attributes will not be affected by destroying a plugin associated with them, as a local copy of the plugin is made upon handle initialization.

Parameters

plugin	A pointer to a GridFTP restart plugin, previously initialized by calling **globus_ftp_client_restart_plugin_init()** (p. 106)

Returns

This function returns an error if

- plugin is null
- plugin is not a restart plugin

See also

globus_ftp_client_restart_plugin_init() (p. 106), **globus_ftp_client_handleattr_add_plugin()** (p. 16), **globus_ftp_client_handleattr_remove_plugin()** (p. 18), **globus_ftp_client_handle_init()** (p. 9)

5.13 Netlogger Throughput Plugin

Collaboration diagram for Netlogger Throughput Plugin:

Defines

- #define **GLOBUS_FTP_CLIENT_THROUGHPUT_NL_PLUGIN_MODULE** (&globus_i_ftp_client_throughput_nl_plugin_module)

Functions

- globus_result_t **globus_ftp_client_throughput_nl_plugin_init** (**globus_ftp_client_plugin_t** *plugin, const char *nl_url, const char *prog_name, const char *opaque_string)
- globus_result_t **globus_ftp_client_throughput_nl_plugin_init_with_handle** (**globus_ftp_client_plugin_t** *plugin, NLhandle *nl_handle, const char *opaque_string)
- globus_result_t **globus_ftp_client_throughput_nl_plugin_destroy** (**globus_ftp_client_plugin_t** *plugin)
- globus_result_t **globus_ftp_client_throughput_nl_plugin_set_callbacks** (**globus_ftp_client_plugin_t** *plugin, **globus_ftp_client_throughput_plugin_begin_cb_t** begin_cb, **globus_ftp_client_throughput_plugin_stripe_cb_t** per_stripe_cb, **globus_ftp_client_throughput_plugin_total_cb_t** total_cb, **globus_ftp_client_throughput_plugin_complete_cb_t** complete_cb, void *user_specific)

5.13.1 Detailed Description

This plugin allows a user to easily use the throughput plugin to log performance data vi Netlogger. The plugin will log the following Event Types with its coressponding info

TransferPerfTotal : This event type will be sent everytime a throughput plugin total callback is received.

- URL.SOURCE <string> Source url of transfer
- URL.DEST <string> Dest url of transfer
- BYTES <int> Total bytes transfered thus far
- BW.CURRENT <float> Current (instantaneous) bandwidth
- BW.AVG <float> Average (instantaneous) bandwidth

TransferPerfStripe : This event type will be sent everytime a throughput plugin stripe callback is received.

- URL.SOURCE <string> Source url of transfer
- URL.DEST <string> Dest url of transfer
- INDEX <int> The stripe index the event applies to

- BYTES <int> Total bytes transfered thus far on this stripe
- BW.CURRENT <float> Current (instantaneous) bandwidth on this stripe
- BW.AVG <float> Average (instantaneous) bandwidth on this stripe

TransferBegin : This event type will be sent everytime a throughput plugin begin callback is received.

- URL.SOURCE <string> Source url of transfer
- URL.DEST <string> Dest url of transfer

TransferEnd : This event type will be sent everytime a throughput plugin complete callback is received.

- SUCCESS <bool> Completion status

5.13.2 Define Documentation

5.13.2.1 #define GLOBUS_FTP_CLIENT_THROUGHPUT_NL_PLUGIN_MODULE (&globus_i_ftp_client_throughput_nl_plugin_module)

Module descriptor.

5.13.3 Function Documentation

5.13.3.1 globus_result_t globus_ftp_client_throughput_nl_plugin_init (globus_ftp_client_plugin_t * *plugin,* const char * *nl_url,* const char * *prog_name,* const char * *opaque_string*)

Initialize netlogger wrapped throughput plugin

This will initialize a netlogger wrapped throughput plugin.

Note that the nl_url may be NULL. Regardless of what nl_host is set to, if the env variable NL_DEST_ENV is set, logging will always occur to that location.

Parameters

plugin	a plugin to be initialized
nl_url	the url to log to (May be NULL) Valid urls are: `file://tmp/netlog.log` x-netlog://host[-:port] x-syslog://localhost
prog_name	This is used as the prog name in the NetLoggerOpen call
opaque_string	this is an opaque string that will be inserted into all logged statements. (may be NULL)

Returns

- Error on NULL plugin or failure to init throughput plugin
- Error on NetLogger open
- GLOBUS_SUCCESS

5.13.3.2 globus_result_t globus_ftp_client_throughput_nl_plugin_init_with_handle (globus_ftp_client_plugin_t * *plugin,* NLhandle * *nl_handle,* const char * *opaque_string*)

Initialize netlogger wrapped throughput plugin

This will initialize a netlogger wrapped throughput plugin.

Instead of passing a NetLogger url as in the plain init func, you can pass in a previously 'Open'ed NLhandle. This handle will not be destroyed by this plugin.

Parameters

plugin	a plugin to be initialized
nl_handle	a previously opened NetLogger handle
opaque_string	this is an opaque string that will be inserted into all logged statements. (may be NULL)

Returns

- Error on NULL plugin or failure to init throughput plugin
- Error on NetLogger open
- GLOBUS_SUCCESS

5.13.3.3 globus_result_t globus_ftp_client_throughput_nl_plugin_destroy (globus_ftp_client_plugin_t * *plugin*)

Destroy netlogger wrapped throughput plugin

Frees up memory associated with plugin.

Parameters

plugin	plugin previously initialized with init (above)

Returns

- GLOBUS_SUCCESS
- Error on NULL plugin

5.13.3.4 globus_result_t globus_ftp_client_throughput_nl_plugin_set_callbacks (globus_ftp_client_plugin_t * *plugin*, globus_ftp_client_throughput_plugin_begin_cb_t *begin_cb*, globus_ftp_client_throughput_plugin_stripe_cb_t *per_stripe_cb*, globus_ftp_client_throughput_plugin_total_cb_t *total_cb*, globus_ftp_client_throughput_plugin_complete_cb_t *complete_cb*, void * *user_specific*)

Receive throughput callbacks

You can still get the automatic netlogging of throughput along with receiving the same throughput callbacks that the throughput plugin provides by using this function to set these callbacks.

Note that the callbacks are defined the same as in the throughput plugin

Parameters

plugin	
begin_cb	the callback to be called upon the start of a transfer
per_stripe_cb	the callback to be called every time updated throughput info is available for a given stripe
total_cb	the callback to be called every time updated throughput info is available for any stripe
complete_cb	the callback to be called to indicate transfer completion
user_specific	a pointer to some user specific data that will be provided to all callbacks

Returns

- Error on NULL or invalid plugin
- GLOBUS_SUCCESS

See also

Throughput Performance Plugin (p. 112)

5.14 Throughput Performance Plugin

Collaboration diagram for Throughput Performance Plugin:

Defines

- #define **GLOBUS_FTP_CLIENT_THROUGHPUT_PLUGIN_MODULE** (&globus_i_ftp_client_throughput_plugin_module)

Typedefs

- typedef void(∗ **globus_ftp_client_throughput_plugin_begin_cb_t**)(void ∗user_specific, **globus_ftp_client_handle_t** ∗handle, const char ∗source_url, const char ∗dest_url)
- typedef void(∗ **globus_ftp_client_throughput_plugin_stripe_cb_t**)(void ∗user_specific, **globus_ftp_client_handle_t** ∗handle, int stripe_ndx, globus_off_t bytes, float instantaneous_throughput, float avg_throughput)
- typedef void(∗ **globus_ftp_client_throughput_plugin_total_cb_t**)(void ∗user_specific, **globus_ftp_client_handle_t** ∗handle, globus_off_t bytes, float instantaneous_throughput, float avg_throughput)
- typedef void(∗ **globus_ftp_client_throughput_plugin_complete_cb_t**)(void ∗user_specific, **globus_ftp_client_handle_t** ∗handle, globus_bool_t success)
- typedef void ∗(∗ **globus_ftp_client_throughput_plugin_user_copy_cb_t**)(void ∗user_specific)
- typedef void(∗ **globus_ftp_client_throughput_plugin_user_destroy_cb_t**)(void ∗user_specific)

Functions

- globus_result_t **globus_ftp_client_throughput_plugin_init** (**globus_ftp_client_plugin_t** ∗plugin, **globus_ftp_client_throughput_plugin_begin_cb_t** begin_cb, **globus_ftp_client_throughput_plugin_stripe_cb_t** per_stripe_cb, **globus_ftp_client_throughput_plugin_total_cb_t** total_cb, **globus_ftp_client_throughput_plugin_complete_cb_t** complete_cb, void ∗user_specific)
- globus_result_t **globus_ftp_client_throughput_plugin_set_copy_destroy** (**globus_ftp_client_plugin_t** ∗plugin, **globus_ftp_client_throughput_plugin_user_copy_cb_t** copy_cb, **globus_ftp_client_throughput_plugin_user_destroy_cb_t** destroy_cb)
- globus_result_t **globus_ftp_client_throughput_plugin_destroy** (**globus_ftp_client_plugin_t** ∗plugin)
- globus_result_t **globus_ftp_client_throughput_plugin_get_user_specific** (**globus_ftp_client_plugin_t** ∗plugin, void ∗∗user_specific)

5.14.1 Detailed Description

The FTP Throughput Performance plugin allows the user to obtain calculated performance information for all types of transfers except a third party transfer in which Extended Block mode is not enabled. Note: Since this plugin is built on top of the Performance Marker Plugin, it is not possible to associate both plugins with a handle

5.14.2 Define Documentation

5.14.2.1 #define GLOBUS_FTP_CLIENT_THROUGHPUT_PLUGIN_MODULE (&globus_i_ftp_client_throughput_plugin_module)

Module descriptor.

5.14.3 Typedef Documentation

5.14.3.1 typedef void(* globus_ftp_client_throughput_plugin_begin_cb_t)(void *user_specific, globus_ftp_client_handle_t *handle, const char *source_url, const char *dest_url)

Transfer begin callback

This callback will be called when a transfer begins.

Parameters

handle	The client handle associated with this transfer
user_specific	User argument passed to globus_ftp_client_throughput_plugin_init
source_url	source of the transfer (GLOBUS_NULL if 'put')
dest_url	dest of the transfer (GLOBUS_NULL if 'get')

Returns

- n/a

5.14.3.2 typedef void(* globus_ftp_client_throughput_plugin_stripe_cb_t)(void *user_specific, globus_ftp_client_handle_t *handle, int stripe_ndx, globus_off_t bytes, float instantaneous_throughput, float avg_throughput)

Stripe performace throughput callback

This callback will be called with every performance callback that is received by the perf plugin.

The first callback for each stripe_ndx will have an instantaneous_throughput based from the time the command was sent.

Parameters

handle	The client handle associated with this transfer
user_specific	User argument passed to globus_ftp_client_throughput_plugin_init
bytes	The total number of bytes received on this stripe
instantaneous_throughput	Instanteous throughput on this stripe (bytes / sec)
avg_throughput	Average throughput on this stripe (bytes / sec)
stripe_ndx	This stripe's index

5.14.3.3 typedef void(* globus_ftp_client_throughput_plugin_total_cb_t)(void *user_specific, globus_ftp_client_handle_t *handle, globus_off_t bytes, float instantaneous_throughput, float avg_throughput)

Total performace throughput callback

This callback will be called with every performance callback that is received by the perf plugin.

The first callback for will have an instantaneous_throughput based from the time the command was sent. This callback will be called after the per_stripe_cb

Parameters

handle	The client handle associated with this transfer
user_specific	User argument passed to globus_ftp_client_throughput_plugin_init
bytes	The total number of bytes received on all stripes
instantaneous_throughput	Total instanteous throughput on all stripes (bytes / sec)
avg_throughput	Average total throughput on all stripes (bytes / sec)

5.14.3.4 typedef void(∗ globus_ftp_client_throughput_plugin_complete_cb_t)(void ∗user_specific, globus_ftp_client_handle_t ∗handle, globus_bool_t success)

Transfer complete callback

This callback will be called upon transfer completion (successful or otherwise)

Parameters

handle	The client handle associated with this transfer
user_specific	User argument passed to globus_ftp_client_throughput_plugin_init
success	indicates whether this transfer completed successfully or was interrupted (by error or abort)

Returns

- n/a

5.14.3.5 typedef void∗(∗ globus_ftp_client_throughput_plugin_user_copy_cb_t)(void ∗user_specific)

Copy constructor

This callback will be called when a copy of this plugin is made, it is intended to allow initialization of a new user_specific data.

Parameters

user_specific	this is user specific data either created by this copy method, or the value passed to init

Returns

- a pointer to a user specific piece of data
- GLOBUS_NULL (does not indicate error)

5.14.3.6 typedef void(∗ globus_ftp_client_throughput_plugin_user_destroy_cb_t)(void ∗user_specific)

Destructor

This callback will be called when a copy of this plugin is destroyed, it is intended to allow the user to free up any memory associated with the user specific data.

Parameters

user_specific	this is user specific data created by the copy method

Returns

- n/a

5.14.4 Function Documentation

5.14.4.1 globus_result_t globus_ftp_client_throughput_plugin_init (globus_ftp_client_plugin_t * *plugin*, globus_ftp_client_throughput_plugin_begin_cb_t *begin_cb*, globus_ftp_client_throughput_plugin_stripe_cb_t *per_stripe_cb*, globus_ftp_client_throughput_plugin_total_cb_t *total_cb*, globus_ftp_client_throughput_plugin_complete_cb_t *complete_cb*, void * *user_specific*)

Throughput plugin init

Use this function to initialize a throughput plugin.

The throughput plugin sits on top of the perf_plugin. The only required param is 'plugin', all others may be GLOBUS_NULL

Parameters

plugin	a pointer to a plugin type to be initialized
begin_cb	the callback to be called upon the start of a transfer
per_stripe_cb	the callback to be called every time updated throughput info is available for a given stripe
total_cb	the callback to be called every time updated throughput info is available for any stripe
complete_cb	the callback to be called to indicate transfer completion
user_specific	a pointer to some user specific data that will be provided to all callbacks

Returns

- GLOBUS_SUCCESS
- Error on NULL plugin
- Error on init perf plugin

5.14.4.2 globus_result_t globus_ftp_client_throughput_plugin_set_copy_destroy (globus_ftp_client_plugin_t * *plugin*, globus_ftp_client_throughput_plugin_user_copy_cb_t *copy_cb*, globus_ftp_client_throughput_plugin_user_destroy_cb_t *destroy_cb*)

Set user copy and destroy callbacks

Use this to have the plugin make callbacks any time a copy of this plugin is being made.

This will allow the user to keep state for different handles.

Parameters

plugin	plugin previously initialized with init (above)
copy_cb	func to be called when a copy is needed
destroy_cb	func to be called when a copy is to be destroyed

Returns

- Error on NULL arguments
- GLOBUS_SUCCESS

5.14.4.3 globus_result_t globus_ftp_client_throughput_plugin_destroy (globus_ftp_client_plugin_t * *plugin*)

Destroy throughput plugin

Frees up memory associated with plugin.

Parameters

plugin	plugin previously initialized with init (above)

Returns

- GLOBUS_SUCCESS
- Error on NULL plugin

5.14.4.4 globus_result_t globus_ftp_client_throughput_plugin_get_user_specific (globus_ftp_client_plugin_t * *plugin*, void ** *user_specific*)

Retrieve user specific pointer.

Parameters

plugin	plugin previously initialized with init (above)
user_specific	pointer to storage for user_specific pointer

Returns

- GLOBUS_SUCCESS
- Error on NULL plugin
- Error on NULL user_specific

6 Data Structure Documentation

6.1 globus_ftp_client_restart_extended_block_t Struct Reference

6.1.1 Detailed Description

Extended block mode restart marker.

6.2 globus_ftp_client_restart_marker_t Union Reference

6.2.1 Detailed Description

Restart marker.

This structure is may be either a stream mode transfer offset, or an extended block mode byte range.

See also

globus_ftp_client_restart_marker_init() (p. 4), **globus_ftp_client_restart_marker_destroy()** (p. 5), **globus_ftp_client_restart_marker_copy()** (p. 4), **globus_ftp_client_restart_marker_insert_range()** (p. 5), **globus_ftp_client_restart_marker_set_offset()** (p. 6)

6.3 globus_ftp_client_restart_stream_t Struct Reference

6.3.1 Detailed Description

Stream mode restart marker.