globus xio

3.6

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1 Globus XIO

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- **User API Assistance.** (p. 16)
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2 Data descriptors

globus_xio uses data descriptors to associate meta data with the data being writen or the data read.

Data descriptors flow into the drivers read and write interface functions by way of the operation structure. If the driver is interested in viewing the data decriptor it can request it from the operation structure via a call to globus_xio_driver_operation_get_data_descriptor() and it can view any driver specific data descriptor via a call to globus_xio_driver_data_descriptor_get_specific(). The driver can modify values in the data descriptor by setting values before passing the request down the stack. Several functions are available to modify the data descriptors. There is

no need to "set()" the data descriptors back into the operation. The functions for manipluating the values in a DD affect the values xio has directly.

Data descriptors flow back to the driver in the callbacks for the data operations. When calling finished operation on a data operation the driver must pass in a data descriptor. It should get this data descriptor from the io operation callback.

Life Cycle:

Passing in a data descriptor: A data descriptor is first created by the globus_xio user. The user can add driver specific data descriptors to it. Once the usre has created and set the attributes on its data descriptor to their liking they pass it into a globus_xio data operation (either read or write). When the data descriptor is passed on globus_xio will make an internal copy of it. It does this by first coping the user the level data descriptor and then walkinging through the list of driver specific data descriptor contianed in to and requesting the the driver make a copy of the driver specific data descriptor. If ever a driver specific data descriptor is NULL globus_xio need not call into its drivers dd_copy function. If ever the user level data descriptor is NULL globus_xio need not deal with the data descriptor functionality at all.

A data descriptor coming back up the stack Once an io operation reachs the transport driver (the bottom of the stack) it takes on a slightly different role. On the way in it is describing what is requested to be done with the data, on the way out it is describing what has actually been done. Once the transport driver performs the operation it should adjust the data descriptor to reflect what has actually happened (few drivers will need to worry about this). Each driver on the way up can adjust the data descriptor and its driver specific data decriptor. When xio reachs the the top of the stack it calls a user callback. When that callback returns all memory associated with the data descriptor is cleaned up. The interface function globus_xio_driver_data_descriptor_free() is used for this.

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3.1 Modules

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6 Module Documentation

6.1 The globus_xio user API.

Typedefs

- typedef void(∗ **globus_xio_accept_callback_t**)(globus_xio_server_t server, globus_xio_handle_t handle, globus_result_t result, void ∗user_arg)
- typedef void(∗ **globus_xio_server_callback_t**)(globus_xio_server_t server, void ∗user_arg)
- typedef globus_bool_t(∗ **globus_xio_timeout_callback_t**)(globus_xio_handle_t handle, **globus_xio_operation_type_t** type, void ∗user_arg)
- typedef void(∗ **globus_xio_callback_t**)(globus_xio_handle_t handle, globus_result_t result, void ∗user_arg)
- typedef void(∗ **globus_xio_data_callback_t**)(globus_xio_handle_t handle, globus_result_t result, globus_byte_t ∗buffer, globus_size_t len, globus_size_t nbytes, globus_xio_data_descriptor_t data_desc, void ∗user_arg)
- typedef void(∗ **globus_xio_iovec_callback_t**)(globus_xio_handle_t handle, globus_result_t result, globus_xio_iovec_t ∗iovec, int count, globus_size_t nbytes, globus_xio_data_descriptor_t data_desc, void ∗user_arg)
- typedef enum **globus_i_xio_op_type_e** **globus_xio_operation_type_t**

Enumerations

- enum **globus_i_xio_op_type_e**
- enum **globus_xio_handle_cmd_t** {
  GLOBUS_XIO_GET_LOCAL_CONTACT = 12345,
  GLOBUS_XIO_GET_LOCAL_NUMERIC_CONTACT,
  GLOBUS_XIO_GET_REMOTE_CONTACT,
  GLOBUS_XIO_GET_REMOTE_NUMERIC_CONTACT,
  GLOBUS_XIO_SEEK,
  GLOBUS_XIO_SET_STRING_OPTIONS }

Functions

- globus_result_t **globus_xio_attr_init** (globus_xio_attr_t ∗attr)
- globus_result_t **globus_xio_attr_cntl** (globus_xio_attr_t attr, globus_xio_driver_t driver, int cmd,...)
- globus_result_t **globus_xio_attr_copy** (globus_xio_attr_t ∗dst, globus_xio_attr_t src)
- globus_result_t **globus_xio_attr_destroy** (globus_xio_attr_t attr)
- globus_result_t **globus_xio_stack_init** (globus_xio_stack_t ∗stack, globus_xio_attr_t stack_attr)
- globus_result_t **globus_xio_stack_push_driver** (globus_xio_stack_t stack, globus_xio_driver_t driver)
- globus_result_t **globus_xio_stack_copy** (globus_xio_stack_t ∗dst, globus_xio_stack_t src)
- globus_result_t **globus_xio_stack_destroy** (globus_xio_stack_t stack)
- globus_result_t **globus_xio_server_create** (globus_xio_server_t ∗server, globus_xio_attr_t server_attr, globus_xio_stack_t stack)
- globus_result_t **globus_xio_server_get_contact_string** (globus_xio_server_t server, char ∗∗contact_string)
- globus_result_t **globus_xio_server_register_close** (globus_xio_server_t server, **globus_xio_server_callback_t** cb, void ∗user_arg)
- globus_result_t **globus_xio_server_close** (globus_xio_server_t server)
- globus_result_t **globus_xio_server_cntl** (globus_xio_server_t server, globus_xio_driver_t driver, int cmd,...)
- globus_result_t **globus_xio_server_accept** (globus_xio_handle_t ∗out_handle, globus_xio_server_t server)
- globus_result_t **globus_xio_server_register_accept** (globus_xio_server_t server, **globus_xio_accept_callback_t** cb, void ∗user_arg)
- globus_result_t **globus_xio_handle_create** (globus_xio_handle_t ∗handle, globus_xio_stack_t stack)
- globus_result_t **globus_xio_data_descriptor_init** (globus_xio_data_descriptor_t ∗data_desc, globus_xio_handle_t handle)

- globus_result_t **globus_xio_data_descriptor_destroy** (globus_xio_data_descriptor_t data_desc)
- globus_result_t **globus_xio_data_descriptor_cntl** (globus_xio_data_descriptor_t data_desc, globus_xio_driver_t driver, int cmd,...)
- globus_result_t **globus_xio_handle_cntl** (globus_xio_handle_t handle, globus_xio_driver_t driver, int cmd,...)
- globus_result_t **globus_xio_register_open** (globus_xio_handle_t handle, const char *contact_string, globus_xio_attr_t attr, **globus_xio_callback_t** cb, void *user_arg)
- globus_result_t **globus_xio_open** (globus_xio_handle_t handle, const char *contact_string, globus_xio_attr_t attr)
- globus_result_t **globus_xio_register_read** (globus_xio_handle_t handle, globus_byte_t *buffer, globus_size_t buffer_length, globus_size_t waitforbytes, globus_xio_data_descriptor_t data_desc, **globus_xio_data_callback_t** cb, void *user_arg)
- globus_result_t **globus_xio_read** (globus_xio_handle_t handle, globus_byte_t *buffer, globus_size_t buffer_length, globus_size_t waitforbytes, globus_size_t *nbytes, globus_xio_data_descriptor_t data_desc)
- globus_result_t **globus_xio_register_readv** (globus_xio_handle_t handle, globus_xio_iovec_t *iovec, int iovec_count, globus_size_t waitforbytes, globus_xio_data_descriptor_t data_desc, **globus_xio_iovec_callback_t** cb, void *user_arg)
- globus_result_t **globus_xio_readv** (globus_xio_handle_t handle, globus_xio_iovec_t *iovec, int iovec_count, globus_size_t waitforbytes, globus_size_t *nbytes, globus_xio_data_descriptor_t data_desc)
- globus_result_t **globus_xio_register_write** (globus_xio_handle_t handle, globus_byte_t *buffer, globus_size_t buffer_length, globus_size_t waitforbytes, globus_xio_data_descriptor_t data_desc, **globus_xio_data_callback_t** cb, void *user_arg)
- globus_result_t **globus_xio_write** (globus_xio_handle_t handle, globus_byte_t *buffer, globus_size_t buffer_length, globus_size_t waitforbytes, globus_size_t *nbytes, globus_xio_data_descriptor_t data_desc)
- globus_result_t **globus_xio_register_writev** (globus_xio_handle_t handle, globus_xio_iovec_t *iovec, int iovec_count, globus_size_t waitforbytes, globus_xio_data_descriptor_t data_desc, **globus_xio_iovec_callback_t** cb, void *user_arg)
- globus_result_t **globus_xio_writev** (globus_xio_handle_t handle, globus_xio_iovec_t *iovec, int iovec_count, globus_size_t waitforbytes, globus_size_t *nbytes, globus_xio_data_descriptor_t data_desc)
- globus_result_t **globus_xio_register_close** (globus_xio_handle_t handle, globus_xio_attr_t attr, **globus_xio_callback_t** cb, void *user_arg)
- globus_result_t **globus_xio_close** (globus_xio_handle_t handle, globus_xio_attr_t attr)
- globus_result_t **globus_xio_handle_create_from_url** (globus_xio_handle_t *out_h, const char *scheme, globus_xio_attr_t attr, char *param_string)
- EXTERN_C_END globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_GET_LOCAL_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_GET_LOCAL_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_GET_REMOTE_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_GET_REMOTE_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_SEEK**, globus_off_t offset)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_SET_STRING_OPTIONS**, char *config_string)

6.1.1 Detailed Description

6.1.2 Typedef Documentation

6.1.2.1 typedef void(* globus_xio_accept_callback_t)(globus_xio_server_t server, globus_xio_handle_t handle, globus_result_t result, void *user_arg)

Callback signature for accept.

When a registered accept operation completes the users function of this signature is called.

Parameters

server	The server object on which the accept was registered.
handle	The newly created handle that was created by the accept operation.
result	A result code indicating the success of the accept operation. GLOBUS_SUCCESS indicates a successful accept.
user_arg	A user argument that is threaded from the registration to the callback.

6.1.2.2 typedef void(∗ globus_xio_server_callback_t)(globus_xio_server_t server, void ∗user_arg)

Server callback signature.

This is the generic server callback signature. It is currently only used for the register close operation.

6.1.2.3 typedef globus_bool_t(∗ globus_xio_timeout_callback_t)(globus_xio_handle_t handle, globus_xio_operation_type_t type, void ∗user_arg)

The timeout callback function signature.

Parameters

handle	The handle the handle on which the timeout operation was requested.
type	The type of opperation that timed out: GLOBUS_XIO_OPERATION_OPEN GLOBUS_XIO-_OPERATION_CLOSE GLOBUS_XIO_OPERATION_READ GLOBUS_XIO_OPERATION_-WRITE
arg	A user arg threaded throw to the callback.

6.1.2.4 typedef void(∗ globus_xio_callback_t)(globus_xio_handle_t handle, globus_result_t result, void ∗user_arg)

globus_xio_callback_t

This callback is used for the open and close asynchronous operations.

6.1.2.5 typedef void(∗ globus_xio_data_callback_t)(globus_xio_handle_t handle, globus_result_t result, globus_byte_t ∗buffer, globus_size_t len, globus_size_t nbytes, globus_xio_data_descriptor_t data_desc, void ∗user_arg)

globus_xio_data_callback_t

This callback is used for asychronous operations that send or receive data.

on eof, result_t will be of type GLOBUS_XIO_ERROR_EOF

6.1.2.6 typedef void(∗ globus_xio_iovec_callback_t)(globus_xio_handle_t handle, globus_result_t result, globus_xio_iovec_t ∗iovec, int count, globus_size_t nbytes, globus_xio_data_descriptor_t data_desc, void ∗user_arg)

globus_xio_iovec_callback_t

This callback is used for asychronous operations that send or receive data with an ivec structure.

on eof, result_t will be of type GLOBUS_XIO_ERROR_EOF

6.1.2.7 typedef enum globus_i_xio_op_type_e globus_xio_operation_type_t

Operation types.

An enumeration of operation types. Used in the timeout callback to indicate what operation typed timedout.

6.1.3 Enumeration Type Documentation

6.1.3.1 enum globus_i_xio_op_type_e

Operation types.

An enumeration of operation types. Used in the timeout callback to indicate what operation typed timedout.

6.1.3.2 enum globus_xio_handle_cmd_t

doxygen varargs filter stuff

Common driver handle cntls.

Enumerator

GLOBUS_XIO_GET_LOCAL_CONTACT See usage for: **globus_xio_handle_cntl** (p. 14).

GLOBUS_XIO_GET_LOCAL_NUMERIC_CONTACT See usage for: **globus_xio_handle_cntl** (p. 14).

GLOBUS_XIO_GET_REMOTE_CONTACT See usage for: **globus_xio_handle_cntl** (p. 14).

GLOBUS_XIO_GET_REMOTE_NUMERIC_CONTACT See usage for: **globus_xio_handle_cntl** (p. 15).

GLOBUS_XIO_SEEK See usage for: **globus_xio_handle_cntl** (p. 15).

GLOBUS_XIO_SET_STRING_OPTIONS See usage for: **globus_xio_handle_cntl** (p. 15).

6.1.4 Function Documentation

6.1.4.1 globus_result_t globus_xio_attr_init (globus_xio_attr_t * *attr*)

Intialize a globus xio attribute.

Parameters

attr	upon return from this function this out parameter will be initialized. Once the user is finished with the attribute they should make sure they destroy it in order to free resources associated with it.

References globus_xio_attr_init().

6.1.4.2 globus_result_t globus_xio_attr_cntl (globus_xio_attr_t *attr,* globus_xio_driver_t *driver,* int *cmd,* ...)

Manipulate the values associated in the attr.

This function provides a means to access the attr structure. What exactly this function does is determined by the value in the parameter cmd and the value of the patameter driver. When the driver parameter is NULL it indicates that this function applies to general globus xio values. If it is not NULL it indicates that the function will effect driver specific values. Each driver is resonsible for defining its own enumeration of values for cmd and the var args associated with that command.

Parameters

attr	the attribute structure to be manipulated.
driver	This parameter indicates which driver the user would like to perform the requested operation. If this parameter is NULL this request will be scoped to general attribure functions.
cmd	an enum that determines what specific operation the user is requesting. Each driver will determine the value for this enumeration.

References globus_xio_attr_cntl().

6.1.4.3 globus_result_t globus_xio_attr_copy (globus_xio_attr_t * *dst,* globus_xio_attr_t *src*)

Copy an attribute structure.

References globus_xio_attr_copy().

6.1.4.4 globus_result_t globus_xio_attr_destroy (globus_xio_attr_t *attr*)

Clean up resources associated with an attribute.

Parameters

attr	Upon completion of this function all resources associated with this structure will returned to the system and the attr will no longer be valid.

References globus_xio_attr_destroy().

6.1.4.5 globus_result_t globus_xio_stack_init (globus_xio_stack_t * *stack,* globus_xio_attr_t *stack_attr*)

Initialize a stack object.

References globus_xio_stack_init().

6.1.4.6 globus_result_t globus_xio_stack_push_driver (globus_xio_stack_t *stack,* globus_xio_driver_t *driver*)

Push a driver onto a stack.

No attrs are associated with a driver. The stack represents the ordered lists of transform drivers and 1 transport driver. The transport driver must be pushed on first.

References globus_xio_stack_push_driver().

6.1.4.7 globus_result_t globus_xio_stack_copy (globus_xio_stack_t * *dst,* globus_xio_stack_t *src*)

Copy a stack object.

References globus_xio_stack_push_driver().

6.1.4.8 globus_result_t globus_xio_stack_destroy (globus_xio_stack_t *stack*)

Destroy a stack object.

References globus_xio_stack_destroy().

6.1.4.9 globus_result_t globus_xio_server_create (globus_xio_server_t * *server,* globus_xio_attr_t *server_attr,* globus_xio_stack_t *stack*)

Create a server object.

This function allows the user to create a server object which can then be used to accept connections.

Parameters

server	An out parameter. Once the function successfully returns this will point to a valid server object.
server_attr	an attributre structure used to alter the default server intialization. This will mostly be used in a driver specific manner. can be NULL.
stack	

References globus_xio_server_create().

6.1.4.10 globus_result_t globus_xio_server_get_contact_string (globus_xio_server_t *server*, char ** *contact_string*)

get contact string

This function allows the user to get the contact string for a server. this string could be used as the contact string for the client side.

Parameters

server	An initialized server handle created with **globus_xio_server_create()** (p. 9)
contact_string	an out varibale. Will point to a newly allocated string on success. must be freed by the caller.

References globus_xio_server_get_contact_string().

6.1.4.11 globus_result_t globus_xio_server_register_close (globus_xio_server_t *server*, globus_xio_server_callback_t *cb*, void * *user_arg*)

post a close on a server object

This function registers a close operation on a server. When the user function pointed to by parameter cb is called the server object is closed.

References globus_xio_server_register_close().

6.1.4.12 globus_result_t globus_xio_server_close (globus_xio_server_t *server*)

A blocking server close.

References globus_xio_server_close(), and globus_xio_server_register_close().

6.1.4.13 globus_result_t globus_xio_server_cntl (globus_xio_server_t *server*, globus_xio_driver_t *driver*, int *cmd*, ...)

Touch driver specific information in a server object.

This function allows the user to comunicate directly with a driver in association with a server object. The driver defines what operations can be preformed.

References globus_xio_server_cntl().

6.1.4.14 globus_result_t globus_xio_server_accept (globus_xio_handle_t * *out_handle*, globus_xio_server_t *server*)

Accept a connection.

This function will accept a connetion on the given server object and the parameter out_handle will be valid if the function returns successfully.

References globus_xio_server_accept().

6.1.4.15 globus_result_t globus_xio_server_register_accept (globus_xio_server_t *server*, globus_xio_accept_callback_t *cb*, void * *user_arg*)

Asynchronous accept.

This function posts an nonblocking accept. Once the operation has completed the user function pointed to by the parameter cb is called.

References globus_xio_server_register_accept().

6.1.4.16 globus_result_t globus_xio_handle_create (globus_xio_handle_t * *handle*, globus_xio_stack_t *stack*)

Initialize a handle for client opens.

This funtion will initialize a handle for active opens (client side connections).

References globus_xio_handle_create().

6.1.4.17 globus_result_t globus_xio_data_descriptor_init (globus_xio_data_descriptor_t * *data_desc,* globus_xio_handle_t *handle*)

Initialize a data descriptor.

Parameters

data_desc	An out parameter. The data descriptor to be intialized.
handle	The handle this data descriptor will be used with. This parametter is require in order to optimize the code handling the data descriptors use.

References globus_xio_data_descriptor_init().

6.1.4.18 globus_result_t globus_xio_data_descriptor_destroy (globus_xio_data_descriptor_t *data_desc*)

clean up a data descriptor.

References globus_xio_data_descriptor_destroy().

6.1.4.19 globus_result_t globus_xio_data_descriptor_cntl (globus_xio_data_descriptor_t *data_desc,* globus_xio_driver_t *driver,* int *cmd, ...*)

Touch driver specific data in data descriptors

This function allows the user to comunicate directly with a driver in association with a data descriptors.

The driver defines what operations can be preformed.

References globus_xio_data_descriptor_cntl().

6.1.4.20 globus_result_t globus_xio_handle_cntl (globus_xio_handle_t *handle,* globus_xio_driver_t *driver,* int *cmd, ...*)

Touch driver specific information in a handle object.

This function allows the user to comunicate directly with a driver in association with a handle object. The driver defines what operations can be preformed.

pass the driver to control a specific driver pass NULL for driver for XIO specific cntls pass GLOBUS_XIO_QUERY for driver to try each driver in order until success

References globus_xio_handle_cntl().

6.1.4.21 globus_result_t globus_xio_register_open (globus_xio_handle_t *handle,* const char * *contact_string,* globus_xio_attr_t *attr,* **globus_xio_callback_t** *cb,* void * *user_arg*)

Open a handle

Creates an open handle based on the state contained in the given stack.

No operation can be preformed on a handle until it is initialized and then opened. If an already open handle used the information contaned in that handle will be destoyed.

Parameters

handle	The handle created with **globus_xio_handle_create()** (p. 10) or **globus_xio_server_register_accept()** (p. 10) that is to be opened.
attr	how to open attribute. can be NULL
cb	The function to be called when the open operation completes.
user_arg	A user pointer that will be threaded through to the callback.

contact_string	An url describing the resource. NULL is allowed. Drivers interpret the various parts of this url as descibed in their documentation. An alternative form is also supported: if contact_string does not specify a scheme (e.g. `http://`) and it contains a ':', it will be parsed as a host:port pair. if it does not contain a ':', it will be parsed as the path

the following are examples of valid formats:

```
<path to file>
host-name ":" <service or port>
"file:" <path to file>
<scheme> "://" [ "/" [ <path to resource> ]  ]
<scheme> "://" location [ "/" [ <path to resource> ] ]
  location:
      [ auth-part ] host-part
  auth-part:
      <user> [ ":" <password> ] "@"
  host-part:
      [ "<" <subject> ">" ] host-name [ ":" <port or service> ]
  host-name:
      <hostname> | <dotted quad> | "[" <ipv6 address> "]"
```

Except for use as the above delimeters, the following special characters MUST be encoded with the %HH format where H == hex char.

```
"/" and "@" in location except subject
"<" and ">" in location
":" everywhere except ipv6 address and subject
"%" everywhere (can be encoded with %HH or %%)
```

References globus_xio_register_open().

6.1.4.22 globus_result_t globus_xio_open (globus_xio_handle_t *handle,* const char * *contact_string,* globus_xio_attr_t *attr*)

blocking open

References globus_xio_open().

6.1.4.23 globus_result_t globus_xio_register_read (globus_xio_handle_t *handle,* globus_byte_t * *buffer,* globus_size_t *buffer_length,* globus_size_t *waitforbytes,* globus_xio_data_descriptor_t *data_desc,* **globus_xio_data_callback_t** *cb,* void * *user_arg*)

Read data from a handle.

References globus_xio_register_read().

6.1.4.24 globus_result_t globus_xio_read (globus_xio_handle_t *handle,* globus_byte_t * *buffer,* globus_size_t *buffer_length,* globus_size_t *waitforbytes,* globus_size_t * *nbytes,* globus_xio_data_descriptor_t *data_desc*)

Read data from a handle.

References globus_xio_read().

6.1.4.25 globus_result_t globus_xio_register_readv (globus_xio_handle_t *handle,* globus_xio_iovec_t * *iovec,* int *iovec_count,* globus_size_t *waitforbytes,* globus_xio_data_descriptor_t *data_desc,* **globus_xio_iovec_callback_t** *cb,* void * *user_arg*)

Read data from a handle into a globus_xio_iovec_t (struct iovec)

References globus_xio_register_readv().

6.1.4.26 globus_result_t globus_xio_readv (globus_xio_handle_t *handle*, globus_xio_iovec_t * *iovec*, int *iovec_count*, globus_size_t *waitforbytes*, globus_size_t * *nbytes*, globus_xio_data_descriptor_t *data_desc*)

Read data from a handle into a globus_xio_iovec_t (struct iovec)

References globus_xio_readv().

6.1.4.27 globus_result_t globus_xio_register_write (globus_xio_handle_t *handle*, globus_byte_t * *buffer*, globus_size_t *buffer_length*, globus_size_t *waitforbytes*, globus_xio_data_descriptor_t *data_desc*, **globus_xio_data_callback_t** *cb*, void * *user_arg*)

Write data to a handle.

References globus_xio_register_write().

6.1.4.28 globus_result_t globus_xio_write (globus_xio_handle_t *handle*, globus_byte_t * *buffer*, globus_size_t *buffer_length*, globus_size_t *waitforbytes*, globus_size_t * *nbytes*, globus_xio_data_descriptor_t *data_desc*)

Write data to a handle.

References globus_xio_write().

6.1.4.29 globus_result_t globus_xio_register_writev (globus_xio_handle_t *handle*, globus_xio_iovec_t * *iovec*, int *iovec_count*, globus_size_t *waitforbytes*, globus_xio_data_descriptor_t *data_desc*, **globus_xio_iovec_callback_t** *cb*, void * *user_arg*)

Write data to a handle from a globus_xio_iovec_t (struct iovec)

References globus_xio_register_writev().

6.1.4.30 globus_result_t globus_xio_writev (globus_xio_handle_t *handle*, globus_xio_iovec_t * *iovec*, int *iovec_count*, globus_size_t *waitforbytes*, globus_size_t * *nbytes*, globus_xio_data_descriptor_t *data_desc*)

Write data to a handle from a globus_xio_iovec_t (struct iovec)

References globus_xio_writev().

6.1.4.31 globus_result_t globus_xio_register_close (globus_xio_handle_t *handle*, globus_xio_attr_t *attr*, **globus_xio_callback_t** *cb*, void * *user_arg*)

Close a handle

This functions servers as a destoy for the handle.

As soon as the operations completes (the callback is called). The handle is destroyed.

Parameters

handle	the handle to be closed.
attr	how to close attribute
cb	The function to be called when the close operation completes.
user_arg	A user pointer that will be threaded through to the callback.

References globus_xio_register_close().

6.1.4.32 globus_result_t globus_xio_close (globus_xio_handle_t *handle*, globus_xio_attr_t *attr*)

Blocking close.

References globus_xio_close().

6.1.4.33 globus_result_t globus_xio_handle_create_from_url (globus_xio_handle_t * *out_h*, const char * *scheme*, globus_xio_attr_t *attr*, char * *param_string*)

Initializes a handle based on the scheme given.

Parameters

out_h	An uninitialized handle that will be initialized in the function to correspond to the scheme given. This handle should be used for any I/O operations.
scheme	A string containing the protocol which the handle should be initialized to. The string can either be a protocol by itself, for example, "http", or a complete scheme such as "http://www.-example.com".
attr	Attribute to be used for setting parameter string. It is initialized by the function. Can be NULL if attributes are not being used.
param_string	A string containing attributes to be set for the drivers associated with the scheme. This should be in the form "protocol1:option1=value1;option2=value2,protocol2:option1=value1; option2=value2" Can be NULL if attributes are not being used.

References globus_xio_attr_cntl(), globus_xio_handle_create(), GLOBUS_XIO_SET_STRING_OPTIONS, globus-_xio_stack_destroy(), globus_xio_stack_init(), and globus_xio_stack_push_driver().

6.1.4.34 EXTERN_C_END globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_GET_LOCAL_CONT-ACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get local connection info.

Parameters

contact_string_-out	A pointer to a contact string for the local end of a connected handle. Where possible, it will be in symbolic form (FQDN).

The user must free the returned string.

See Also

globus_xio_server_get_contact_string() (p. 10)

6.1.4.35 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_GET_LOCAL_NUMERIC_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get local connection info.

Parameters

contact_string_-out	A pointer to a contact string for the local end of a connected handle. Where possible, it will be in numeric form. (IP)

The user must free the returned string.

6.1.4.36 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_GET_REMOTE_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get remote connection info.

Parameters

contact_string_out	A pointer to a contact string for the remote end of a connected handle. Where possible, it will be in symbolic form (FQDN).

The user must free the returned string.

6.1.4.37 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_GET_REMOTE_NUMERIC_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get remote connection info.

Parameters

contact_string_out	A pointer to a contact string for the remote end of a connected handle. Where possible, it will be in numeric form. (IP)

The user must free the returned string.

6.1.4.38 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_SEEK , globus_off_t *offset*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Reposition read/write offset.

Parameters

offset	Specify the desired offset.

6.1.4.39 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_SET_STRING_OPTIONS , char * *config_string*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the driver specific configuration string.

The format of the string is defined by the driver. It is typically a set of key=value pairs

Parameters

config_string	The driver specific parameter string.

6.2 User API Assistance.

Help understanding the globus_xio api.

Stack Constuction.

The driver stack that is used for a given xio handle is constructed using a globus_xio_stack_t. Each driver is loaded by name and pushed onto a stack.

```
stack setup example:

// First load the drivers
globus_xio_driver_load("tcp", &tcp_driver);
globus_xio_driver_load("gsi", &gsi_driver);

//build the stack
globus_xio_stack_init(&stack);
globus_xio_stack_push_driver(stack, tcp_driver, NULL);
globus_xio_stack_push_driver(stack, gsi_driver, NULL);
```

Servers

A server data structure provides functionality for passive opens. A server is initialized and bound to a protocol stack and set of attributes with the function **globus_xio_server_create()** (p. 9). Once a server is created many "connections" can be accepted. Each connection will result in an intialized handle which can later be opened.

```
globus_xio_server_t             server;
globus_xio_attr_t               attr;

globus_xio_attr_init(&attr);
globus_xio_server_create(&server_handle, attr, stack);
globus_xio_server_accept(&handle, server);
```

Handle Construction

There are two ways to create a handle. The first is for use as a client (one that is doing an active open). The function: **globus_xio_handle_create()** (p. 10) is used to create such a handle and bind that handle to a protocol stack.

```
globus_xio_handle_create(&handle, stack);
```

The second means of creating a handle is for use as a server (one that is doing a passive open). This is created by accepting a connection on a server_handle with the function **globus_xio_server_accept()** (p. 10) or **globus_xio_server_register_accept()** (p. 10).

Mutable attrs can be altered via a call to **globus_xio_handle_cntl()** (p. 11) described later.

```
globus_xio_server_accept(&xio_handle, server_handle);
```

once a handle is intialized the user can call **globus_xio_open()** (p. 12) to begin the open process.

Timeouts

A user can set a timeout value for any io operation. Each IO operation (open close read write) can have its own timeout value. If no timeout is set the operation will be allowed to infinitly block.
When time expires the outstanding operation is canceled. If the timeout callback for the given operation is not NULL it is called first to notify the user that the operation timed out and give the user a chance to ignore that timeout. If canceled, the user will get the callback they registered for the operation as well, but it will come with an error indicating that it has been canceled.
It is possiblie that part of an io operation will complete before the timeout expires. In this case the opperation can still be canceled. The user will receive there IO callback with and error set and the length value appropriately set to indicate how much of the operation completed.

Data Desciptor

The data descriptor ADT gives the user a means of attaching/extracting meta data to a read or write operation. Things like offset, out of band message, and other driver specific meta data are contained in the data descriptor. Data descriptors are passed to globus_xio in **globus_xio_read()** (p. 12) and **globus_xio_write()** (p. 13). Within the globus_xio framework it is acceptable to pass NULL instead of a valid data_descriptor,

```
ex:
globus_xio_data_descriptor_init(&desc);
globus_xio_data_descriptor_cntl(desc,
    tcp_driver,
    GLOBUS_XIO_TCP_SET_SEND_FLAGS,
    GLOBUS_XIO_TCP_SEND_OOB);
```

User Attributes

Globus XIO uses a single attribute object for all of its functions. Attributes give an the user an extenable mechanism to alter default values which control parameters in an operation.

In most of the globus xio user api functions a user passes an attribute as a parameter. In many cases the user may ignore the attribute parameter and just pass in NULL. However at times the user will wish to tweak the operation. The attribute structure is used for this tweaking.

There are only three attribute functions. **globus_xio_attr_init** (p. 8) **globus_xio_attr_cntl** (p. 120) and **globus_xio_attr_destroy** (p. 9). The init and destroy functions are very simple and require little explaination. Before an attribute can be used it must be intialized, and to clean up all memory associated with it the user must call destroy on it.

The function **globus_xio_attr_cntl** (p. 120) manipulates values in the attribute. For more info on it see **globus_xio_attr_cntl** (p. 120).

6.3 Globus XIO Driver

Globus XIO introduces a notion of a driver stack to its API. With in globus_xio every IO operation must occur on a globus_xio handle. Associated with each handle is a stack of drivers. A driver is a module piece of code that implements the globus_xio driver interface. The purpose of a driver is manipulate data passed in by the user in someway. Each driver in a stack will serve its own unique purpose.

IO operations pass from driver to driver, starting at the top of the stack and ending at the bottom. When the bottom layer driver finishes with the operation it signals globus_xio that it has completed. Completion notification then follows the driver stack up to the top.

Driver Types:

`Transport driver:`
A transport driver is one that is responsible for actually putting bytes onto the wire. For example: A TCP driver or a UDP driver would be an example of transport drivers.
Per driver stack there must be exactly one transport driver and must be at the bottom of the stack. A transform driver is defined by its lack of passing an operation to the next driver in the stack. This type of driver does not rely on globus_xio for further completion of an operation, rather it is self sufficent in this task.

`Transform driver:`
A tranform driver is any intermediate driver in the stack. These drivers are indentified by there reliance on the driver stack to complete the operation. These drivers must pass the operation down the stack because they cannot complete it themselves. An example of a transform driver would be a gsi driver. This driver would wrap and unwrap messages, but would not be able to complete the transport itself, so it would rely on the remaining drivers in the stack.

Driver API

The globus xio driver api is a set of functions and interfaces to allow a developer to create a backend driver for globus_xio. To create a driver the user must implement all of the interface functions in the driver specification. There are also a set of functions provide to assist the driver author in implemention.

`Quick Start:`
Four basic driver needs the user will have to pay attention to a few new structures and concepts.

`globus_xio_operation_t`
This structure represents a request for an operation. If the driver can service the operation it does so and the calls the appropriate finish_operation() function. If the driver cannot completely service the operation it can pass() it along to the next driver in the stack. As soon as the operation structure is either finished or passed it is no longer valid for use in any other function.

`globus_xio_driver_handle_t`
A driver_handle represents a open handle to the driver stack for xio. The driver obtains a driver_handle by calling globus_xio_driver_open(). When the open operation completes (it callback is called) the driver then has a driver_handle. The driver_handle allows the user to do some complex things that will be described later.

`globus_xio_stack_t`
This structure provides the driver with information about the driver stack It is mainly used for creating driver_-handle as a parameter to lobus_xio_driver_open()..

Typical Sequence:

Here is a typcial sequence of events for a globus_xio transform driver:

Open

globus_xio_driver_open_t is called. The user calls globus_xio_driver_open() passing it the operation and the stack and a callback. When the open callback is called the driver is given a new operation as a parameter. The driver will then call **globus_xio_driver_finished_open()** (p. 25) passing it the now initialized driver_handle and the newly received operation. The call to **globus_xio_driver_finished_open()** (p. 25) does two things: 1) it tells globus_xio that this driver has finished its open operation, and 2) it gives xio the driver_handle (which contains information on the drivers below it).

Read/Write

The read or write interface funcion is called. It receives a operation as a parameter. The driver then calls the approriate pass operation and waits for the callback. When the callback is received the driver calls finished_operation passing in the operation structure it received in the callback

Close

The close interface function is called and is passed an operation and a driver_handle. The driver will call globus_xio_driver_close() passing it the operation. When the close callback is received the driver calls **globus_xio_driver_finished_close()** (p. 26) passing it the operation received in the close callback and the driver_handle received in the interface function. At this point the driver_handle is no longer valid..

Advanced Driver Programming

The typical driver implementatin is describe above. However globus_xio allows driver authors to do more advanced things. Some of these things will be explored here.

Read Ahead

Once a driver_handle is open a driver can spawn operation structures from it. This gives the driver the ability to request io from the driver stack before it receives a call to its own interface io interface function. So if a driver wishes to read ahead it does the following:

- it creats an operation by calling globus_xio_driver_create_operation() and passing it the driver_handle it is intereesting in using.
- call globus_xio_driver_read() using this operations. When the read callback is received the driver may call finished_operation() on the op it receives (this ultimitely results in very little, since this operation was started by this driver, but it is good practice and will free up resources that would otherwise leak).
- Now when the user finally does receive a read interface call from globus_xio it can imediately finish it using the operation it just received as a parameter and updating the iovec structure to represent the read that already occured.

Preopening handles.

Once the driver has received a globus_xio_driver_stack_t it can open a driver_handle. The globus_xio_driver_stack_t comes in the call to the interface function globus_xio_server/client_init_t(). The driver uses this structure in a call to globus_xio_driver_open(). When this functionality completes the driver has an initialized driver_handle and can use it to create operations as described above. The driver can now hang onto this driver_handle until it receives an open interface function call. At which time it can call **globus_xio_driver_finished_open()** (p. 25) passing in the driver_handle and thereby glueing the pre opened driver_handle with the requested globus_xio operation.

6.4 Driver Programming

Typedefs

- typedef void(∗ **globus_xio_driver_callback_t**)(globus_xio_operation_t op, globus_result_t result, void ∗user_arg)
- typedef void(∗ **globus_xio_driver_data_callback_t**)(globus_xio_operation_t op, globus_result_t result, globus_size_t nbytes, void ∗user_arg)
- typedef globus_result_t(∗ **globus_xio_driver_attr_init_t**)(void ∗∗out_driver_attr)
- typedef globus_result_t(∗ **globus_xio_driver_attr_copy_t**)(void ∗∗dst, void ∗src)
- typedef globus_result_t(∗ **globus_xio_driver_attr_destroy_t**)(void ∗driver_attr)
- typedef globus_result_t(∗ **globus_xio_driver_attr_cntl_t**)(void ∗attr, int cmd, va_list ap)
- typedef globus_result_t(∗ **globus_xio_driver_server_init_t**)(void ∗driver_attr, const globus_xio_contact_t ∗contact_info, globus_xio_operation_t op)
- typedef globus_result_t(∗ **globus_xio_driver_server_destroy_t**)(void ∗driver_server)
- typedef globus_result_t(∗ **globus_xio_driver_server_accept_t**)(void ∗driver_server, globus_xio_operation_t op)
- typedef globus_result_t(∗ **globus_xio_driver_server_cntl_t**)(void ∗driver_server, int cmd, va_list ap)
- typedef globus_result_t(∗ **globus_xio_driver_link_destroy_t**)(void ∗driver_link)
- typedef globus_result_t(∗ **globus_xio_driver_transform_open_t**)(const globus_xio_contact_t ∗contact_info, void ∗driver_link, void ∗driver_attr, globus_xio_operation_t op)
- typedef globus_result_t(∗ **globus_xio_driver_transport_open_t**)(const globus_xio_contact_t ∗contact_info, void ∗driver_link, void ∗driver_attr, globus_xio_operation_t op)
- typedef globus_result_t(∗ **globus_xio_driver_handle_cntl_t**)(void ∗handle, int cmd, va_list ap)
- typedef globus_result_t(∗ **globus_xio_driver_close_t**)(void ∗driver_handle, void ∗driver_attr, globus_xio_operation_t op)
- typedef globus_result_t(∗ **globus_xio_driver_read_t**)(void ∗driver_specific_handle, const globus_xio_iovec_t ∗iovec, int iovec_count, globus_xio_operation_t op)
- typedef globus_result_t(∗ **globus_xio_driver_write_t**)(void ∗driver_specific_handle, const globus_xio_iovec_t ∗iovec, int iovec_count, globus_xio_operation_t op)

Functions

- globus_result_t **globus_xio_driver_handle_cntl** (globus_xio_driver_handle_t handle, globus_xio_driver_t driver, int cmd,...)
- void **globus_xio_driver_finished_accept** (globus_xio_operation_t op, void ∗driver_link, globus_result_t result)
- globus_result_t **globus_xio_driver_pass_open** (globus_xio_operation_t op, const globus_xio_contact_t ∗contact_info, **globus_xio_driver_callback_t** cb, void ∗user_arg)
- void **globus_xio_driver_finished_open** (void ∗driver_handle, globus_xio_operation_t op, globus_result_t result)
- globus_result_t **globus_xio_driver_operation_create** (globus_xio_operation_t ∗operation, globus_xio_driver_handle_t handle)
- globus_bool_t **globus_xio_driver_operation_is_blocking** (globus_xio_operation_t operation)
- globus_result_t **globus_xio_driver_pass_close** (globus_xio_operation_t op, **globus_xio_driver_callback_t** cb, void ∗user_arg)
- void **globus_xio_driver_finished_close** (globus_xio_operation_t op, globus_result_t result)
- globus_result_t **globus_xio_driver_pass_read** (globus_xio_operation_t op, globus_xio_iovec_t ∗iovec, int iovec_count, globus_size_t wait_for, **globus_xio_driver_data_callback_t** cb, void ∗user_arg)
- void **globus_xio_driver_finished_read** (globus_xio_operation_t op, globus_result_t result, globus_size_t nread)
- void **globus_xio_driver_set_eof_received** (globus_xio_operation_t op)
- globus_bool_t **globus_xio_driver_eof_received** (globus_xio_operation_t op)

- globus_result_t **globus_xio_driver_pass_write** (globus_xio_operation_t op, globus_xio_iovec_t *iovec, int iovec_count, globus_size_t wait_for, **globus_xio_driver_data_callback_t** cb, void *user_arg)
- void **globus_xio_driver_finished_write** (globus_xio_operation_t op, globus_result_t result, globus_size_t nwritten)
- globus_result_t **globus_xio_driver_merge_operation** (globus_xio_operation_t top_op, globus_xio_operation_t bottom_op)

6.4.1 Detailed Description

The set of interface functions that the driver author must implement to create a driver and the functions to assist in the creation. Driver attribute functions

If the driver wishes to provide driver specific attributes to the user it must implement the following functions:

globus_xio_driver_attr_init_t globus_xio_driver_attr_copy_t globus_xio_driver_attr_cntl_t globus_xio_driver_attr_destroy_t

6.4.2 Typedef Documentation

6.4.2.1 typedef void(* globus_xio_driver_callback_t)(globus_xio_operation_t op, globus_result_t result, void *user_arg)

callback interface

This is the function signature of callbacks for the globus_xio_driver_open/close().

Parameters

op	The operation structure associated with the open or the close requested operation. The driver should call the appropriate finished operation to clean up this structure.
result	The result of the requested data operation
user_arg	The user pointer that is threaded through to the callback.

6.4.2.2 typedef void(* globus_xio_driver_data_callback_t)(globus_xio_operation_t op, globus_result_t result, globus_size_t nbytes, void *user_arg)

Data Callback interface

This is the function signature of read and write operation callbacks.

Parameters

op	The operation structure associated with the read or write operation request. The driver should call the approriate finished operation when it receives this operation.
result	The result of the requested data operation
nbytes	the number of bytes read or written
user_arg	The user pointer that is threaded through to the callback.

6.4.2.3 typedef globus_result_t(* globus_xio_driver_attr_init_t)(void **out_driver_attr)

Create a driver specific attribute.

The driver should implement this function to create a driver specific attribute and return it via the out_attr parameter.

6.4.2.4 typedef globus_result_t(* globus_xio_driver_attr_copy_t)(void **dst, void *src)

Copy a driver attr.

When this function is called the driver will create a copy of the attr in parameter src and place it in the parameter dst.

6.4.2.5 typedef globus_result_t(* globus_xio_driver_attr_destroy_t)(void *driver_attr)

Destroy the driver attr.

Clean up all resources associate with the attr.

6.4.2.6 typedef globus_result_t(* globus_xio_driver_attr_cntl_t)(void *attr, int cmd, va_list ap)

get or set information in an attr.

The cmd parameter determines what functionality the user is requesting. The driver is resonsible for providing documentation to the user on all the possible values that cmd can be.

Parameters

driver_attr	The driver specific attr, created by globus_xio_driver_attr_init_t.
cmd	An integer representing what functionality the user is requesting.
ap	variable arguments. These are determined by the driver and the value of cmd.

6.4.2.7 typedef globus_result_t(* globus_xio_driver_server_init_t)(void *driver_attr, const globus_xio_contact_t *contact_info, globus_xio_operation_t op)

Initialize a server object.

The driver developer should implement this function if their driver handles server operations (pasive opens). In the tcp driver this function should create a listener.

Parameters

op	An op which should be passed to globus_xio_driver_server_created. Note, that unlike most operations, the server is created from the bottom of the stack to the top.
contact_info	This the contact info for the stack below this driver. (entries will always be NULL for the transport driver)
driver_attr	A server attr if the user specified any driver specific attributes. This may be NULL.

Returns

Returning GLOBUS_SUCCESS for this means that ' globus_xio_driver_pass_server_init returned success and the driver's server was successfully initialized.

6.4.2.8 typedef globus_result_t(* globus_xio_driver_server_destroy_t)(void *driver_server)

destroy a server.

When this function is called the driver should free up all resources associated with a server.

Parameters

server	The server that the driver should clean up.
driver_server	The reference to the iunternal server that is being declaired invaild with this function call.

6.4.2.9 typedef globus_result_t(* globus_xio_driver_server_accept_t)(void *driver_server, globus_xio_operation_t op)

Accept a server connection.

The driver developer should implement this function if their driver handles server operations. Once the accept operation completes, the connection is established. The user still has an opertunity to open the link or destroy it. They can query the link for additional information on which to base the decision to open.

Parameters

driver_server	The server object from which the link connection will be accepted.
op	The requested operation. When the driver is finished acepting the server connection it uses this structure to signal globus_xio that it has completed the operation.

6.4.2.10 typedef globus_result_t(* globus_xio_driver_server_cntl_t)(void *driver_server, int cmd, va_list ap)

Query a server for information.

This function allows a user to request information from a driver specific server handle.

Parameters

driver_server	the server handle.
cmd	An integer telling the driver what operation to preform on this server handle.
ap	variable args.

6.4.2.11 typedef globus_result_t(* globus_xio_driver_link_destroy_t)(void *driver_link)

destroy a link

The driver should clean up all resources associated with the link when this function is called.

Parameters

driver_link	The link to be destroyed.

6.4.2.12 typedef globus_result_t(* globus_xio_driver_transform_open_t)(const globus_xio_contact_t *contact_info, void *driver_link, void *driver_attr, globus_xio_operation_t op)

Open a handle

This is called when a user requests to open a handle.

Parameters

driver_link	Comes from server accept. Used to link an accepted connection to an xio handle. xio will destroy this object upon the return of this interface call.
driver_attr	A attribute describing how to open. This points to a piece of memory created by the globus_xio_driver_driver_attr_init_t interface funstion.
contact_info	Contains information about the requested resource. Its members may all be null (especially when link is not null). XIO will destroy this contact info upon return from the interface function
op	The requested operation. When the driver is finished opening the handle it uses this structure to signal globus_xio that it has completed the operation requested. It does this by calling **globus_xio_driver_finished_open()** (p. 25)

6.4.2.13 typedef globus_result_t(* globus_xio_driver_transport_open_t)(const globus_xio_contact_t *contact_info, void *driver_link, void *driver_attr, globus_xio_operation_t op)

transport open

6.4.2.14 typedef globus_result_t(* globus_xio_driver_handle_cntl_t)(void *handle, int cmd, va_list ap)

this call *must* return an GLOBUS_XIO_ERROR_COMMAND error for unsupported command numbers.

(use GlobusXIOErrorInvalidCommand(cmd))

Drivers that have reason to support the commands listed at **globus_xio_handle_cmd_t** (p. 8) should accept the xio generic cmd numbers and their driver specific command number. Do NOT implement those handle cntls unless you really are the definitive source.

6.4.2.15 typedef globus_result_t(* globus_xio_driver_close_t)(void *driver_handle, void *driver_attr, globus_xio_operation_t op)

Close an open handle

This is called when a user requests to close a handle.

The driver implemntor should clean up all resources connected to there driver handle when this function is called.

Parameters

driver_specific_handle	The driver handle to be closed.
driver_attr	A driver specific attr which may be used to alter how a close is performed (e,g, caching drivers)
op	The requested operation. When the driver is finished closing the handle it uses this structure to signal globus_xio that it has completed the operation requested. It does this by calling **globus_xio_driver_finished_close()** (p. 26)

6.4.2.16 typedef globus_result_t(* globus_xio_driver_read_t)(void *driver_specific_handle, const globus_xio_iovec_t *iovec, int iovec_count, globus_xio_operation_t op)

Read data from an open handle.

This function is called when the user requests to read data from a handle. The driver author shall implement all code needed to for there driver to complete a read operations.

Parameters

driver_handle	The driver handle from which data should be read.
iovec	An io vector pointing to the buffers to be read into.
iovec_count	The number if entries in the io vector.
op	The requested operation. When the driver is finished fullfilling the requested read operation it must use this structure to signal globus_xio that the operation is completed. This is done by calling globus_xio_driver_finished_operation()..

6.4.2.17 typedef globus_result_t(* globus_xio_driver_write_t)(void *driver_specific_handle, const globus_xio_iovec_t *iovec, int iovec_count, globus_xio_operation_t op)

Write data from an open handle.

This function is called when the user requests to write data to a handle. The driver author shall implement all code needed to for there driver to complete write operations.

Parameters

driver_handle	The driver handle to which data should be writen.
iovec	An io vector pointing to the buffers to be written.
iovec_count	The number if entries in the io vector.
op	The requested operation. When the driver is finished fullfilling the requested read operation it must use this structure to signal globus_xio that the operation is completed. This is done by calling globus_xio_driver_finished_operation()..

6.4.3 Function Documentation

6.4.3.1 globus_result_t globus_xio_driver_handle_cntl (globus_xio_driver_handle_t *handle,* globus_xio_driver_t *driver,* int *cmd,* ...)

Touch driver specific information in a handle object.

pass the driver to control a specific driver pass NULL for driver for XIO specific cntls pass GLOBUS_XIO_QUERY for driver to try each driver (below current) in order

References globus_xio_driver_handle_cntl().

6.4.3.2 void globus_xio_driver_finished_accept (globus_xio_operation_t *op,* void * *driver_link,* globus_result_t *result*)

Driver API finished accept.

This function should be called to signal globus_xio that it has completed the accept operation requested of it. It will free up resources associated with the accept_op and potientially cause xio to pop the signal up the driver stack.

Parameters

op	The requested accept operation that has completed.
driver_link	This is the initialized driver link that is that will be passed to the open interface when this handle is opened.
result	Return status of the completed operation

References globus_xio_driver_finished_accept().

6.4.3.3 globus_result_t globus_xio_driver_pass_open (globus_xio_operation_t *op,* const globus_xio_contact_t * *contact_info,* globus_xio_driver_callback_t *cb,* void * *user_arg*)

Driver API Open

This function will pass an open request down the driver stack.

Upon completion of the open operation globus_xio will call the *cb* function, at which point the handle structure will be intialized and available for use.

As soon as the function returns the handle is valid for creating other operations.

Parameters

op	The operation from which the handle will be established. This parameter is used to determine what drivers are in the stack and other such information.
contact_info	The contact info describing the resource the driver below should open. This will normally be the same contact info that was passed in on the open interface.
cb	The function to be called wehn the open operation is complete.
user_arg	a user pointer that will be threaded through to the callback.

References globus_xio_driver_pass_open().

6.4.3.4 void globus_xio_driver_finished_open (void * *driver_handle,* globus_xio_operation_t *op,* globus_result_t *result*)

Driver API finished open

This function should be called to signal globus_xio that it has completed the open operation requested of it.

It will free up resources associated with the op and potientially cause xio to pop the signal up the driver stack.

Parameters

driver_handle	The driver specific handle pointer that will be passed to future interface funstion calls.
op	The requested open operation that has completed.
result	Return status of the completed operation

References globus_xio_driver_finished_open().

6.4.3.5 globus_result_t globus_xio_driver_operation_create (globus_xio_operation_t * *operation*, globus_xio_driver_handle_t *handle*)

Driver API Create Operation

This function will create an operation from an initialized handle This operation can then be used for io operations related to the handle that created them.

Parameters

operation	The operation to be created. When this function returns this structure will be populated and available for use for the driver.
handle	The initialized handle representing the user handle from which the operation will be created.

References globus_xio_driver_operation_create().

6.4.3.6 globus_bool_t globus_xio_driver_operation_is_blocking (globus_xio_operation_t *operation*)

Is Operation blocking.

If the operation is blocking the driver developer may be able to make certian optimizations. The function returns true if the given operation was created via a user call to a blocking funciton.

6.4.3.7 globus_result_t globus_xio_driver_pass_close (globus_xio_operation_t *op*, globus_xio_driver_callback_t *cb*, void * *user_arg*)

Driver API Close

This function will pass a close request down the driver stack.

Upon completion of the close operation globus_xio will call the funciton pointed to by the cb argument.

Parameters

op	The operation to pass along the driver stack for closing.
cb	A pointer to the function to be called once all drivers lower in the stack have closed.
user_arg	A user pointer that will be threaded through to the callback.

References globus_xio_driver_pass_close().

6.4.3.8 void globus_xio_driver_finished_close (globus_xio_operation_t *op*, globus_result_t *result*)

Driver API finished_close

The driver calls this function after completing a close operation on a driver_handle.

Once this function returns the driver_handle is no longer valid.

Parameters

op	The close operation that has completed.
result	Return status of the completed operation

References globus_xio_driver_finished_close().

6.4.3.9 globus_result_t globus_xio_driver_pass_read (globus_xio_operation_t *op*, globus_xio_iovec_t * *iovec*, int *iovec_count*, globus_size_t *wait_for*, **globus_xio_driver_data_callback_t** *cb*, void * *user_arg*)

Driver read

This function passes a read operation down the driver stack.

After this function is called the op structure is no longer valid. However when the driver stack finishes servicing the read request it will pass a new operation structure in the funciton pointed to by cb. Finishe read can be called on the new operation received.

Parameters

op	The operation structure representing this requested io operation.
iovec	A pointer to the array of iovecs.
iovec_count	The number of iovecs in the array.
wait_for	The minimum number of bytes to read before returning... if a driver has no specifc requirement, he should use the user's request... available via GlobusXIOOperationMinimumRead(op)
cb	The function to be called when the operation request is completed.
user_arg	A user pointer that will be threaded through to the callback.

References globus_xio_driver_pass_read().

6.4.3.10 void globus_xio_driver_finished_read (globus_xio_operation_t *op*, globus_result_t *result*, globus_size_t *nread*)

Finished Read

This function is called to signal globus_xio that the requested read operation has been completed.

Parameters

op	The operation structure representing the requested read operation.
result	Return status of the completed operation
nread	The number of bytes read

References globus_xio_driver_finished_read().

6.4.3.11 void globus_xio_driver_set_eof_received (globus_xio_operation_t *op*)

EOF state manipulation

This function is used by drivers that allow multiple outstanding reads at a time.

It can only be called on behalf of a read operation (while in the read interface call or the pass_read callback).

Typical use for this would be to hold a driver specific lock and call this when an internal eof has been received. The read operation this is called on behalf of must be finished with an eof error or the results are undefined.

In general, you should not have an eof flag in your driver. Use this call and **globus_xio_driver_eof_received()** (p. 28) instead. This is necessary to support xio's automatic eof resetting. If your driver absolutely can not be read after an eof has been set, then you will need your own eof flag.

This call will typically only be used just before a finished_read() call.

Parameters

op	The operation structure representing the requested read operation.

References globus_xio_driver_set_eof_received().

6.4.3.12 globus_bool_t globus_xio_driver_eof_received (globus_xio_operation_t *op*)

EOF state checking

This function is used by drivers that allow multiple outstanding reads at a time.

It can only be called on behalf of a read operation (while in the read interface call or the pass_read callback).

Typical use for this would be to hold a driver specific lock (the same one used when calling **globus_xio_driver_set_eof_received()** (p. 27)) and call this to see if an eof has been received. If so, the operation should immediately be finished with an eof error (do not *return* an eof error).

This call will typically only be used in the read interface call.

Parameters

op	The operation structure representing the requested read operation.

Returns

GLOBUS_TRUE if eof received, GLOBUS_FALSE otherwise.

References globus_xio_driver_eof_received().

6.4.3.13 globus_result_t globus_xio_driver_pass_write (globus_xio_operation_t *op*, globus_xio_iovec_t * *iovec*, int *iovec_count*, globus_size_t *wait_for*, globus_xio_driver_data_callback_t *cb*, void * *user_arg*)

Driver write

This function passes a write operation down the driver stack.

After this function is called the op structure is no longer valid. However when the driver stack finishes servicing the write request it will pass a new operation structure in the funciton pointed to by cb. Finished write can be called on the new operation received.

Parameters

op	The operation structure representing this requested io operation.
iovec	A pointer to the array of iovecs.
iovec_count	The number of iovecs in the array.
wait_for	The minimum number of bytes to write before returning... if a driver has no specifc requirement, he should use the user's request... available via GlobusXIOOperationMinimumWrite(op)
cb	The function to be called when the operation request is completed.
user_arg	A user pointer that will be threaded through to the callback.

References globus_xio_driver_pass_write().

6.4.3.14 void globus_xio_driver_finished_write (globus_xio_operation_t *op*, globus_result_t *result*, globus_size_t *nwritten*)

Finished Write

This function is called to signal globus_xio that the requested write operation has been completed.

Parameters

op	The operation structure representing the requested write operation.
result	Return status of the completed operation
nwritten	The number of bytes written

References globus_xio_driver_finished_write().

6.4.3.15 globus_result_t globus_xio_driver_merge_operation (globus_xio_operation_t *top_op*, globus_xio_operation_t *bottom_op*)

Finishes an operation and merge two op structures.

(XXX not implemented yet)

This function will join to operations together and signal globus_xio that it has completed. This is an advanced function. Most drivers will not require its use. This function takes an operation that was created by this driver and passed on to drivers lower on the stack and an operation that came in on the interface function (that has seen the top half of the stack) and joins them together. The purpose of this function is to join data descriptors that were prestaged and cached with those that have later come in at the users request. See the read ahead doc for more information.

Parameters

top_op	The operation that has seen the top part of the driver stack.
bottom_op	The operation that has seen the bottom part of the driver stack.

(result is always success in this case.. if there is an error, use the other finish() call)

6.5 Driver Programming: String options

Functions

- globus_result_t **globus_xio_string_cntl_bouncer** (**globus_xio_driver_attr_cntl_t** cntl_func, void ∗attr, int cmd,...)
- globus_result_t **globus_xio_string_cntl_bool** (void ∗attr, const char ∗key, const char ∗val, int cmd, **globus_xio_driver_attr_cntl_t** cntl_func)
- globus_result_t **globus_xio_string_cntl_float** (void ∗attr, const char ∗key, const char ∗val, int cmd, **globus_xio_driver_attr_cntl_t** cntl_func)
- globus_result_t **globus_xio_string_cntl_int** (void ∗attr, const char ∗key, const char ∗val, int cmd, **globus_xio_driver_attr_cntl_t** cntl_func)
- globus_result_t **globus_xio_string_cntl_string** (void ∗attr, const char ∗key, const char ∗val, int cmd, **globus_xio_driver_attr_cntl_t** cntl_func)
- globus_result_t **globus_xio_string_cntl_int_int** (void ∗attr, const char ∗key, const char ∗val, int cmd, **globus_xio_driver_attr_cntl_t** cntl_func)

6.5.1 Detailed Description

The set of interface functions that the driver author must implement to create a driver and the functions to assist in the creation. Driver attribute functions

If the driver wishes to provide driver specific attributes to the user it must implement the following functions:

globus_xio_driver_attr_init_t globus_xio_driver_attr_copy_t globus_xio_driver_attr_cntl_t globus_xio_driver_attr_destroy_t

A driver can choose to expose parameters as in a string form. Providing this feature makes dynamicly setting driver specific options much easier. a user can then load the driverby name and set specific options by name all at runtime with no object module references. For example, a TCP driver can be loaded with the string: tcp, and the options can be set with:

port=50668#keepalive=yes#nodelay=N

this would set the port to 50668, keepalive to true and nodelay to false. The particular string definition is defined by the tcp driver by properly creating a globus_i_xio_attr_parse_table_t array. Each element of the array is 1 options. There are 3 members of each array entry: key, cmd, and parse function. The key is a string that defines what option is to be set. In the above example string "port" would be 1 key. cmd tells the driver what cntl is associated with the key. In otherwords, once the string is parsed out what driver specific control must be called to set the requested option. For more information on controls see **globus_xio_attr_cntl** (p. 120). The final value in the array entry is the parsing function. The pasing function takes the value of the <key>=

portion of the string and parses it into data types. once parsed globus_xio_attr_cntl is called and thus the option is set. There are many available parsing functions but the developer is free to right their own if the provided ones are not sufficient. Sample parsing functions follow:

- **globus_xio_string_cntl_bool** (p. 31)
- **globus_xio_string_cntl_float** (p. 31)
- **globus_xio_string_cntl_int** (p. 31)
- **globus_xio_string_cntl_string** (p. 31)
- **globus_xio_string_cntl_int_int** (p. 31)

6.5.2 Function Documentation

6.5.2.1 globus_result_t globus_xio_string_cntl_bouncer (globus_xio_driver_attr_cntl_t *cntl_func*, void * *attr*, int *cmd*, ...)

New type functions call this one.

6.5.2.2 globus_result_t globus_xio_string_cntl_bool (void * *attr*, const char * *key*, const char * *val*, int *cmd*, globus_xio_driver_attr_cntl_t *cntl_func*)

String option parsing function.

References globus_xio_string_cntl_bool(), and globus_xio_string_cntl_bouncer().

6.5.2.3 globus_result_t globus_xio_string_cntl_float (void * *attr*, const char * *key*, const char * *val*, int *cmd*, globus_xio_driver_attr_cntl_t *cntl_func*)

String option parsing function.

References globus_xio_string_cntl_bouncer(), and globus_xio_string_cntl_float().

6.5.2.4 globus_result_t globus_xio_string_cntl_int (void * *attr*, const char * *key*, const char * *val*, int *cmd*, globus_xio_driver_attr_cntl_t *cntl_func*)

String option parsing function.

References globus_xio_string_cntl_bouncer(), and globus_xio_string_cntl_int().

6.5.2.5 globus_result_t globus_xio_string_cntl_string (void * *attr*, const char * *key*, const char * *val*, int *cmd*, globus_xio_driver_attr_cntl_t *cntl_func*)

String option parsing function.

References globus_xio_string_cntl_bouncer(), and globus_xio_string_cntl_string().

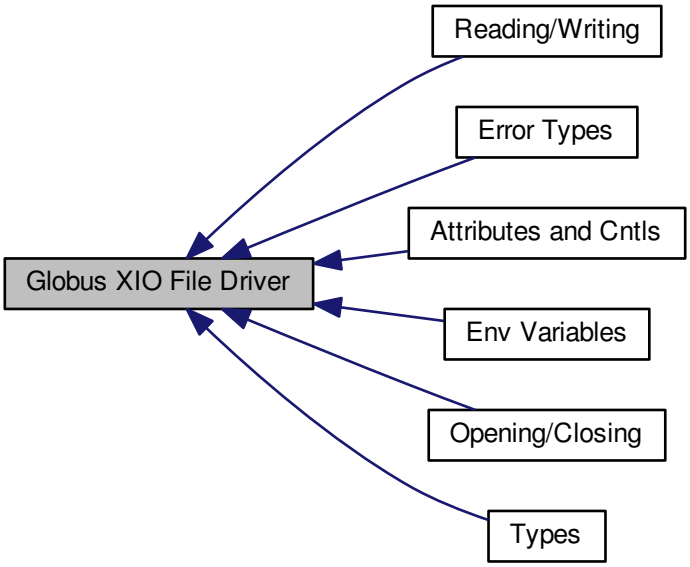
6.5.2.6 globus_result_t globus_xio_string_cntl_int_int (void * *attr*, const char * *key*, const char * *val*, int *cmd*, globus_xio_driver_attr_cntl_t *cntl_func*)

String option parsing function.

References globus_xio_string_cntl_bouncer(), and globus_xio_string_cntl_int_int().

6.6 Globus XIO File Driver

Collaboration diagram for Globus XIO File Driver:



Modules

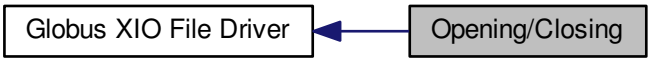
- **Opening/Closing**
- **Reading/Writing**
- **Env Variables**
- **Attributes and Cntls**
- **Types**
- **Error Types**

6.6.1 Detailed Description

The File I/O driver.

6.7 Opening/Closing

Collaboration diagram for Opening/Closing:



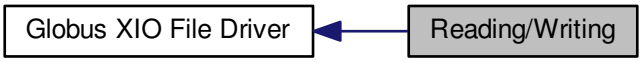
An XIO handle with the file driver can be created with **globus_xio_handle_create()** (p. 10) If there is no handle set on the attr passed to the **globus_xio_open()** (p. 12) call, it performs the equivalent of an open() call. In this case, the contact string must contain either a pathname or one of stdin://, stdout://, or stderr://. If a pathname is used, that path is opened. If one of the schemes are used the corresponding stdio handle is used (retrieved with fileno()).

In either of the above cases, it is most efficient to call the blocking version of **globus_xio_open()** (p. 12). It is also safe to call within a locked critical section.

When the XIO handle is closed, the file driver will destroy its internal resources and close the fd (unless this fd was set on an attr or converted from one of the stdio handles).

6.8 Reading/Writing

Collaboration diagram for Reading/Writing:



Both the **globus_xio_register_read()** (p. 12) and **globus_xio_register_write()** (p. 13) calls follow similar semantics as described below. If the waitforbytes parameter is greater than zero, the io will happen asynchronously and be completed when at least waitforbytes has been read/written.

If the waitforbytes parameter is equal to zero, one of the following alternative behaviors occur:

If the length of the buffer is $>$ 0 the read or write happens synchronously. If the user is using one of the blocking xio calls, no internal callback will occur.

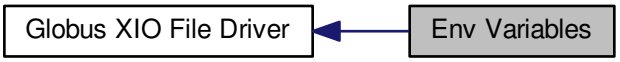
If the length of the buffer is also 0, the call behaves like an asynchronous notification of data ready to be either read or written. ie, an asynchronous select().

In any case, when an error or EOF occurs before the waitforbytes request has been met, the outgoing nbytes is set to the amount of data actually read/written before the error or EOF occurred.

You may either use GLOBUS_XIO_FILE_SEEK or GLOBUS_XIO_SEEK to position the file pointer before each read or write or you can specify the desired offset on a data descriptor with the xio cmd, GLOBUS_XIO_DD_SET-_OFFSET. simultaneous reading and writing is only predictable if the data descriptor method is used.

6.9 Env Variables

Collaboration diagram for Env Variables:



The file driver uses the following environment variables.

- GLOBUS_XIO_FILE_DEBUG Available if using a debug build. See globus_debug.h for format. The File driver defines the levels TRACE for all function call tracing and INFO for write buffer sizes
- GLOBUS_XIO_SYSTEM_DEBUG Available if using a debug build. See globus_debug.h for format. The File driver uses globus_xio_system (along with the TCP and UDP drivers) which defines the following levels: TRACE for all function call tracing, DATA for data read and written counts, INFO for some special events, and RAW which dumps the raw buffers actually read or written. This can contain binary data, so be careful when you enable it.

6.10 Attributes and Cntls

Collaboration diagram for Attributes and Cntls:



Enumerations

- enum **globus_xio_file_attr_cmd_t** {
  GLOBUS_XIO_FILE_SET_MODE,
  GLOBUS_XIO_FILE_GET_MODE,
  GLOBUS_XIO_FILE_SET_FLAGS,
  GLOBUS_XIO_FILE_GET_FLAGS,
  GLOBUS_XIO_FILE_SET_TRUNC_OFFSET,
  GLOBUS_XIO_FILE_GET_TRUNC_OFFSET,
  GLOBUS_XIO_FILE_SET_HANDLE,
  GLOBUS_XIO_FILE_GET_HANDLE,
  GLOBUS_XIO_FILE_SET_BLOCKING_IO,
  GLOBUS_XIO_FILE_GET_BLOCKING_IO,
  GLOBUS_XIO_FILE_SEEK }

Functions

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_MODE**, int mode)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_MODE**, int *mode_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_FLAGS**, int flags)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_FLAGS**, int *flags_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_TRUNC_OFFSET**, globus_off_t offset)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_TRUNC_OFFSET**, globus_off_t *offset_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_HANDLE**, globus_xio_system_file_t handle)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_HANDLE**, globus_xio_system_file_t *handle_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_FILE_GET_HANDLE**, globus_xio_system_file_t *handle_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_BLOCKING_IO**, globus_bool_t use_blocking_io)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_FILE_SET_BLOCKING_IO**, globus_bool_t use_blocking_io)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_BLOCKING_IO**, globus_bool_t *use_blocking_io_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_FILE_GET_BLOCKING_IO**, globus_bool_t *use_blocking_io_out)

- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_FILE_SEEK**, globus_off_t *in_-out_offset, **globus_xio_file_whence_t** whence)

6.10.1 Detailed Description

File driver specific attrs and cntls.

See Also

globus_xio_attr_cntl() (p. 8)
globus_xio_handle_cntl() (p. 11)

6.10.2 Enumeration Type Documentation

6.10.2.1 enum globus_xio_file_attr_cmd_t

doxygen varargs filter stuff

File driver specific cntls

Enumerator

GLOBUS_XIO_FILE_SET_MODE See usage for: **globus_xio_attr_cntl** (p. 37).

GLOBUS_XIO_FILE_GET_MODE See usage for: **globus_xio_attr_cntl** (p. 38).

GLOBUS_XIO_FILE_SET_FLAGS See usage for: **globus_xio_attr_cntl** (p. 38).

GLOBUS_XIO_FILE_GET_FLAGS See usage for: **globus_xio_attr_cntl** (p. 38).

GLOBUS_XIO_FILE_SET_TRUNC_OFFSET See usage for: **globus_xio_attr_cntl** (p. 38).

GLOBUS_XIO_FILE_GET_TRUNC_OFFSET See usage for: **globus_xio_attr_cntl** (p. 39).

GLOBUS_XIO_FILE_SET_HANDLE See usage for: **globus_xio_attr_cntl** (p. 39).

GLOBUS_XIO_FILE_GET_HANDLE See usage for: **globus_xio_attr_cntl** (p. 39), **globus_xio_handle_-cntl** (p. 39).

GLOBUS_XIO_FILE_SET_BLOCKING_IO See usage for: **globus_xio_attr_cntl** (p. 39), **globus_xio_-handle_cntl** (p. 40).

GLOBUS_XIO_FILE_GET_BLOCKING_IO See usage for: **globus_xio_attr_cntl** (p. 40), **globus_xio_-handle_cntl** (p. 40).

GLOBUS_XIO_FILE_SEEK See usage for: **globus_xio_handle_cntl** (p. 40).

6.10.3 Function Documentation

6.10.3.1 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_SET_MODE , int *mode*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the file create mode.

Use this to set the permissions a non-existent file is created with, The default mode is 0644.

Parameters

mode	A bitwise OR of all the modes desired

See Also

globus_xio_file_mode_t (p. 42)

string opt: mode=<int>

6.10.3.2 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_GET_MODE , int * *mode_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the file create mode.

Parameters

mode_out	The current mode will be stored here.

6.10.3.3 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_SET_FLAGS , int *flags*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the file open flags.

The default flags specify to create the file if it doesn't exist, open it for reading and writing, and interpret it as a binary file.

Parameters

flags	A bitwise OR of all the flags desired

See Also

globus_xio_file_flag_t (p. 42)

string opt: flags=<int>

6.10.3.4 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_GET_FLAGS , int * *flags_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the file open flags.

Parameters

flags_out	The current flags will be stored here.

6.10.3.5 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_SET_TRUNC_OFFSET , globus_off_t *offset*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the file truncate offset.

Use this in conjunction with the **GLOBUS_XIO_FILE_TRUNC** (p. 42) flag to truncate a file to a non-zero offset. If the file was larger than offset bytes, the extra data is lost. If the file was shorter or non-existent, it is extended and the extended part reads as zeros. (default is 0)

Parameters

offset	The desired size of the file.

6.10.3.6 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_GET_TRUNC_OFFSET , globus_off_t * *offset_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the file truncate offset.

Parameters

offset_out	The offset will be stored here.

6.10.3.7 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_SET_HANDLE , globus_xio_system_file_t *handle*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the file handle to use.

Do not open a new file, use this preopened handle instead.

Parameters

handle	Use this handle (fd or HANDLE) for the file. Note: close() will not be called on this handle.

6.10.3.8 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_GET_HANDLE , globus_xio_system_file_t * *handle_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the file handle in use or in attr.

Parameters

handle_out	The file handle (fd or HANDLE) will be stored here. If none is set, GLOBUS_XIO_TCP_INVALID_HANDLE will be set.

6.10.3.9 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_FILE_GET_HANDLE , globus_xio_system_file_t * *handle_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the file handle in use or in attr.

Parameters

handle_out	The file handle (fd or HANDLE) will be stored here. If none is set, GLOBUS_XIO_TCP_INVALID_HANDLE will be set.

6.10.3.10 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_SET_BLOCKING_IO , globus_bool_t *use_blocking_io*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Enable true blocking io when making globus_xio_read/write() calls.

Note: use with caution. you can deadlock an entire app with this.

Parameters

use_blocking_io	If GLOBUS_TRUE, true blocking io will be enabled. GLOBUS_FALSE will disable it (default);

6.10.3.11 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_FILE_SET_BLOCKING_IO , globus_bool_t *use_blocking_io*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Enable true blocking io when making globus_xio_read/write() calls.

Note: use with caution. you can deadlock an entire app with this.

Parameters

use_blocking_io	If GLOBUS_TRUE, true blocking io will be enabled. GLOBUS_FALSE will disable it (default);

6.10.3.12 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_FILE_GET_BLOCKING_IO , globus_bool_t * *use_blocking_io_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the blocking io status in use or in attr.

Parameters

use_blocking_io_out	The flag will be set here. GLOBUS_TRUE for enabled.

string opt: blocking=<bool>

6.10.3.13 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_FILE_GET_BLOCKING_IO , globus_bool_t * *use_blocking_io_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the blocking io status in use or in attr.

Parameters

use_blocking_io_out	The flag will be set here. GLOBUS_TRUE for enabled.

string opt: blocking=<bool>

6.10.3.14 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_FILE_SEEK , globus_off_t * *in_out_offset,* globus_xio_file_whence_t *whence*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Reposition read/write file offset.

Parameters

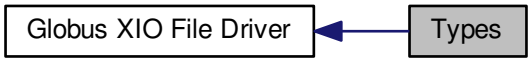
in_out_offset	Specify the desired offset (according to whence). On success, the actual file offset will be stored here.
whence	Specify how offset should be interpreted.

See Also

globus_xio_file_whence_t (p. 43)
GLOBUS_XIO_SEEK (p. 8)

6.11 Types

Collaboration diagram for Types:



Macros

- #define **GLOBUS_XIO_FILE_INVALID_HANDLE**

Enumerations

- enum **globus_xio_file_flag_t** {
  GLOBUS_XIO_FILE_CREAT = O_CREAT,
  GLOBUS_XIO_FILE_EXCL = O_EXCL,
  GLOBUS_XIO_FILE_RDONLY = O_RDONLY,
  GLOBUS_XIO_FILE_WRONLY = O_WRONLY,
  GLOBUS_XIO_FILE_RDWR = O_RDWR,
  GLOBUS_XIO_FILE_TRUNC = O_TRUNC,
  GLOBUS_XIO_FILE_APPEND = O_APPEND,
  GLOBUS_XIO_FILE_BINARY = 0,
  GLOBUS_XIO_FILE_TEXT = 0 }
- enum **globus_xio_file_mode_t** {
  GLOBUS_XIO_FILE_IRWXU = S_IRWXU,
  GLOBUS_XIO_FILE_IRUSR = S_IRUSR,
  GLOBUS_XIO_FILE_IWUSR = S_IWUSR,
  GLOBUS_XIO_FILE_IXUSR = S_IXUSR,
  GLOBUS_XIO_FILE_IRWXO = S_IRWXO,
  GLOBUS_XIO_FILE_IROTH = S_IROTH,
  GLOBUS_XIO_FILE_IWOTH = S_IWOTH,
  GLOBUS_XIO_FILE_IXOTH = S_IXOTH,
  GLOBUS_XIO_FILE_IRWXG = S_IRWXG,
  GLOBUS_XIO_FILE_IRGRP = S_IRGRP,
  GLOBUS_XIO_FILE_IWGRP = S_IWGRP,
  GLOBUS_XIO_FILE_IXGRP = S_IXGRP }
- enum **globus_xio_file_whence_t** {
  GLOBUS_XIO_FILE_SEEK_SET = SEEK_SET,
  GLOBUS_XIO_FILE_SEEK_CUR = SEEK_CUR,
  GLOBUS_XIO_FILE_SEEK_END = SEEK_END }

6.11.1 Detailed Description

6.11.2 Macro Definition Documentation

6.11.2.1 #define GLOBUS_XIO_FILE_INVALID_HANDLE

Invalid handle type.

See Also

GLOBUS_XIO_FILE_SET_HANDLE (p. 37)

6.11.3 Enumeration Type Documentation

6.11.3.1 enum globus_xio_file_flag_t

File driver open flags

OR together all the flags you want.

See Also

GLOBUS_XIO_FILE_SET_FLAGS (p. 37)

Enumerator

GLOBUS_XIO_FILE_CREAT Create a new file if it doesn't exist (default)

GLOBUS_XIO_FILE_EXCL Fail if file already exists.

GLOBUS_XIO_FILE_RDONLY Open for read only.

GLOBUS_XIO_FILE_WRONLY Open for write only.

GLOBUS_XIO_FILE_RDWR Open for reading and writing (default)

GLOBUS_XIO_FILE_TRUNC Truncate file.

See Also

GLOBUS_XIO_FILE_SET_TRUNC_OFFSET (p. 37)

GLOBUS_XIO_FILE_APPEND Open file for appending.

GLOBUS_XIO_FILE_BINARY File is binary (default)

GLOBUS_XIO_FILE_TEXT File is text.

6.11.3.2 enum globus_xio_file_mode_t

File driver create mode

OR these modes together to get the mode you want.

See Also

GLOBUS_XIO_FILE_SET_MODE (p. 37)

NOTE: for Win32, you only have a choice between read-only and read-write. If the chosen mode does not specify writability, the file will be read only

Enumerator

GLOBUS_XIO_FILE_IRWXU User read, write, and execute.

GLOBUS_XIO_FILE_IRUSR User read.

GLOBUS_XIO_FILE_IWUSR User write.

GLOBUS_XIO_FILE_IXUSR User execute.

GLOBUS_XIO_FILE_IRWXO Others read, write, and execute.

GLOBUS_XIO_FILE_IROTH Others read.

GLOBUS_XIO_FILE_IWOTH Others write.

GLOBUS_XIO_FILE_IXOTH Others execute.

GLOBUS_XIO_FILE_IRWXG Group read, write, and execute.

GLOBUS_XIO_FILE_IRGRP Group read.

GLOBUS_XIO_FILE_IWGRP Group write.

GLOBUS_XIO_FILE_IXGRP Group execute.

6.11.3.3 enum globus_xio_file_whence_t

File driver seek options.

See Also

GLOBUS_XIO_FILE_SEEK (p. 37)

Enumerator

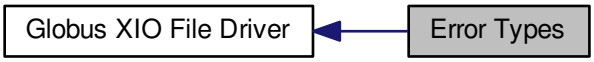
GLOBUS_XIO_FILE_SEEK_SET set the file pointer at the specified offset

GLOBUS_XIO_FILE_SEEK_CUR set the file pointer at current position + offset

GLOBUS_XIO_FILE_SEEK_END set the file pointer at size of file + offest

6.12 Error Types

Collaboration diagram for Error Types:



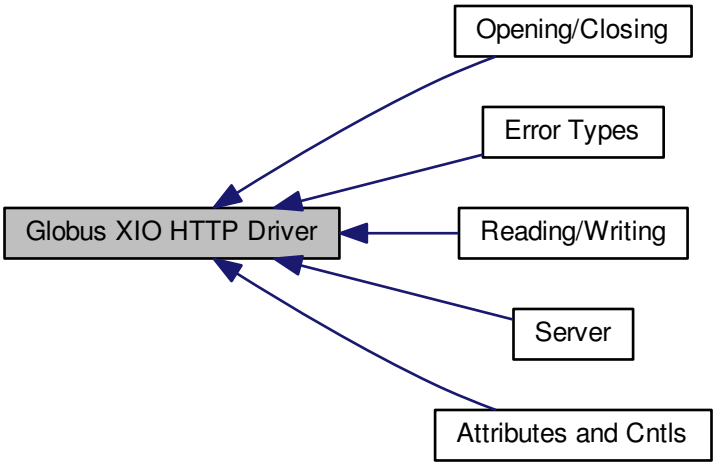
The File driver is very close to the system code, so most errors reported by it are converted from the system errno. A few of the exceptions are GLOBUS_XIO_ERROR_EOF, GLOBUS_XIO_ERROR_COMMAND, GLOBUS_XIO_-ERROR_CONTACT_STRING, and GLOBUS_XIO_ERROR_CANCELED

See Also

globus_error_errno_match()

6.13 Globus XIO HTTP Driver

Collaboration diagram for Globus XIO HTTP Driver:



Modules

- **Opening/Closing**
- **Reading/Writing**
- **Server**
- **Attributes and Cntls**
- **Error Types**

Data Structures

- struct **globus_xio_http_header_t**

Enumerations

- enum **globus_xio_http_version_t** { ,
  GLOBUS_XIO_HTTP_VERSION_1_0,
  GLOBUS_XIO_HTTP_VERSION_1_1 }

6.13.1 Detailed Description

This driver implements the HTTP/1.0 and HTTP/1.1 protocols within the Globus XIO framework. It may be used with the tcp driver for the standard HTTP protocol stack, or may be combined with the gsi driver for a HTTPS implementation.

This implementation supports user-defined HTTP headers, persistent connections, and chunked transfer encoding.

6.13.2 Enumeration Type Documentation

6.13.2.1 enum globus_xio_http_version_t

Valid HTTP versions, used with the **GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HTTP_VERSION** (p. 51) attribute and the **GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HTTP_VERSION** (p. 51) handle control.

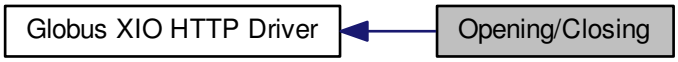
Enumerator

GLOBUS_XIO_HTTP_VERSION_1_0 HTTP/1.0.

GLOBUS_XIO_HTTP_VERSION_1_1 HTTP/1.1.

6.14 Opening/Closing

Collaboration diagram for Opening/Closing:



An XIO handle with the http driver can be created with either **globus_xio_handle_create()** (p. 10) or **globus_xio_server_register_accept()** (p. 10). If the handle is created with **globus_xio_server_register_accept()** (p. 10), then an HTTP service handle will be created when **globus_xio_register_open()** (p. 11) is called. The XIO application must call one of the functions in the **globus_xio_read()** (p. 12) family to receive the HTTP request metadata. This metadata will be returned in the data descriptor associated with that first read: the application should use the GLOBUS_XIO_HTTP_GET_REQUEST descriptor cntl to extract this metadata.

If the handle is created with **globus_xio_handle_create()** (p. 10), then an HTTP client handle will be created when **globus_xio_register_open()** (p. 11) is called. HTTP request headers, version and method may be chosen by setting attributes.

6.15 Reading/Writing

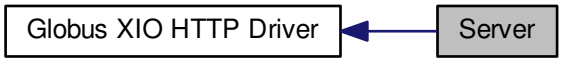
Collaboration diagram for Reading/Writing:



The HTTP driver behaves similar to the underlying transport driver with respect to reads and writes with the exception that metadata must be passed to the handle via open attributes on the client side and will be received as data descriptors as part of the first request read or response read.

6.16 Server

Collaboration diagram for Server:

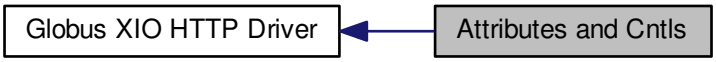


The **globus_xio_server_create()** (p. 9) causes a new transport-specific listener socket to be created to handle new HTTP connections. **globus_xio_server_register_accept()** (p. 10) will accept a new connection for processing. **globus_xio_server_register_close()** (p. 10) cleans up the internal resources associated with the http server and calls close on the listener.

Multiple HTTP requests may be read in sequence from an HTTP server. After each request is processed and the response is sent (either by writing the entire entity body as specified by the Content-Length header or by using the GLOBUS_XIO_HTTP_HANDLE_SET_END_OF_ENTITY handle cntl), the next read will contain the metadata related to the next operation. Only one request will be in process at once–the previous request must have sent or received and EOF (whichever is applicable to the request type).

6.17 Attributes and Cntls

Collaboration diagram for Attributes and Cntls:



Enumerations

- enum **globus_xio_http_handle_cmd_t** {
  GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HEADER,
  GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_STATUS_CODE,
  GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_REASON_PHRASE,
  GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HTTP_VERSION,
  GLOBUS_XIO_HTTP_HANDLE_SET_END_OF_ENTITY }
- enum **globus_xio_http_attr_cmd_t** {
  GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_METHOD,
  GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HTTP_VERSION,
  GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HEADER,
  GLOBUS_XIO_HTTP_ATTR_DELAY_WRITE_HEADER,
  GLOBUS_XIO_HTTP_GET_REQUEST,
  GLOBUS_XIO_HTTP_GET_RESPONSE }

Functions

- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HEADER**, const char ∗header_name, const char ∗header_value)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_STATUS_CODE**, int status)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_REASON_PHRASE**, const char ∗reason)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HTTP_VERSION**, **globus_xio_http_version_t** version)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_END_OF_ENTITY**)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_METHOD**, const char ∗method)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HTTP_VERSION**, **globus_xio_http_version_t** version)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HEADER**, const char ∗header_name, const char ∗header_value)

6.17.1 Detailed Description

HTTP driver specific attrs and cntls.

See Also

globus_xio_attr_cntl() (p. 8)
globus_xio_handle_cntl() (p. 11)

6.17.2 Enumeration Type Documentation

6.17.2.1 enum globus_xio_http_handle_cmd_t

HTTP driver specific cntls.

Enumerator

GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HEADER See usage for: **globus_xio_handle_cntl** (p. 51).

GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_STATUS_CODE See usage for: **globus_xio_handle_cntl** (p. 52).

GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_REASON_PHRASE See usage for: **globus_xio_handle_cntl** (p. 52).

GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HTTP_VERSION See usage for: **globus_xio_handle_cntl** (p. 53).

GLOBUS_XIO_HTTP_HANDLE_SET_END_OF_ENTITY See usage for: **globus_xio_handle_cntl** (p. 53).

6.17.2.2 enum globus_xio_http_attr_cmd_t

HTTP driver specific attribute and data descriptor cntls.

Enumerator

GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_METHOD See usage for: **globus_xio_attr_cntl** (p. 53).

GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HTTP_VERSION See usage for: **globus_xio_attr_cntl** (p. 54).

GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HEADER See usage for: **globus_xio_attr_cntl** (p. 54).

GLOBUS_XIO_HTTP_ATTR_DELAY_WRITE_HEADER See usage for: **globus_xio_attr_cntl** (p. 126).

GLOBUS_XIO_HTTP_GET_REQUEST See usage for: **globus_xio_data_descriptor_cntl** (p. 126).

GLOBUS_XIO_HTTP_GET_RESPONSE See usage for: **globus_xio_data_descriptor_cntl** (p. 127).

6.17.3 Function Documentation

6.17.3.1 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HEADER , const char * *header_name,* const char * *header_value*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.Set the value of a response HTTP header.

Parameters

header_name	Name of the HTTP header to set.
header_value	Value of the HTTP header

Certain headers will cause changes in how the HTTP protocol will be handled. These include:

- Transfer-Encoding: {identity|chunked} Override the default transfer encoding. If a server knows the exact length of the message body, or does not intend to support persistent connections, it may set this header to be "identity".

  If this is set to "identity" and any of the following are true, then the connection will be closed after the end of the response is sent:

  - A Content-Length header is not present
  - The HTTP version is set to "HTTP/1.0"
  - The Connection header is set to "close" Attempts to set this to "chunked" with an "HTTP/1.0" client will fail with a GLOBUS_XIO_ERROR_HTTP_INVALID_HEADER error.

- Content-Length: 1∗Digit

  - Provide a content length for the response message. If the "chunked" transfer encoding is being used, then this header will be silently ignored by the HTTP driver.

- Connection: close

  - The HTTP connection will be closed after the end of the data response is written.

Returns

This handle control function can fail with

- GLOBUS_XIO_ERROR_MEMORY
- GLOBUS_XIO_ERROR_PARAMETER
- GLOBUS_XIO_ERROR_HTTP_INVALID_HEADER

6.17.3.2 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_STATUS_CODE , int *status*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the response status code.

Parameters

status	Value in the range 100-599 which will be used as the HTTP response code, as per RFC 2616.

If this cntl is not called by a server, then the default value of 200 ("Ok") will be used. If this is called on the client-side of an HTTP connection, the handle control will fail with a GLOBUS_XIO_ERROR_PARAMETER error.

Returns

This handle control function can fail with

- GLOBUS_XIO_ERROR_PARAMETER

6.17.3.3 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_REASON_PHRASE , const char ∗ *reason*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the response reason phrase.

Parameters

reason	The value of the HTTP response string, as per RFC 2616.

If this cntl is not called by a server, then a default value based on the handle's response status code will be generated. If this is called on the client-side of an HTTP connection, the handle control will fail with a GLOBUS_XIO_ERROR_PARAMETER error.

Returns

This handle control function can fail with

- GLOBUS_XIO_ERROR_MEMORY
- GLOBUS_XIO_ERROR_PARAMETER

6.17.3.4 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HTTP_VERSION , globus_xio_http_version_t *version*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the response HTTP version.

Parameters

version	The HTTP version to be used in the server response line.

If this cntl is not called by a server, then the default of GLOBUS_XIO_HTTP_VERSION_1_1 will be used, though no HTTP/1.1 features (chunking, persistent connections, etc) will be assumed if the client request was an HTTP/1.0 request. If this is called on the client-side of an HTTP connection, the handle control will fail with GLOBUS_XIO_ERROR_PARAMETER.

Returns

This handle control function can fail with

- GLOBUS_XIO_ERROR_MEMORY
- GLOBUS_XIO_ERROR_PARAMETER

6.17.3.5 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_HTTP_HANDLE_SET_END_OF_ENTITY)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Indicate end-of-entity for an HTTP body.

HTTP clients and servers must call this command to indicate to the driver that the entity-body which is being sent is completed. Subsequent attempts to write data on the handle will fail.

This handle command MUST be called on the client side of an HTTP connection when the HTTP method is OPTIONS, POST, or PUT, or when the open attributes indicate that an entity will be sent. This handle command MUST be called on the server side of an HTTP request connection when the HTTP method was OPTIONS, GET, POST, or TRACE.

6.17.3.6 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_METHOD , const char * *method*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the HTTP method to use for a client request.

Parameters

method	The request method string ("GET", "PUT", "POST", etc) that will be used in the HTTP request.

If this is not set on the target before it is opened, it will default to GET.

This attribute is ignored when opening the server side of an HTTP connection.

Setting this attribute may fail with

- GLOBUS_XIO_ERROR_MEMORY
- GLOBUS_XIO_ERROR_PARAMETER

6.17.3.7 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HTTP_VERSION , globus_xio_http_version_t *version*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the HTTP version to use for a client request.

Parameters

version	The HTTP version to use for the client request.

If the client is using HTTP/1.0 in a request which will send a request message body (such as a POST or PUT), then the client MUST set the "Content-Length" HTTP header to be the length of the message. If this attribute is not present, then the default of GLOBUS_XIO_HTTP_VERSION_1_1 will be used.

This attribute is ignored when opening the server side of an HTTP connection.

6.17.3.8 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HEADER , const char * *header_name,* const char * *header_value*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the value of an HTTP request header.

Parameters

header_name	Name of the HTTP header to set.
header_value	Value of the HTTP header

Certain headers will cause the HTTP driver to behave differently than normal. This must be called before

- Transfer-Encoding: {identity|chunked} Override the default transfer encoding. If a server knows the exact length of the message body, or does not intend to support persistent connections, it may set this header to be "identity".

  If this is set to "identity" and any of the following are true, then the connection will be closed after the end of the message is sent:

  - A Content-Length header is not present
  - The HTTP version is set to "HTTP/1.0"
  - The Connection header is set to "close" Attempts to set this to "chunked" with an "HTTP/1.0" client will fail with a GLOBUS_XIO_ERROR_HTTP_INVALID_HEADER error.

- Content-Length: 1*Digit

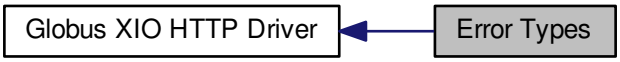
  - Provide a content length for the response message. If the "chunked" transfer encoding is being used, then this header will be silently ignored by the HTTP driver.

- Connection: close

– If present in the server response, the connection will be closed after the end of the data response is written. Otherwise, when persistent connections are enabled, the connection *may* be left open by the driver. Persistent connections are not yet implemented.

6.18 Error Types

Collaboration diagram for Error Types:



Enumerations

- enum **globus_xio_http_errors_t** {
  GLOBUS_XIO_HTTP_ERROR_INVALID_HEADER,
  GLOBUS_XIO_HTTP_ERROR_PARSE,
  GLOBUS_XIO_HTTP_ERROR_NO_ENTITY,
  GLOBUS_XIO_HTTP_ERROR_EOF,
  GLOBUS_XIO_HTTP_ERROR_PERSISTENT_CONNECTION_DROPPED }

6.18.1 Detailed Description

In addition to errors generated by underlying protocol drivers, the XIO HTTP driver defines a few error conditions specific to the HTTP protocol.

See Also

globus_xio_driver_error_match()

6.18.2 Enumeration Type Documentation

6.18.2.1 enum globus_xio_http_errors_t

Error types used to generate errors using the globus_error_generic module.

Enumerator

GLOBUS_XIO_HTTP_ERROR_INVALID_HEADER An attempt to set a header which is not compatible with the HTTP version being used.

GLOBUS_XIO_HTTP_ERROR_PARSE Error parsing HTTP protocol.

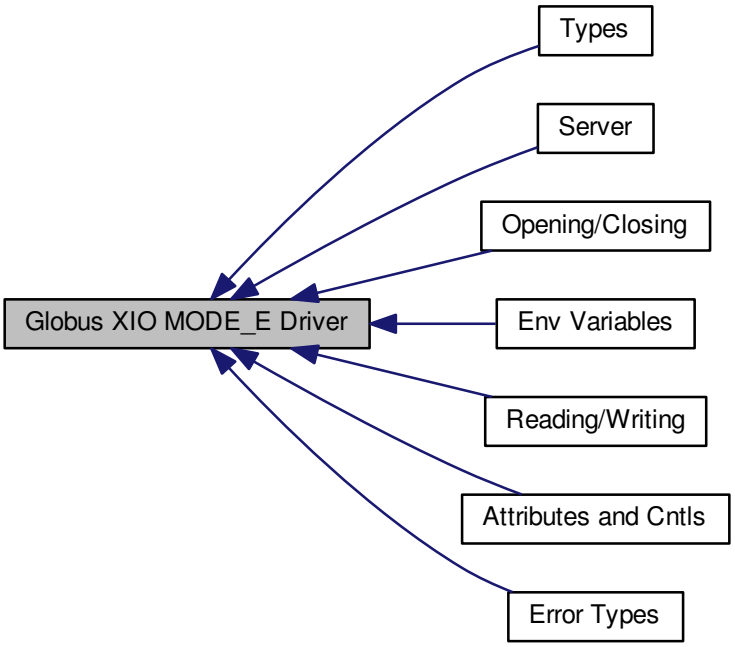
GLOBUS_XIO_HTTP_ERROR_NO_ENTITY There is no entity body to read or write.

GLOBUS_XIO_HTTP_ERROR_EOF Server side fake EOF.

GLOBUS_XIO_HTTP_ERROR_PERSISTENT_CONNECTION_DROPPED Persistent connection dropped by the server.

6.19 Globus XIO MODE_E Driver

Collaboration diagram for Globus XIO MODE_E Driver:



Modules

- **Opening/Closing**
- **Reading/Writing**
- **Server**
- **Env Variables**
- **Attributes and Cntls**
- **Types**
- **Error Types**

6.19.1 Detailed Description

6.20 Opening/Closing

Collaboration diagram for Opening/Closing:

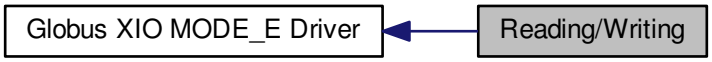


An XIO handle with the mode_e driver can be created with either **globus_xio_handle_create()** (p. 10) or **globus_xio_server_register_accept()** (p. 10). If the handle is created with **globus_xio_handle_create()** (p. 10), the contact string passed to ref **globus_xio_register_open()** (p. 11) call must contain a host name and service/port. The number of streams required can be specified on the attr using **GLOBUS_XIO_MODE_E_SET_NUM_STREAMS** (p. 63) (default is one stream). The stack of drivers to be used on the streams can be specified on the attr using **GLOBUS_XIO_MODE_E_SET_STACK** (p. 63) (default is a stack containing TCP driver).

When the XIO handle is closed, the mode_e driver will destroy its internal resources and close the stream(s).

6.21 Reading/Writing

Collaboration diagram for Reading/Writing:



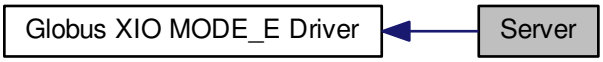
Mode E is unidirectional. Clients can only write and the server can only read. The **globus_xio_register_read()** (p. 12) enforce that the waitforbytes parameter should be one. When multiple transport streams are used between the client and the server, data might not be delivered in order. **globus_xio_data_descriptor_cntl()** (p. 11) can be used to get the offset of the data.

globus_xio_register_write() (p. 13) does not enforce any restriction on the waitforbytes parameter.

In any case, when an error or EOF occurs before the waitforbytes request has been met, the outgoing nbytes is set to the amount of data actually read/written before the error or EOF occurred.

6.22 Server

Collaboration diagram for Server:

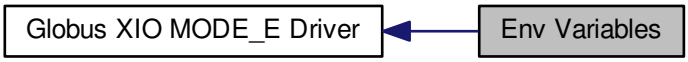


globus_xio_server_create() (p. 9) causes a mode_e listener to be created and listened upon. **globus_xio_server_register_accept()** (p. 10) performs an asynchronous accept(). **globus_xio_server_register_close()** (p. 10) cleans up the internal resources associated with the mode_e server.

All accepted handles inherit all mode_e specific attributes set in the attr to **globus_xio_server_create()** (p. 9)

6.23 Env Variables

Collaboration diagram for Env Variables:

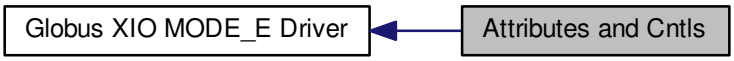


The mode_e driver uses the following environment variable.

- GLOBUS_XIO_MODE_E_DEBUG Available if using a debug build. See globus_debug.h for format.

6.24 Attributes and Cntls

Collaboration diagram for Attributes and Cntls:



Enumerations

- enum **globus_xio_mode_e_cmd_t** {
  GLOBUS_XIO_MODE_E_SET_STACK,
  GLOBUS_XIO_MODE_E_GET_STACK,
  GLOBUS_XIO_MODE_E_SET_NUM_STREAMS,
  GLOBUS_XIO_MODE_E_GET_NUM_STREAMS,
  GLOBUS_XIO_MODE_E_SET_OFFSET_READS,
  GLOBUS_XIO_MODE_E_GET_OFFSET_READS,
  GLOBUS_XIO_MODE_E_SET_MANUAL_EODC,
  GLOBUS_XIO_MODE_E_GET_MANUAL_EODC,
  GLOBUS_XIO_MODE_E_SEND_EOD,
  GLOBUS_XIO_MODE_E_SET_EODC,
  GLOBUS_XIO_MODE_E_DD_GET_OFFSET,
  GLOBUS_XIO_MODE_E_SET_STACK_ATTR,
  GLOBUS_XIO_MODE_E_GET_STACK_ATTR }

Functions

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_STACK**, globus_xio_-stack_t stack)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_STACK**, globus_xio_-stack_t ∗stack_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_NUM_STREAMS**, int num_streams)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_NUM_STREAMS**, int ∗num_streams_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_OFFSET_READS**, globus_bool_t offset_reads)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_OFFSET_READS**, globus_bool_t ∗offset_reads_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_MANUAL_EODC**, globus_bool_t manual_eodc)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_MANUAL_EODC**, globus_bool_t ∗manual_eodc_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_MODE_E_SEND_EOD**, globus_bool_t send_eod)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_MODE_E_SET_EODC**, int eod_-count)

- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_MODE_E_DD_GET_OFFSET**, globus_off_t *offset_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_STACK_ATTR**, globus_xio_stack_t stack)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_STACK_ATTR**, globus_xio_attr_t *stack_out)

6.24.1 Detailed Description

Mode_e driver specific attrs and cntls.

See Also

globus_xio_attr_cntl() (p. 8)
globus_xio_handle_cntl() (p. 11)
globus_xio_server_cntl() (p. 10)
globus_xio_data_descriptor_cntl() (p. 11)

6.24.2 Enumeration Type Documentation

6.24.2.1 enum globus_xio_mode_e_cmd_t

doxygen varargs filter stuff

MODE_E driver specific cntls

Enumerator

GLOBUS_XIO_MODE_E_SET_STACK See usage for: **globus_xio_attr_cntl** (p. 63).

GLOBUS_XIO_MODE_E_GET_STACK See usage for: **globus_xio_attr_cntl** (p. 64).

GLOBUS_XIO_MODE_E_SET_NUM_STREAMS See usage for: **globus_xio_attr_cntl** (p. 64).

GLOBUS_XIO_MODE_E_GET_NUM_STREAMS See usage for: **globus_xio_attr_cntl** (p. 64).

GLOBUS_XIO_MODE_E_SET_OFFSET_READS See usage for: **globus_xio_attr_cntl** (p. 64).

GLOBUS_XIO_MODE_E_GET_OFFSET_READS See usage for: **globus_xio_attr_cntl** (p. 64).

GLOBUS_XIO_MODE_E_SET_MANUAL_EODC See usage for: **globus_xio_attr_cntl** (p. 65).

GLOBUS_XIO_MODE_E_GET_MANUAL_EODC See usage for: **globus_xio_attr_cntl** (p. 65).

GLOBUS_XIO_MODE_E_SEND_EOD See usage for: **globus_xio_data_descriptor_cntl** (p. 65).

GLOBUS_XIO_MODE_E_SET_EODC See usage for: **globus_xio_handle_cntl** (p. 65).

GLOBUS_XIO_MODE_E_DD_GET_OFFSET See usage for: **globus_xio_data_descriptor_cntl** (p. 65).

GLOBUS_XIO_MODE_E_SET_STACK_ATTR See usage for: **globus_xio_attr_cntl** (p. 66).

GLOBUS_XIO_MODE_E_GET_STACK_ATTR See usage for: **globus_xio_attr_cntl** (p. 66).

6.24.3 Function Documentation

6.24.3.1 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_SET_STACK , globus_xio_stack_t *stack*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the stack (of xio drivers) to be used for the connection(s).

Do not create a new ftp client handle, use this handle instead.

Parameters

stack	Specifies the stack to use for the connection(s). Note: this stack will not be destroyed.

6.24.3.2 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_GET_STACK , globus_xio_stack_t * *stack_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the stack on the attr.

Parameters

stack_out	The stack will be stored here. If none is set, GLOBUS_NULL will be set.

6.24.3.3 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_SET_NUM_STREAMS , int *num_streams*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the number of streams to be used between the client and the server.

Parameters

num_streams	Specifies the number of streams to use.

6.24.3.4 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_GET_NUM_STREAMS , int * *num_streams_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the number of streams on the attr.

Parameters

num_streams_out	The stream count will be stored here.

6.24.3.5 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_SET_OFFSET_READS , globus_bool_t *offset_reads*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set flag to indicate whether the data read from user would always be preceded by an offset read or not.

The user can do a read with wait_for_bytes set to zero, to find the offset of the data that he is going to get in his next read operation

Parameters

offset_reads	GLOBUS_TRUE to enable offset reads, GLOBUS_FALSE to disable offset reads (default).

6.24.3.6 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_GET_OFFSET_READS , globus_bool_t * *offset_reads_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get OFFSET_READS flag on the attr.

Parameters

offset_reads_out	The OFFSET_READS flag will be stored here.

6.24.3.7 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_SET_MANUAL_EODC , globus_bool_t *manual_eodc*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set flag to indicate whether EODC will be set manually by the user on a data_desc or the driver has to calculate the EODC.

Parameters

manual_eodc	GLOBUS_TRUE to set EODC manually, GLOBUS_FALSE to not set EODC manually (default).

6.24.3.8 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_GET_MANUAL_EODC , globus_bool_t * *manual_eodc_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get MANUAL_EODC flag on the attr.

Parameters

manual_eodc_out	The MANUAL_EODC flag will be stored here.

6.24.3.9 globus_result_t globus_xio_data_descriptor_cntl (dd , driver , GLOBUS_XIO_MODE_E_SEND_EOD , globus_bool_t *send_eod*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set SEND_EOD flag

Used only for data descriptors to write calls.

Parameters

send_eod	GLOBUS_TRUE to send EOD, GLOBUS_FALSE to not send EOD (default).

6.24.3.10 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_MODE_E_SET_EODC , int *eod_count*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set EOD count

Used only if MANUAL_EODC flag is set to GLOBUS_TRUE.

Parameters

eod_count	specifies the eod count

6.24.3.11 globus_result_t globus_xio_data_descriptor_cntl (dd , driver , GLOBUS_XIO_MODE_E_DD_GET_OFFSET , globus_off_t * *offset_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get offset of the next available data

Used only if OFFSET_READS is enabled.

Parameters

offset_out	offset will be stored here

6.24.3.12 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_SET_STACK_ATTR , globus_xio_stack_t *stack*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the attr to be used with the stack set from GLOBUS_XIO_MODE_E_SET_STACK.

Do not create a new ftp client handle, use this handle instead.

Parameters

stack	Specifies the stack to use for the connection(s). Note: this stack will not be destroyed.

6.24.3.13 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_MODE_E_GET_STACK_ATTR , globus_xio_attr_t * *stack_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the attr that will be used with the stack.

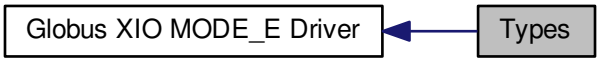
This is intended for use with GLOBUS_XIO_MODE_E_SET_STACK.

Parameters

stack_out	The stack will be stored here. If none is set, GLOBUS_NULL will be set.

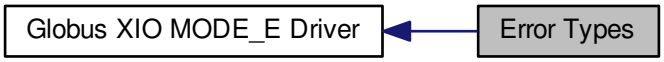
6.25 Types

Collaboration diagram for Types:



6.26 Error Types

Collaboration diagram for Error Types:



Enumerations

- enum **globus_xio_mode_e_error_type_t** { **GLOBUS_XIO_MODE_E_HEADER_ERROR** }

6.26.1 Detailed Description

The errors reported by MODE_E driver include GLOBUS_XIO_ERROR_COMMAND, GLOBUS_XIO_ERROR_MEMORY, GLOBUS_XIO_ERROR_STATE, GLOBUS_XIO_ERROR_PARAMETER, GLOBUS_XIO_ERROR_EOF, GLOBUS_XIO_ERROR_CANCELED, **GLOBUS_XIO_MODE_E_HEADER_ERROR** (p. 68).

See Also

globus_xio_driver_error_match()
globus_error_errno_match()

6.26.2 Enumeration Type Documentation

6.26.2.1 enum globus_xio_mode_e_error_type_t

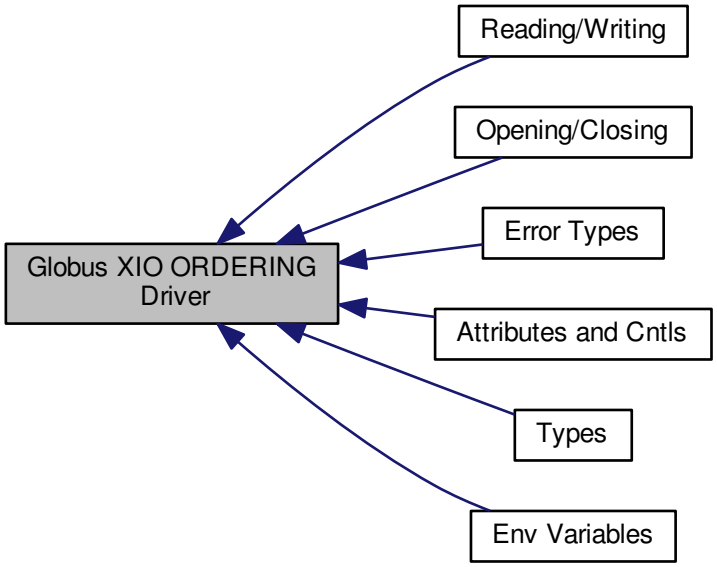
MODE_E driver specific error types.

Enumerator

GLOBUS_XIO_MODE_E_HEADER_ERROR Indicates that the mode_e header is erroneous.

6.27 Globus XIO ORDERING Driver

Collaboration diagram for Globus XIO ORDERING Driver:



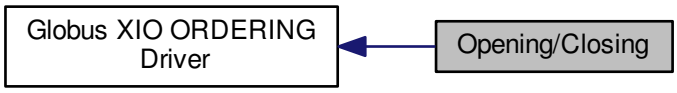
Modules

- **Opening/Closing**
- **Reading/Writing**
- **Env Variables**
- **Attributes and Cntls**
- **Types**
- **Error Types**

6.27.1 Detailed Description

6.28 Opening/Closing

Collaboration diagram for Opening/Closing:

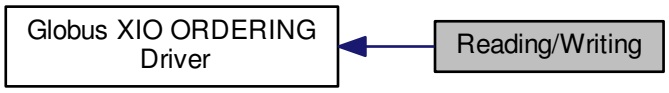


Ordering driver is a transform driver and thus has to be used on top of a transport driver. An XIO handle with the ordering driver can be created with either **globus_xio_handle_create()** (p. 10) or **globus_xio_server_register_accept()** (p. 10).

When the XIO handle is closed, the ordering driver will destroy its internal resources.

6.29 Reading/Writing

Collaboration diagram for Reading/Writing:

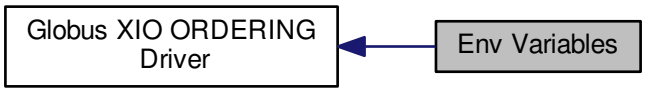


Ordering driver does not allow multiple **globus_xio_register_read()** (p. 12) to be outstanding. This limitation is there to enforce that the users get the read callback in order. There is a known issue in enforcing the order in which read callbacks are delivered with multiple outstanding reads. This limitation does not restrict the use of parallel reads feature provided by the underlying transport driver. **GLOBUS_XIO_ORDERING_SET_MAX_READ_COUNT** (p. 74) on the attr can be used to specify the number of parallel reads. Ordering will have a maximum of this many number of reads outstanding to the driver below it on the stack. It buffers the data read and delivers it to the user in order.

globus_xio_register_write() (p. 13) does not enforce any restriction.

6.30 Env Variables

Collaboration diagram for Env Variables:

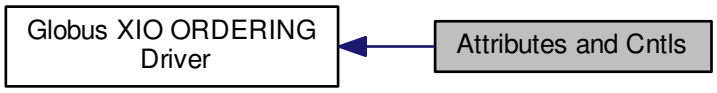


The ordering driver uses the following environment variable.

- GLOBUS_XIO_ORDERING_DEBUG Available if using a debug build. See globus_debug.h for format.

6.31 Attributes and Cntls

Collaboration diagram for Attributes and Cntls:



Enumerations

- enum **globus_xio_ordering_cmd_t** {
  GLOBUS_XIO_ORDERING_SET_OFFSET,
  GLOBUS_XIO_ORDERING_SET_MAX_READ_COUNT,
  GLOBUS_XIO_ORDERING_GET_MAX_READ_COUNT,
  GLOBUS_XIO_ORDERING_SET_BUFFERING,
  GLOBUS_XIO_ORDERING_GET_BUFFERING,
  GLOBUS_XIO_ORDERING_SET_BUF_SIZE,
  GLOBUS_XIO_ORDERING_GET_BUF_SIZE,
  GLOBUS_XIO_ORDERING_SET_MAX_BUF_COUNT,
  GLOBUS_XIO_ORDERING_GET_MAX_BUF_COUNT }

Functions

- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_ORDERING_SET_OFFSET**, globus_off_t offset)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_SET_MAX_READ_COUNT**, int max_read_count)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_GET_MAX_READ_COUNT**, int *max_read_count_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_SET_BUFFERING**, globus_bool_t buffering)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_GET_BUFFERING**, globus_bool_t *buffering_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_SET_BUF_SIZE**, int buf_size)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_GET_BUF_SIZE**, int *buf_size_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_SET_MAX_BUF_COUNT**, int max_buf_count)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_GET_MAX_BUF_COUNT**, int *max_buf_count_out)

6.31.1 Detailed Description

Ordering driver specific attrs and cntls.

See Also

globus_xio_attr_cntl() (p. 8)
globus_xio_handle_cntl() (p. 11)

6.31.2 Enumeration Type Documentation

6.31.2.1 enum globus_xio_ordering_cmd_t

ORDERING driver specific cntls.

Enumerator

GLOBUS_XIO_ORDERING_SET_OFFSET See usage for: **globus_xio_handle_cntl** (p. 74).

GLOBUS_XIO_ORDERING_SET_MAX_READ_COUNT See usage for: **globus_xio_attr_cntl** (p. 74).

GLOBUS_XIO_ORDERING_GET_MAX_READ_COUNT See usage for: **globus_xio_attr_cntl** (p. 74).

GLOBUS_XIO_ORDERING_SET_BUFFERING See usage for: **globus_xio_attr_cntl** (p. 75).

GLOBUS_XIO_ORDERING_GET_BUFFERING See usage for: **globus_xio_attr_cntl** (p. 75).

GLOBUS_XIO_ORDERING_SET_BUF_SIZE See usage for: **globus_xio_attr_cntl** (p. 75).

GLOBUS_XIO_ORDERING_GET_BUF_SIZE See usage for: **globus_xio_attr_cntl** (p. 75).

GLOBUS_XIO_ORDERING_SET_MAX_BUF_COUNT See usage for: **globus_xio_attr_cntl** (p. 75).

GLOBUS_XIO_ORDERING_GET_MAX_BUF_COUNT See usage for: **globus_xio_attr_cntl** (p. 76).

6.31.3 Function Documentation

6.31.3.1 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_ORDERING_SET_OFFSET , globus_off_t *offset*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set offset for the next IO operation.

This is not allowed when there is an outstanding IO operation. This operation clears all the buffered data.

Parameters

offset	Specifies the offset to use in the next IO operation.

6.31.3.2 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_ORDERING_SET_MAX_READ_COUNT , int *max_read_count*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the maximum number of reads that ordering driver can have outstanding on driver(s) below.

Parameters

max_read_count	Specifies the maximum number of parallel reads (default is 1).

6.31.3.3 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_ORDERING_GET_MAX_READ_COUNT , int * *max_read_count_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the maximum number of parallel reads set on the attr.

Parameters

max_read_count_out	The maximum number of parallel reads allowed will be stored here.

6.31.3.4 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_ORDERING_SET_BUFFERING , globus_bool_t *buffering*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. This driver can be used in 2 modes; ordering (care about offsets of the data read - underlying transport driver may deliver data out of order - this driver will rearrange data based on the offset and deliver inorder to user) and buffering (do not care about offsets - just buffer the data read abd deliver it when requested).

This attribute control can be used to enable buffering.

Parameters

buffering	GLOBUS_TRUE to enable buffering, GLOBUS_FALSE (default) to disable buffering.

6.31.3.5 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_ORDERING_GET_BUFFERING , globus_bool_t * *buffering_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the buffering flag on the attr.

Parameters

buffering_out	Buffering flag will be stored in here.

6.31.3.6 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_ORDERING_SET_BUF_SIZE , int *buf_size*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the size of the buffer that ordering driver creates to use for reading data from the driver below it.

Parameters

buf_size	Specifies the buffer size for internal reads (default is 100 KB).

6.31.3.7 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_ORDERING_GET_BUF_SIZE , int * *buf_size_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the size of the buffer used for the internal reads.

Parameters

buf_size_out	The buffer size will be stored in here.

6.31.3.8 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_ORDERING_SET_MAX_BUF_COUNT , int *max_buf_count*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the maximum number of buffers that this driver can create for reading data from the driver below it.

Parameters

max_buf_count	Specifies the max buffer count for internal reads (default is 100).

6.31.3.9 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_ORDERING_GET_MAX_BUF_COUNT , int * *max_buf_count_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the maximum buffer count set on the attr.

Parameters

max_buf_count_out	The maximun buffer count will be stored in here.

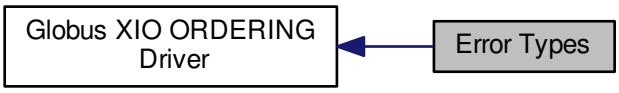
6.32 Types

Collaboration diagram for Types:



6.33 Error Types

Collaboration diagram for Error Types:



Enumerations

- enum **globus_xio_ordering_error_type_t** {
  GLOBUS_XIO_ORDERING_ERROR_READ,
  GLOBUS_XIO_ORDERING_ERROR_CANCEL }

6.33.1 Detailed Description

The errors reported by ORDERING driver include GLOBUS_XIO_ERROR_COMMAND, GLOBUS_XIO_ERROR-_MEMORY, GLOBUS_XIO_ERROR_STATE, GLOBUS_XIO_ERROR_CANCELED.

See Also

globus_xio_driver_error_match()
globus_error_errno_match()

6.33.2 Enumeration Type Documentation

6.33.2.1 enum globus_xio_ordering_error_type_t

doxygen varargs filter stuff

ORDERING driver specific error types

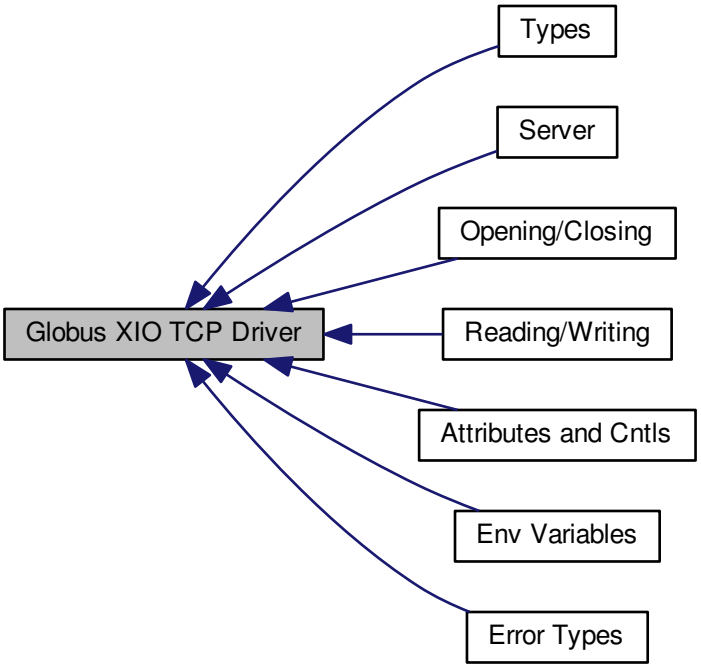
Enumerator

GLOBUS_XIO_ORDERING_ERROR_READ Indicates that an error occured in reading data.

GLOBUS_XIO_ORDERING_ERROR_CANCEL Indicates an error occured in canceling an operation.

6.34 Globus XIO TCP Driver

Collaboration diagram for Globus XIO TCP Driver:



Modules

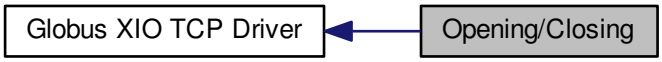
- **Opening/Closing**
- **Reading/Writing**
- **Server**
- **Env Variables**
- **Attributes and Cntls**
- **Types**
- **Error Types**

6.34.1 Detailed Description

The IPV4/6 TCP socket driver.

6.35 Opening/Closing

Collaboration diagram for Opening/Closing:



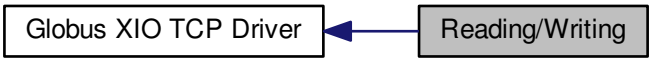
An XIO handle with the tcp driver can be created with either **globus_xio_handle_create()** (p. 10) or **globus_xio_server_register_accept()** (p. 10). If the handle is created with **globus_xio_server_register_accept()** (p. 10), the **globus_xio_register_open()** (p. 11) call does nothing more than initialize the internal handle with the accepted socket.

If the handle is created with **globus_xio_handle_create()** (p. 10), and there is no handle set on the attr passed to the **globus_xio_register_open()** (p. 11) call, it performs the equivalent of an asynchronous connect() call. In this case, the contact string must contain a host name and service/port. Both the hostname and port number can be numeric or symbolic (eg: some.webserver.com:80 or 214.123.12.1:http). If the hostname is symbolic and it resolves to multiple ip addresses, each one will be attempted in succession, until the connect is successful or there are no more addresses.

When the XIO handle is closed, the tcp driver will destroy its internal resources and close the socket (unless this socket was set on an attr). Any write data pending in system buffers will be sent unless the linger option has been set. Any remaining data in recv buffers will be discarded and (on some systems) a connection reset sent to the peer.

6.36 Reading/Writing

Collaboration diagram for Reading/Writing:



Both the **globus_xio_register_read()** (p. 12) and **globus_xio_register_write()** (p. 13) calls follow similar semantics as described below. If the waitforbytes parameter is greater than zero, the io will happen asynchronously and be completed when at least waitforbytes has been read/written.

If the waitforbytes parameter is equal to zero, one of the following alternative behaviors occur:

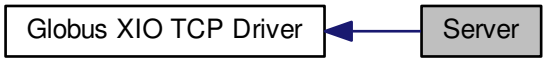
If the length of the buffer is $>$ 0 the read or write happens synchronously. If the user is using one of the blocking xio calls, no internal callback will occur.

If the length of the buffer is also 0, the call behaves like an asynchronous notification of data ready to be either read or written. ie, an asynchronous select().

In any case, when an error or EOF occurs before the waitforbytes request has been met, the outgoing nbytes is set to the amount of data actually read/written before the error or EOF occurred.

6.37 Server

Collaboration diagram for Server:



globus_xio_server_create() (p. 9) causes a tcp listener socket to be created and listened upon. **globus_xio_server_register_accept()** (p. 10) performs an asynchronous accept(). **globus_xio_server_register_close()** (p. 10) cleans up the internal resources associated with the tcp server and calls close() on the listener socket (unless the socket was set on the server via the attr)

All accepted handles inherit all tcp specific attributes set in the attr to **globus_xio_server_create()** (p. 9), but can be overridden with the attr to **globus_xio_register_open()** (p. 11).

6.38 Env Variables

Collaboration diagram for Env Variables:

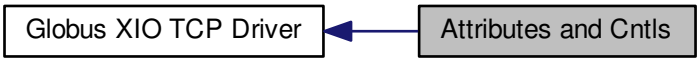


The tcp driver uses the following environment variables.

- GLOBUS_HOSTNAME Used when setting the hostname in the contact string
- GLOBUS_TCP_PORT_RANGE Used to restrict anonymous listener ports ex: GLOBUS_TCP_PORT_RANGE=4000,4100
- GLOBUS_TCP_PORT_RANGE_STATE_FILE Used in conjunction with GLOBUS_TCP_PORT_RANGE to maintain last used port among many applications making use of the same port range. That last port + 1 will be used as a starting point within the specified tcp port range instead of always starting at the beginning. This is really only necessary when a machine is behind a stateful firewall which is holding a port in a different state than the application's machine. See bugzilla.globus.org, bug 1851 for more info. ex: GLOBUS_TCP_PORT_RANGE_STATE_FILE=/tmp/port_state (file will be created if it does not exist)
- GLOBUS_TCP_SOURCE_RANGE Used to restrict local ports used in a connection
- GLOBUS_XIO_TCP_DEBUG Available if using a debug build. See globus_debug.h for format. The TCP driver defines the levels TRACE for all function call tracing and INFO for write buffer sizes
- GLOBUS_XIO_SYSTEM_DEBUG Available if using a debug build. See globus_debug.h for format. The TCP driver uses globus_xio_system (along with the File and UDP drivers) which defines the following levels: TRACE for all function call tracing, DATA for data read and written counts, INFO for some special events, and RAW which dumps the raw buffers actually read or written. This can contain binary data, so be careful when you enable it.

6.39 Attributes and Cntls

Collaboration diagram for Attributes and Cntls:



Enumerations

- enum **globus_xio_tcp_cmd_t** {
  GLOBUS_XIO_TCP_SET_SERVICE,
  GLOBUS_XIO_TCP_GET_SERVICE,
  GLOBUS_XIO_TCP_SET_PORT,
  GLOBUS_XIO_TCP_GET_PORT,
  GLOBUS_XIO_TCP_SET_BACKLOG,
  GLOBUS_XIO_TCP_GET_BACKLOG,
  GLOBUS_XIO_TCP_SET_LISTEN_RANGE,
  GLOBUS_XIO_TCP_GET_LISTEN_RANGE,
  GLOBUS_XIO_TCP_GET_HANDLE,
  GLOBUS_XIO_TCP_SET_HANDLE,
  GLOBUS_XIO_TCP_SET_INTERFACE,
  GLOBUS_XIO_TCP_GET_INTERFACE,
  GLOBUS_XIO_TCP_SET_RESTRICT_PORT,
  GLOBUS_XIO_TCP_GET_RESTRICT_PORT,
  GLOBUS_XIO_TCP_SET_REUSEADDR,
  GLOBUS_XIO_TCP_GET_REUSEADDR,
  GLOBUS_XIO_TCP_SET_NO_IPV6,
  GLOBUS_XIO_TCP_GET_NO_IPV6,
  GLOBUS_XIO_TCP_SET_CONNECT_RANGE,
  GLOBUS_XIO_TCP_GET_CONNECT_RANGE,
  GLOBUS_XIO_TCP_SET_KEEPALIVE,
  GLOBUS_XIO_TCP_GET_KEEPALIVE,
  GLOBUS_XIO_TCP_SET_LINGER,
  GLOBUS_XIO_TCP_GET_LINGER,
  GLOBUS_XIO_TCP_SET_OOBINLINE,
  GLOBUS_XIO_TCP_GET_OOBINLINE,
  GLOBUS_XIO_TCP_SET_SNDBUF,
  GLOBUS_XIO_TCP_GET_SNDBUF,
  GLOBUS_XIO_TCP_SET_RCVBUF,
  GLOBUS_XIO_TCP_GET_RCVBUF,
  GLOBUS_XIO_TCP_SET_NODELAY,
  GLOBUS_XIO_TCP_GET_NODELAY,
  GLOBUS_XIO_TCP_SET_SEND_FLAGS,
  GLOBUS_XIO_TCP_GET_SEND_FLAGS,
  GLOBUS_XIO_TCP_GET_LOCAL_CONTACT,
  GLOBUS_XIO_TCP_GET_LOCAL_NUMERIC_CONTACT,
  GLOBUS_XIO_TCP_GET_REMOTE_CONTACT,
  GLOBUS_XIO_TCP_GET_REMOTE_NUMERIC_CONTACT,
  GLOBUS_XIO_TCP_AFFECT_ATTR_DEFAULTS,
  GLOBUS_XIO_TCP_SET_BLOCKING_IO,
  GLOBUS_XIO_TCP_GET_BLOCKING_IO }

Functions

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_SERVICE**, const char ∗service_name)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_SERVICE**, char ∗∗service_name_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_PORT**, int listener_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_PORT**, int ∗listener_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_BACKLOG**, int listener_backlog)

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_BACKLOG**, int *listener_backlog_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_LISTEN_RANGE**, int listener_min_port, int listener_max_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_LISTEN_RANGE**, int *listener_min_port_out, int *listener_max_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_server_cntl** (server, driver, **GLOBUS_XIO_TCP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_HANDLE**, globus_xio_system_socket_t handle)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_INTERFACE**, const char *interface)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_INTERFACE**, char **interface_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_RESTRICT_PORT**, globus_bool_t restrict_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_RESTRICT_PORT**, globus_bool_t *restrict_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_REUSEADDR**, globus_bool_t resuseaddr)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_REUSEADDR**, globus_bool_t *resuseaddr_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_NO_IPV6**, globus_bool_t no_ipv6)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_NO_IPV6**, globus_bool_t *no_ipv6_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_CONNECT_RANGE**, int connector_min_port, int connector_max_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_CONNECT_RANGE**, int *connector_min_port_out, int *connector_max_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_KEEPALIVE**, globus_bool_t keepalive)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_KEEPALIVE**, globus_bool_t keepalive)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_KEEPALIVE**, globus_bool_t *keepalive_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_KEEPALIVE**, globus_bool_t *keepalive_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_LINGER**, globus_bool_t linger, int linger_time)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_LINGER**, globus_bool_t linger, int linger_time)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_LINGER**, globus_bool_t *linger_out, int *linger_time_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_LINGER**, globus_bool_t *linger_out, int *linger_time_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_OOBINLINE**, globus_bool_t oobinline)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_OOBINLINE**, globus_bool_t oobinline)

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_OOBINLINE**, globus_bool_t *oobinline_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_OOBINLINE**, globus_bool_t *oobinline_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_SNDBUF**, int sndbuf)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_SNDBUF**, int sndbuf)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_SNDBUF**, int *sndbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_SNDBUF**, int *sndbuf_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_RCVBUF**, int rcvbuf)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_RCVBUF**, int rcvbuf)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_RCVBUF**, int *rcvbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_RCVBUF**, int *rcvbuf_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_NODELAY**, globus_bool_t nodelay)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_NODELAY**, globus_bool_t nodelay)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_NODELAY**, globus_bool_t *nodelay_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_NODELAY**, globus_bool_t *nodelay_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_TCP_SET_SEND_FLAGS**, int send_flags)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_TCP_GET_SEND_FLAGS**, int *send_flags_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_LOCAL_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_server_cntl** (server, driver, **GLOBUS_XIO_TCP_GET_LOCAL_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_LOCAL_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_server_cntl** (server, driver, **GLOBUS_XIO_TCP_GET_LOCAL_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_REMOTE_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_REMOTE_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_AFFECT_ATTR_DEFAULTS**, globus_bool_t affect_global)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_BLOCKING_IO**, globus_bool_t use_blocking_io)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_BLOCKING_IO**, globus_bool_t use_blocking_io)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_BLOCKING_IO**, globus_bool_t *use_blocking_io_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_BLOCKING_IO**, globus_bool_t *use_blocking_io_out)

6.39.1 Detailed Description

Tcp driver specific attrs and cntls.

See Also

globus_xio_attr_cntl() (p. 8)
globus_xio_handle_cntl() (p. 11)
globus_xio_server_cntl() (p. 10)
globus_xio_data_descriptor_cntl() (p. 11)

6.39.2 Enumeration Type Documentation

6.39.2.1 enum globus_xio_tcp_cmd_t

doxygen varargs filter stuff

TCP driver specific cntls

Enumerator

GLOBUS_XIO_TCP_SET_SERVICE See usage for: **globus_xio_attr_cntl** (p. 89).

GLOBUS_XIO_TCP_GET_SERVICE See usage for: **globus_xio_attr_cntl** (p. 89).

GLOBUS_XIO_TCP_SET_PORT See usage for: **globus_xio_attr_cntl** (p. 90).

GLOBUS_XIO_TCP_GET_PORT See usage for: **globus_xio_attr_cntl** (p. 90).

GLOBUS_XIO_TCP_SET_BACKLOG See usage for: **globus_xio_attr_cntl** (p. 90).

GLOBUS_XIO_TCP_GET_BACKLOG See usage for: **globus_xio_attr_cntl** (p. 90).

GLOBUS_XIO_TCP_SET_LISTEN_RANGE See usage for: **globus_xio_attr_cntl** (p. 91).

GLOBUS_XIO_TCP_GET_LISTEN_RANGE See usage for: **globus_xio_attr_cntl** (p. 91).

GLOBUS_XIO_TCP_GET_HANDLE See usage for: **globus_xio_attr_cntl** (p. 91), **globus_xio_handle_cntl** (p. 91), **globus_xio_server_cntl** (p. 92).

GLOBUS_XIO_TCP_SET_HANDLE See usage for: **globus_xio_attr_cntl** (p. 92).

GLOBUS_XIO_TCP_SET_INTERFACE See usage for: **globus_xio_attr_cntl** (p. 92).

GLOBUS_XIO_TCP_GET_INTERFACE See usage for: **globus_xio_attr_cntl** (p. 92).

GLOBUS_XIO_TCP_SET_RESTRICT_PORT See usage for: **globus_xio_attr_cntl** (p. 92).

GLOBUS_XIO_TCP_GET_RESTRICT_PORT See usage for: **globus_xio_attr_cntl** (p. 93).

GLOBUS_XIO_TCP_SET_REUSEADDR See usage for: **globus_xio_attr_cntl** (p. 93).

GLOBUS_XIO_TCP_GET_REUSEADDR See usage for: **globus_xio_attr_cntl** (p. 93).

GLOBUS_XIO_TCP_SET_NO_IPV6 See usage for: **globus_xio_attr_cntl** (p. 93).

GLOBUS_XIO_TCP_GET_NO_IPV6 See usage for: **globus_xio_attr_cntl** (p. 94).

GLOBUS_XIO_TCP_SET_CONNECT_RANGE See usage for: **globus_xio_attr_cntl** (p. 94).

GLOBUS_XIO_TCP_GET_CONNECT_RANGE See usage for: **globus_xio_attr_cntl** (p. 94).

GLOBUS_XIO_TCP_SET_KEEPALIVE See usage for: **globus_xio_attr_cntl** (p. 94), **globus_xio_handle_cntl** (p. 95).

GLOBUS_XIO_TCP_GET_KEEPALIVE See usage for: **globus_xio_attr_cntl** (p. 95), **globus_xio_handle_cntl** (p. 95).

GLOBUS_XIO_TCP_SET_LINGER See usage for: **globus_xio_attr_cntl** (p. 95), **globus_xio_handle_cntl** (p. 96).

GLOBUS_XIO_TCP_GET_LINGER See usage for: **globus_xio_attr_cntl** (p. 96), **globus_xio_handle_cntl** (p. 96).

GLOBUS_XIO_TCP_SET_OOBINLINE See usage for: **globus_xio_attr_cntl** (p. 96), **globus_xio_handle_cntl** (p. 97).

GLOBUS_XIO_TCP_GET_OOBINLINE See usage for: **globus_xio_attr_cntl** (p. 97), **globus_xio_handle_cntl** (p. 97).

GLOBUS_XIO_TCP_SET_SNDBUF See usage for: **globus_xio_attr_cntl** (p. 97), **globus_xio_handle_cntl** (p. 97).

GLOBUS_XIO_TCP_GET_SNDBUF See usage for: **globus_xio_attr_cntl** (p. 98), **globus_xio_handle_cntl** (p. 98).

GLOBUS_XIO_TCP_SET_RCVBUF See usage for: **globus_xio_attr_cntl** (p. 98), **globus_xio_handle_cntl** (p. 98).

GLOBUS_XIO_TCP_GET_RCVBUF See usage for: **globus_xio_attr_cntl** (p. 99), **globus_xio_handle_cntl** (p. 99).

GLOBUS_XIO_TCP_SET_NODELAY See usage for: **globus_xio_attr_cntl** (p. 99), **globus_xio_handle_cntl** (p. 99).

GLOBUS_XIO_TCP_GET_NODELAY See usage for: **globus_xio_attr_cntl** (p. 99), **globus_xio_handle_cntl** (p. 100).

GLOBUS_XIO_TCP_SET_SEND_FLAGS See usage for: **globus_xio_data_descriptor_cntl** (p. 100).

GLOBUS_XIO_TCP_GET_SEND_FLAGS See usage for: **globus_xio_data_descriptor_cntl** (p. 100).

GLOBUS_XIO_TCP_GET_LOCAL_CONTACT See usage for: **globus_xio_handle_cntl** (p. 100), **globus_xio_server_cntl** (p. 101).

GLOBUS_XIO_TCP_GET_LOCAL_NUMERIC_CONTACT See usage for: **globus_xio_handle_cntl** (p. 101), **globus_xio_server_cntl** (p. 101).

GLOBUS_XIO_TCP_GET_REMOTE_CONTACT See usage for: **globus_xio_handle_cntl** (p. 101).

GLOBUS_XIO_TCP_GET_REMOTE_NUMERIC_CONTACT See usage for: **globus_xio_handle_cntl** (p. 102).

GLOBUS_XIO_TCP_AFFECT_ATTR_DEFAULTS See usage for: **globus_xio_attr_cntl** (p. 102).

GLOBUS_XIO_TCP_SET_BLOCKING_IO See usage for: **globus_xio_attr_cntl** (p. 102), **globus_xio_handle_cntl** (p. 102).

GLOBUS_XIO_TCP_GET_BLOCKING_IO See usage for: **globus_xio_attr_cntl** (p. 103), **globus_xio_handle_cntl** (p. 103).

6.39.3 Function Documentation

6.39.3.1 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_SERVICE , const char * *service_name*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the tcp service name to bind to.

Used only on attrs for **globus_xio_server_create()** (p. 9).

Parameters

service_name	The service name to use when setting up the listener. If the service name cannot be resolved, the port (if one is set) will be used instead.

string opt: port=<string>

6.39.3.2 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_SERVICE , char ** *service_name_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp service name to bind to.

Parameters

service_name_out	A pointer to the service name will be stored here If none is set, NULL will be passed back. Otherwise, the name will be duplicated with strdup() and the user should call free() on it.

6.39.3.3 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_PORT , int *listener_port*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the tcp port number to bind to.

Used only on attrs for **globus_xio_server_create()** (p. 9). The default port number is 0 (system assigned)

Parameters

listener_port	The port number to use when setting up the listener. If the service name is also set, this will only be used if that can't be resolved.

string opt: port=<int>

6.39.3.4 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_PORT , int * *listener_port_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp port number to bind to.

Parameters

listener_port_out	The port will be stored here.

6.39.3.5 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_BACKLOG , int *listener_backlog*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the listener backlog on a server.

Used only on attrs for **globus_xio_server_create()** (p. 9). The default backlog is -1 (system maximum)

Parameters

listener_backlog	This indicates the maximum length of the system's queue of pending connections. Any connection attempts when the queue is full will fail. If backlog is equal to -1, then the system-specific maximum queue length will be used.

6.39.3.6 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_BACKLOG , int * *listener_backlog_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the listener backlog on an attr.

Parameters

listener_backlog_out	The backlog will be stored here.

6.39.3.7 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_LISTEN_RANGE , int *listener_min_port*, int *listener_max_port*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the tcp port range to confine the server to.

Used only on attrs for **globus_xio_server_create()** (p. 9) where no specific service or port has been set. It overrides the range set in the GLOBUS_TCP_PORT_RANGE env variable. If 'restrict port' is true, the server's listening port will be constrained to the range specified.

Parameters

listener_min_port	The lower bound on the listener port. (default 0 – no bound)
listener_max_port	The upper bound on the listener port. (default 0 – no bound)

See Also

GLOBUS_XIO_TCP_SET_RESTRICT_PORT (p. 88)

string opt: listen_range=<int>,<int>

6.39.3.8 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_LISTEN_RANGE , int * *listener_min_port_out*, int * *listener_max_port_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp port range on an attr.

Parameters

listener_min_port_out	The lower bound will be stored here.
listener_max_port_out	The upper bound will be stored here.

6.39.3.9 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_HANDLE , globus_xio_system_socket_t * *handle_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp socket handle on an attr, handle, or server.

Parameters

handle_out	The tcp socket will be stored here. If none is set, GLOBUS_XIO_TCP_INVALID_HANDLE will be set.

6.39.3.10 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_HANDLE , globus_xio_system_socket_t * *handle_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp socket handle on an attr, handle, or server.

Parameters

handle_out	The tcp socket will be stored here. If none is set, GLOBUS_XIO_TCP_INVALID_HANDLE will be set.

6.39.3.11 globus_result_t globus_xio_server_cntl (server , driver , GLOBUS_XIO_TCP_GET_HANDLE , globus_xio_system_socket_t * *handle_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp socket handle on an attr, handle, or server.

Parameters

handle_out	The tcp socket will be stored here. If none is set, GLOBUS_XIO_TCP_INVALID_HANDLE will be set.

6.39.3.12 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_HANDLE , globus_xio_system_socket_t *handle*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the tcp socket to use for a handle or server.

Used only on attrs for **globus_xio_server_create()** (p. 9) or **globus_xio_register_open()** (p. 11).

Parameters

handle	Use this handle (fd or SOCKET) for the listener or connection. Note: close() will not be called on this handle.

6.39.3.13 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_INTERFACE , const char * *interface*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the interface to bind a listener or connection to.

Used only on attrs for **globus_xio_server_create()** (p. 9) or **globus_xio_register_open** (p. 11).

Parameters

interface	The interface to use. Can be a hostname or numeric IP

string opt: iface=<string>

6.39.3.14 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_INTERFACE , char ** *interface_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the interface on the attr.

Parameters

interface_out	A pointer to the interface will be stored here If one is set, NULL will be passed back. Otherwise, the interface will be duplicated with strdup() and the user should call free() on it.

6.39.3.15 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_RESTRICT_PORT , globus_bool_t *restrict_port*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Enable or disable the listener or connector range constraints.

Used only on attrs for **globus_xio_server_create()** (p. 9) or **globus_xio_register_open()** (p. 11). This enables or ignores the port range found in the attr or in then env. By default, those ranges are enabled.

Parameters

restrict_port	GLOBUS_TRUE to enable (default), GLOBUS_FALSE to disable.

See Also

GLOBUS_XIO_TCP_SET_LISTEN_RANGE (p. 88)
GLOBUS_XIO_TCP_SET_CONNECT_RANGE (p. 88)

6.39.3.16 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_RESTRICT_PORT , globus_bool_t * *restrict_port_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the restrict port flag.

Parameters

restrict_port_out	The restrict port flag will be stored here.

6.39.3.17 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_REUSEADDR , globus_bool_t *resuseaddr*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Reuse addr when binding.

Used only on attrs for **globus_xio_server_create()** (p. 9) or **globus_xio_register_open()** (p. 11) to determine whether or not to allow reuse of addresses when binding a socket to a port number.

Parameters

resuseaddr	GLOBUS_TRUE to allow, GLOBUS_FALSE to disallow (default)

string opt: reuse=<bool>

6.39.3.18 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_REUSEADDR , globus_bool_t * *resuseaddr_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the reuseaddr flag on an attr.

Parameters

resuseaddr_out	The reuseaddr flag will be stored here.

6.39.3.19 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_NO_IPV6 , globus_bool_t *no_ipv6*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Restrict to IPV4 only.

Used only on attrs for **globus_xio_server_create()** (p. 9) or **globus_xio_register_open()** (p. 11). Disallow IPV6 sockets from being used (default is to use either ipv4 or ipv6)

Parameters

no_ipv6	GLOBUS_TRUE to disallow ipv6, GLOBUS_FALSE to allow (default)

string opt: noipv6=<bool>

6.39.3.20 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_NO_IPV6 , globus_bool_t * *no_ipv6_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the no ipv6 flag on an attr.

Parameters

no_ipv6_out	The no ipv6 flag will be stored here.

6.39.3.21 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_CONNECT_RANGE , int *connector_min_port,* int *connector_max_port*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the tcp port range to confine the server to.

Used only on attrs for **globus_xio_register_open()** (p. 11). It overrides the range set in the GLOBUS_TCP_SOURCE_RANGE env variable. If 'restrict port' is true, the connecting socket's local port will be constrained to the range specified.

Parameters

connector_min_port	The lower bound on the listener port. (default 0 – no bound)
connector_max_port	The upper bound on the listener port. (default 0 – no bound)

See Also

GLOBUS_XIO_TCP_SET_RESTRICT_PORT (p. 88)

6.39.3.22 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_CONNECT_RANGE , int * *connector_min_port_out,* int * *connector_max_port_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp source port range on an attr.

Parameters

connector_min_port_out	The lower bound will be stored here.
connector_max_port_out	The upper bound will be stored here.

6.39.3.23 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_KEEPALIVE , globus_bool_t *keepalive*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Enable tcp keepalive.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to determine whether or not to periodically send "keepalive" messages on a connected socket handle. This may enable earlier detection of broken connections.

Parameters

keepalive	GLOBUS_TRUE to enable, GLOBUS_FALSE to disable (default)

string opt: keepalive=<bool>

6.39.3.24 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_SET_KEEPALIVE , globus_bool_t *keepalive*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Enable tcp keepalive.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to determine whether or not to periodically send "keepalive" messages on a connected socket handle. This may enable earlier detection of broken connections.

Parameters

keepalive	GLOBUS_TRUE to enable, GLOBUS_FALSE to disable (default)

string opt: keepalive=<bool>

6.39.3.25 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_KEEPALIVE , globus_bool_t * *keepalive_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp keepalive flag.

Parameters

keepalive_out	The tcp keepalive flag will be stored here.

6.39.3.26 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_KEEPALIVE , globus_bool_t * *keepalive_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp keepalive flag.

Parameters

keepalive_out	The tcp keepalive flag will be stored here.

6.39.3.27 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_LINGER , globus_bool_t *linger,* int *linger_time*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set tcp linger.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to determine what to do when data is in the socket's buffer when the socket is closed. If linger is set to true, then the close operation will block until the socket buffers are empty, or the linger_time has expired. If this is enabled, any data remaining after the linger time has expired, will be discarded. If this is disabled, close finishes immediately, but the OS will still attempt to transmit the remaining data.

Parameters

linger	GLOBUS_TRUE to enable, GLOBUS_FALSE to disable (default)
linger_time	The time (in seconds) to block at close time if linger is true and data is queued in the socket buffer.

6.39.3.28 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_SET_LINGER , globus_bool_t *linger*, int *linger_time*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set tcp linger.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to determine what to do when data is in the socket's buffer when the socket is closed. If linger is set to true, then the close operation will block until the socket buffers are empty, or the linger_time has expired. If this is enabled, any data remaining after the linger time has expired, will be discarded. If this is disabled, close finishes immediately, but the OS will still attempt to transmit the remaining data.

Parameters

linger	GLOBUS_TRUE to enable, GLOBUS_FALSE to disable (default)
linger_time	The time (in seconds) to block at close time if linger is true and data is queued in the socket buffer.

6.39.3.29 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_LINGER , globus_bool_t * *linger_out*, int * *linger_time_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp linger flag and time.

Parameters

linger_out	The linger flag will be stored here.
linger_time_out	The linger time will be set here.

6.39.3.30 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_LINGER , globus_bool_t * *linger_out*, int * *linger_time_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp linger flag and time.

Parameters

linger_out	The linger flag will be stored here.
linger_time_out	The linger time will be set here.

6.39.3.31 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_OOBINLINE , globus_bool_t *oobinline*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Receive out of band data (tcp urgent data) in normal stream.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to choose whether out-of-band data is received in the normal data queue. (Currently, there is no other way to receive OOB data)

Parameters

oobinline	GLOBUS_TRUE to enable, GLOBUS_FALSE to disable (default)

6.39.3.32 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_SET_OOBINLINE , globus_bool_t *oobinline*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Receive out of band data (tcp urgent data) in normal stream.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to choose whether out-of-band data is received in the normal data queue. (Currently, there is no other way to receive OOB data)

Parameters

oobinline	GLOBUS_TRUE to enable, GLOBUS_FALSE to disable (default)

6.39.3.33 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_OOBINLINE , globus_bool_t * *oobinline_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the oobinline flag.

Parameters

oobinline_out	The oobinline flag will be stored here.

6.39.3.34 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_OOBINLINE , globus_bool_t * *oobinline_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the oobinline flag.

Parameters

oobinline_out	The oobinline flag will be stored here.

6.39.3.35 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_SNDBUF , int *sndbuf*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the tcp socket send buffer size.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to set the size of the send buffer used on the socket.

Parameters

sndbuf	The send buffer size in bytes to use. (default is system specific)

string opt: sndbuf=<formatted int>=""

6.39.3.36 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_SET_SNDBUF , int *sndbuf*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the tcp socket send buffer size.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to set the size of the send buffer used on the socket.

Parameters

sndbuf	The send buffer size in bytes to use. (default is system specific)

string opt: sndbuf=<formatted int>=""

6.39.3.37 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_SNDBUF , int * *sndbuf_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp send buffer size on the attr or handle.

Parameters

sndbuf_out	The send buffer size will be stored here.

6.39.3.38 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_SNDBUF , int * *sndbuf_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp send buffer size on the attr or handle.

Parameters

sndbuf_out	The send buffer size will be stored here.

6.39.3.39 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_RCVBUF , int *rcvbuf*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the tcp socket receive buffer size.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to set the size of the receive buffer used on the socket. The receive buffer size is often used by the operating system to choose the appropriate TCP window size.

Parameters

rcvbuf	The receive buffer size in bytes. (default is system specific)

string opt: rcvbuf=<formatted int>=""

6.39.3.40 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_SET_RCVBUF , int *rcvbuf*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the tcp socket receive buffer size.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to set the size of the receive buffer used on the socket. The receive buffer size is often used by the operating system to choose the appropriate TCP window size.

Parameters

rcvbuf	The receive buffer size in bytes. (default is system specific)

string opt: rcvbuf=<formatted int>=""

6.39.3.41 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_RCVBUF , int * *rcvbuf_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp receive buffer size on the attr or handle.

Parameters

rcvbuf_out	The receive buffer size will be stored here.

6.39.3.42 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_RCVBUF , int * *rcvbuf_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp receive buffer size on the attr or handle.

Parameters

rcvbuf_out	The receive buffer size will be stored here.

6.39.3.43 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_NODELAY , globus_bool_t *nodelay*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Disable Nagle's algorithm.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to determine whether or not to disable Nagle's algorithm. If set to GLOBUS_TRUE, the socket will send packets as soon as possible with no unnecessary delays introduced.

Parameters

nodelay	GLOBUS_TRUE to disable nagle, GLOBUS_FALSE to enable (default)

string opt: nodelay=<bool>

6.39.3.44 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_SET_NODELAY , globus_bool_t *nodelay*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Disable Nagle's algorithm.

Used on attrs for **globus_xio_server_create()** (p. 9), **globus_xio_register_open()** (p. 11) and with **globus_xio_handle_cntl()** (p. 11) to determine whether or not to disable Nagle's algorithm. If set to GLOBUS_TRUE, the socket will send packets as soon as possible with no unnecessary delays introduced.

Parameters

nodelay	GLOBUS_TRUE to disable nagle, GLOBUS_FALSE to enable (default)

string opt: nodelay=<bool>

6.39.3.45 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_NODELAY , globus_bool_t * *nodelay_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp nodelay flag.

Parameters

nodelay_out	The no delay flag will be stored here.

6.39.3.46 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_NODELAY , globus_bool_t * *nodelay_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the tcp nodelay flag.

Parameters

nodelay_out	The no delay flag will be stored here.

6.39.3.47 globus_result_t globus_xio_data_descriptor_cntl (dd , driver , GLOBUS_XIO_TCP_SET_SEND_FLAGS , int *send_flags*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set tcp send flags.

```
Used only for data descriptors to write calls.
```

Parameters

send_flags	The flags to use when sending data.

See Also

globus_xio_tcp_send_flags_t (p. 104)

6.39.3.48 globus_result_t globus_xio_data_descriptor_cntl (dd , driver , GLOBUS_XIO_TCP_GET_SEND_FLAGS , int * *send_flags_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get tcp send flags.

Parameters

send_flags_out	The flags to use will be stored here.

6.39.3.49 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_LOCAL_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get local socket info.

Parameters

contact_string_out	A pointer to a contact string for the local end of a connected socket or listener will be stored here. The user should free() it when done with it. It will be in the format: <hostname>:<port>

See Also

globus_xio_server_get_contact_string() (p. 10)
GLOBUS_XIO_GET_LOCAL_CONTACT (p. 8)

6.39.3.50 globus_result_t globus_xio_server_cntl (server , driver , GLOBUS_XIO_TCP_GET_LOCAL_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get local socket info.

Parameters

contact_string_out	A pointer to a contact string for the local end of a connected socket or listener will be stored here. The user should free() it when done with it. It will be in the format: <hostname>:<port>

See Also

globus_xio_server_get_contact_string() (p. 10)
GLOBUS_XIO_GET_LOCAL_CONTACT (p. 8)

6.39.3.51 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_LOCAL_NUMERIC_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get local socket info.

Parameters

contact_string_out	A pointer to a contact string for the local end of a connected socket or listener will be stored here. The user should free() it when done with it. It will be in the format: <ip>:<port>

See Also

GLOBUS_XIO_GET_LOCAL_NUMERIC_CONTACT (p. 8)

6.39.3.52 globus_result_t globus_xio_server_cntl (server , driver , GLOBUS_XIO_TCP_GET_LOCAL_NUMERIC_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get local socket info.

Parameters

contact_string_out	A pointer to a contact string for the local end of a connected socket or listener will be stored here. The user should free() it when done with it. It will be in the format: <ip>:<port>

See Also

GLOBUS_XIO_GET_LOCAL_NUMERIC_CONTACT (p. 8)

6.39.3.53 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_REMOTE_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get remote socket info.

Parameters

contact_string_out	A pointer to a contact string for the remote end of a connected socket will be stored here. The user should free() it when done with it. It will be in the format: <hostname>:<port>

See Also

GLOBUS_XIO_GET_REMOTE_CONTACT (p. 8)

6.39.3.54 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_REMOTE_NUMERIC_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get remote socket info.

Parameters

contact_string_out	A pointer to a contact string for the remote end of a connected socket will be stored here. The user should free() it when done with it. It will be in the format: <ip>:<port>

See Also

GLOBUS_XIO_GET_REMOTE_NUMERIC_CONTACT (p. 8)

6.39.3.55 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_AFFECT_ATTR_DEFAULTS , globus_bool_t *affect_global*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Change the default attr values.

Parameters

affect_global	If GLOBUS_TRUE, any future cntls on this attr will access the global default attr (which all new attrs are initialized from) The default is GLOBUS_FALSE. Note: this should only be used at the application level and there should only be one. There is no mutex protecting the global attr. This feature should not be abused. There are some attrs that make no sense to change globally. Attrs that do include the tcp port range stuff, socket buffer sizes, etc.

6.39.3.56 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_SET_BLOCKING_IO , globus_bool_t *use_blocking_io*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Enable true blocking io when making globus_xio_read/write() calls.

Note: use with caution. you can deadlock an entire app with this.

Parameters

use_blocking_io	If GLOBUS_TRUE, true blocking io will be enabled. GLOBUS_FALSE will disable it (default);

6.39.3.57 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_SET_BLOCKING_IO , globus_bool_t *use_blocking_io*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Enable true blocking io when making globus_xio_read/write() calls.

Note: use with caution. you can deadlock an entire app with this.

Parameters

use_blocking_io	If GLOBUS_TRUE, true blocking io will be enabled. GLOBUS_FALSE will disable it (default);

6.39.3.58 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_TCP_GET_BLOCKING_IO , globus_bool_t * *use_blocking_io_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the blocking io status in use or in attr.

Parameters

use_blocking_io_out	The flag will be set here. GLOBUS_TRUE for enabled.

6.39.3.59 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_TCP_GET_BLOCKING_IO , globus_bool_t * *use_blocking_io_out*)

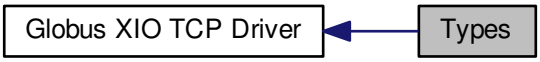
This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the blocking io status in use or in attr.

Parameters

use_blocking_io_out	The flag will be set here. GLOBUS_TRUE for enabled.

6.40 Types

Collaboration diagram for Types:



Macros

- #define **GLOBUS_XIO_TCP_INVALID_HANDLE**

Enumerations

- enum **globus_xio_tcp_send_flags_t** { **GLOBUS_XIO_TCP_SEND_OOB** = MSG_OOB }

6.40.1 Detailed Description

6.40.2 Macro Definition Documentation

6.40.2.1 #define GLOBUS_XIO_TCP_INVALID_HANDLE

Invalid handle type.

See Also

GLOBUS_XIO_TCP_SET_HANDLE (p. 88)

6.40.3 Enumeration Type Documentation

6.40.3.1 enum globus_xio_tcp_send_flags_t

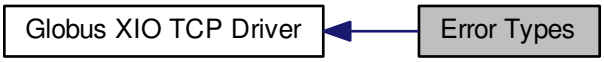
TCP driver specific types.

Enumerator

GLOBUS_XIO_TCP_SEND_OOB Use this with **GLOBUS_XIO_TCP_SET_SEND_FLAGS** (p. 89) to send a TCP message out of band (Urgent data flag set)

6.41 Error Types

Collaboration diagram for Error Types:



Enumerations

- enum **globus_xio_tcp_error_type_t** { **GLOBUS_XIO_TCP_ERROR_NO_ADDRS** }

6.41.1 Detailed Description

The TCP driver is very close to the system code, so most errors reported by it are converted from the system errno. A few of the exceptions are GLOBUS_XIO_ERROR_EOF, GLOBUS_XIO_ERROR_COMMAND, GLOBUS_XIO_ERROR_CONTACT_STRING, GLOBUS_XIO_ERROR_CANCELED, and **GLOBUS_XIO_TCP_ERROR_NO_ADDRS** (p. 105)

See Also

globus_xio_driver_error_match()
globus_error_errno_match()

6.41.2 Enumeration Type Documentation

6.41.2.1 enum globus_xio_tcp_error_type_t

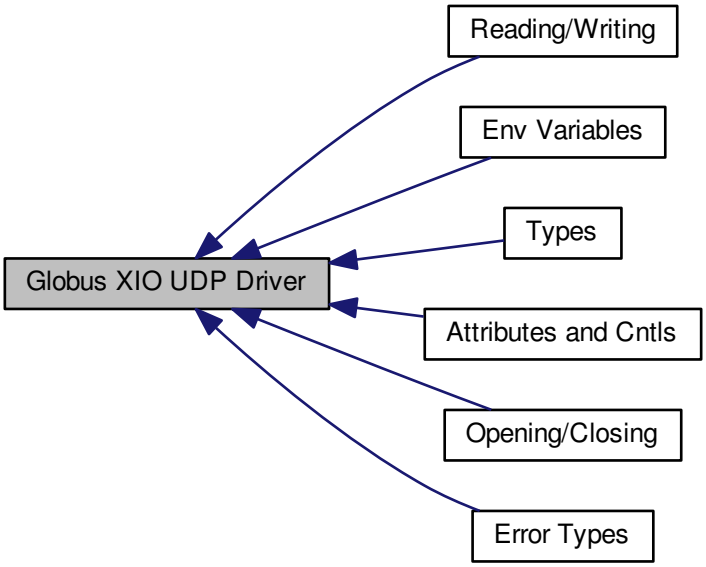
TCP driver specific error types.

Enumerator

GLOBUS_XIO_TCP_ERROR_NO_ADDRS Indicates that no IPv4/6 compatible sockets could be resolved for the specified hostname.

6.42 Globus XIO UDP Driver

Collaboration diagram for Globus XIO UDP Driver:



Modules

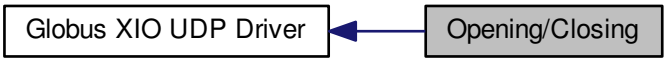
- **Opening/Closing**
- **Reading/Writing**
- **Env Variables**
- **Attributes and Cntls**
- **Types**
- **Error Types**

6.42.1 Detailed Description

The IPV4/6 UDP socket driver.

6.43 Opening/Closing

Collaboration diagram for Opening/Closing:

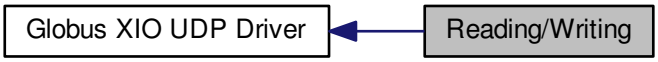


An XIO handle with the udp driver can be created with **globus_xio_handle_create()** (p. 10). The handle can be created in two modes: open server or connected client. If the contact string does not have a host and port, the udp socket will accept messages from any sender. If a host and port is specified, the udp socket will be 'connected' immediately to that host:port. This blocks packets from any sender other than the contact string. A handle that starts out as an open server can later be 'connected' with **GLOBUS_XIO_UDP_CONNECT** (p. 112) (presumably after the first message is received from a sender and his contact info is available).

When the XIO handle is closed, the udp driver will destroy its internal resources and close the socket (unless this socket was set on the attr to **globus_xio_register_open()** (p. 11)).

6.44 Reading/Writing

Collaboration diagram for Reading/Writing:



globus_xio_register_read() (p. 12) semantics: If the waitforbytes parameter is greater than zero, the read will happen asynchronously and be completed when at least waitforbytes has been read/written.

If the waitforbytes parameter is equal to zero, one of the following alternative behaviors occur:

If the length of the buffer is $>$ 0 the read happens synchronously. If the user is using one of the blocking xio calls, no internal callback will occur.

If the length of the buffer is also 0, the call behaves like an asynchronous notification of data ready to be read. ie, an asynchronous select().

In any case, when an error occurs before the waitforbytes request has been met, the outgoing nbytes is set to the amount of data actually read before the error occurred.

If the handle is not connected, the user should pass in a data descriptor. After the read, this data_descriptor will contain the contact string of the sender. The user can either get this contact string with **GLOBUS_XIO_UDP_GET-_CONTACT** (p. 112) or pass the data descriptor directly to **globus_xio_register_write()** (p. 13) to send a message back to the sender.

Also, if the handle is not connected, the waitforbytes should probably be 1 to guarantee that only one packet is received and the sender contact isnt overwritten by multiple packets from different senders.

globus_xio_register_write() (p. 13) semantics:

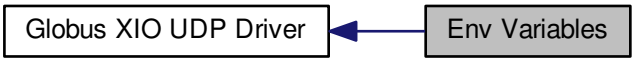
When performing a write, exactly one UDP packet is sent of the entire buffer length. The waitforbytes parameter is ignored. If the entire buffer can not be written, a **GLOBUS_XIO_UDP_ERROR_SHORT_WRITE** (p. 122) error will be returned with nbytes set to the number of bytes actually sent.

If the handle is not 'connected', a contact string must be set in the data descriptor to **globus_xio_register_-write()** (p. 13). This can either be done explicitly with **GLOBUS_XIO_UDP_SET_CONTACT** (p. 112) or implicitly by passing in a data descriptor received from **globus_xio_register_read()** (p. 12).

The udp write semantics are always synchronous. No blocking or internal callback will occur when using **globus_-xio_write()** (p. 13).

6.45 Env Variables

Collaboration diagram for Env Variables:

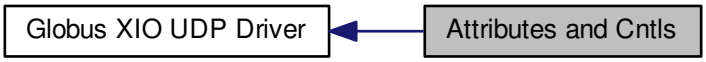


The udp driver uses the following environment variables.

- GLOBUS_HOSTNAME Used when setting the hostname in the contact string
- GLOBUS_UDP_PORT_RANGE Used to restrict the port the udp socket binds to
- GLOBUS_XIO_SYSTEM_DEBUG Available if using a debug build. See globus_debug.h for format. The UDP driver uses globus_xio_system (along with the File and TCP drivers) which defines the following levels: TRACE for all function call tracing, DATA for data read and written counts, INFO for some special events, and RAW which dumps the raw buffers actually read or written. This can contain binary data, so be careful when you enable it.

6.46 Attributes and Cntls

Collaboration diagram for Attributes and Cntls:



Enumerations

- enum **globus_xio_udp_cmd_t** {
  GLOBUS_XIO_UDP_SET_HANDLE,
  GLOBUS_XIO_UDP_SET_SERVICE,
  GLOBUS_XIO_UDP_GET_SERVICE,
  GLOBUS_XIO_UDP_SET_PORT,
  GLOBUS_XIO_UDP_GET_PORT,
  GLOBUS_XIO_UDP_SET_LISTEN_RANGE,
  GLOBUS_XIO_UDP_GET_LISTEN_RANGE,
  GLOBUS_XIO_UDP_SET_INTERFACE,
  GLOBUS_XIO_UDP_GET_INTERFACE,
  GLOBUS_XIO_UDP_SET_RESTRICT_PORT,
  GLOBUS_XIO_UDP_GET_RESTRICT_PORT,
  GLOBUS_XIO_UDP_SET_REUSEADDR,
  GLOBUS_XIO_UDP_GET_REUSEADDR,
  GLOBUS_XIO_UDP_SET_NO_IPV6,
  GLOBUS_XIO_UDP_GET_NO_IPV6,
  GLOBUS_XIO_UDP_GET_HANDLE,
  GLOBUS_XIO_UDP_SET_SNDBUF,
  GLOBUS_XIO_UDP_GET_SNDBUF,
  GLOBUS_XIO_UDP_SET_RCVBUF,
  GLOBUS_XIO_UDP_GET_RCVBUF,
  GLOBUS_XIO_UDP_GET_CONTACT,
  GLOBUS_XIO_UDP_GET_NUMERIC_CONTACT,
  GLOBUS_XIO_UDP_SET_CONTACT,
  GLOBUS_XIO_UDP_CONNECT,
  GLOBUS_XIO_UDP_SET_MULTICAST }

Functions

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_HANDLE**, globus_xio_-system_socket_t handle)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_SERVICE**, const char ∗service_name)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_SERVICE**, char ∗∗service_-name_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_PORT**, int listener_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_PORT**, int ∗listener_port_out)

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_LISTEN_RANGE**, int listener_min_port, int listener_max_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_LISTEN_RANGE**, int *listener_min_port_out, int *listener_max_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_INTERFACE**, const char *interface)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_INTERFACE**, char **interface_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_RESTRICT_PORT**, globus_bool_t restrict_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_RESTRICT_PORT**, globus_bool_t *restrict_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_REUSEADDR**, globus_bool_t resuseaddr)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_REUSEADDR**, globus_bool_t *resuseaddr_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_NO_IPV6**, globus_bool_t no_ipv6)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_NO_IPV6**, globus_bool_t *no_ipv6_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_SNDBUF**, int sndbuf)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_SET_SNDBUF**, int sndbuf)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_SNDBUF**, int *sndbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_SNDBUF**, int *sndbuf_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_RCVBUF**, int rcvbuf)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_SET_RCVBUF**, int rcvbuf)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_RCVBUF**, int *rcvbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_RCVBUF**, int *rcvbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_UDP_GET_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_UDP_GET_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_UDP_SET_CONTACT**, char *contact_string)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_CONNECT**, char *contact_string)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_MULTICAST**, char *contact_string)

6.46.1 Detailed Description

UDP driver specific attrs and cntls.

See Also

globus_xio_attr_cntl() (p. 8)
globus_xio_handle_cntl() (p. 11)
globus_xio_data_descriptor_cntl() (p. 11)

6.46.2 Enumeration Type Documentation

6.46.2.1 enum globus_xio_udp_cmd_t

doxygen varargs filter stuff

UDP driver specific cntls

Enumerator

GLOBUS_XIO_UDP_SET_HANDLE See usage for: **globus_xio_attr_cntl** (p. 113).

GLOBUS_XIO_UDP_SET_SERVICE See usage for: **globus_xio_attr_cntl** (p. 113).

GLOBUS_XIO_UDP_GET_SERVICE See usage for: **globus_xio_attr_cntl** (p. 113).

GLOBUS_XIO_UDP_SET_PORT See usage for: **globus_xio_attr_cntl** (p. 113).

GLOBUS_XIO_UDP_GET_PORT See usage for: **globus_xio_attr_cntl** (p. 113).

GLOBUS_XIO_UDP_SET_LISTEN_RANGE See usage for: **globus_xio_attr_cntl** (p. 114).

GLOBUS_XIO_UDP_GET_LISTEN_RANGE See usage for: **globus_xio_attr_cntl** (p. 114).

GLOBUS_XIO_UDP_SET_INTERFACE See usage for: **globus_xio_attr_cntl** (p. 114).

GLOBUS_XIO_UDP_GET_INTERFACE See usage for: **globus_xio_attr_cntl** (p. 114).

GLOBUS_XIO_UDP_SET_RESTRICT_PORT See usage for: **globus_xio_attr_cntl** (p. 115).

GLOBUS_XIO_UDP_GET_RESTRICT_PORT See usage for: **globus_xio_attr_cntl** (p. 115).

GLOBUS_XIO_UDP_SET_REUSEADDR See usage for: **globus_xio_attr_cntl** (p. 115).

GLOBUS_XIO_UDP_GET_REUSEADDR See usage for: **globus_xio_attr_cntl** (p. 115).

GLOBUS_XIO_UDP_SET_NO_IPV6 See usage for: **globus_xio_attr_cntl** (p. 115).

GLOBUS_XIO_UDP_GET_NO_IPV6 See usage for: **globus_xio_attr_cntl** (p. 116).

GLOBUS_XIO_UDP_GET_HANDLE See usage for: **globus_xio_attr_cntl** (p. 116), **globus_xio_handle_cntl** (p. 116).

GLOBUS_XIO_UDP_SET_SNDBUF See usage for: **globus_xio_attr_cntl** (p. 116), **globus_xio_handle_cntl** (p. 116).

GLOBUS_XIO_UDP_GET_SNDBUF See usage for: **globus_xio_attr_cntl** (p. 117), **globus_xio_handle_cntl** (p. 117).

GLOBUS_XIO_UDP_SET_RCVBUF See usage for: **globus_xio_attr_cntl** (p. 117), **globus_xio_handle_cntl** (p. 117).

GLOBUS_XIO_UDP_GET_RCVBUF See usage for: **globus_xio_attr_cntl** (p. 117), **globus_xio_handle_cntl** (p. 117).

GLOBUS_XIO_UDP_GET_CONTACT See usage for: **globus_xio_handle_cntl** (p. 118), **globus_xio_data_descriptor_cntl** (p. 118).

GLOBUS_XIO_UDP_GET_NUMERIC_CONTACT See usage for: **globus_xio_handle_cntl** (p. 118), **globus_xio_data_descriptor_cntl** (p. 119).

GLOBUS_XIO_UDP_SET_CONTACT See usage for: **globus_xio_data_descriptor_cntl** (p. 119).

GLOBUS_XIO_UDP_CONNECT See usage for: **globus_xio_handle_cntl** (p. 119).

GLOBUS_XIO_UDP_SET_MULTICAST See usage for: **globus_xio_attr_cntl** (p. 120).

6.46.3 Function Documentation

6.46.3.1 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_HANDLE , globus_xio_system_socket_t *handle*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the udp socket to use.

Parameters

handle	Use this handle (fd or SOCKET). Note: close() will not be called on this handle.

6.46.3.2 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_SERVICE , const char * *service_name*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the udp service name to listen on.

Parameters

service_name	The service name to use when setting up the listener. If the service name cannot be resolved, the port (if one is set) will be used instead.

6.46.3.3 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_SERVICE , char ** *service_name_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the service name to listen on.

Parameters

service_name_out	A pointer to the service name will be stored here If none is set, NULL will be passed back. Otherwise, the name will be duplicated with strdup() and the user should call free() on it.

6.46.3.4 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_PORT , int *listener_port*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the port number to listen on.

The default is 0 (system assigned)

Parameters

listener_port	The port number to use when setting up the listener. If the service name is also set, this will only be used if that can't be resolved.

6.46.3.5 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_PORT , int * *listener_port_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. the port number to listen on.

Parameters

listener_port_out	The port will be stored here.

6.46.3.6 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_LISTEN_RANGE , int *listener_min_port,* int *listener_max_port*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the port range to confine the listener to.

Used only where no specific service or port has been set. It overrides the range set in the GLOBUS_UDP_PORT-_RANGE env variable. If 'restrict port' is true, the listening port will be constrained to the range specified.

Parameters

listener_min_-port	The lower bound on the listener port. (default 0 – no bound)
listener_max_-port	The upper bound on the listener port. (default 0 – no bound)

See Also

GLOBUS_XIO_UDP_SET_RESTRICT_PORT (p. 112)

6.46.3.7 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_LISTEN_RANGE , int * *listener_min_port_out,* int * *listener_max_port_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the udp port range on an attr.

Parameters

listener_min_-port_out	The lower bound will be stored here.
listener_max_-port_out	The upper bound will be stored here.

6.46.3.8 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_INTERFACE , const char * *interface*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the interface to bind the socket to.

Parameters

interface	The interface to use. Can be a hostname or numeric IP

6.46.3.9 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_INTERFACE , char ** *interface_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the interface on the attr.

Parameters

interface_out	A pointer to the interface will be stored here If one is set, NULL will be passed back. Otherwise, the interface will be duplicated with strdup() and the user should call free() on it.

6.46.3.10 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_RESTRICT_PORT , globus_bool_t *restrict_port*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Enable or disable the listener range constraints.

This enables or ignores the port range found in the attr or in then env. By default, those ranges are enabled.

Parameters

restrict_port	GLOBUS_TRUE to enable (default), GLOBUS_FALSE to disable.

See Also

GLOBUS_XIO_UDP_SET_LISTEN_RANGE (p. 112)

6.46.3.11 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_RESTRICT_PORT , globus_bool_t * *restrict_port_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the restrict port flag.

Parameters

restrict_port_out	The restrict port flag will be stored here.

6.46.3.12 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_REUSEADDR , globus_bool_t *resuseaddr*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Reuse addr when binding.

Used to determine whether or not to allow reuse of addresses when binding a socket to a port number.

Parameters

resuseaddr	GLOBUS_TRUE to allow, GLOBUS_FALSE to disallow (default)

6.46.3.13 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_REUSEADDR , globus_bool_t * *resuseaddr_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the reuseaddr flag on an attr.

Parameters

resuseaddr_out	The reuseaddr flag will be stored here.

6.46.3.14 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_NO_IPV6 , globus_bool_t *no_ipv6*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Restrict to IPV4 only.

Disallow IPV6 sockets from being used (default is to use either ipv4 or ipv6)

Parameters

no_ipv6	GLOBUS_TRUE to disallow ipv6, GLOBUS_FALSE to allow (default)

6.46.3.15 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_NO_IPV6 , globus_bool_t * *no_ipv6_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the no ipv6 flag on an attr.

Parameters

no_ipv6_out	The no ipv6 flag will be stored here.

6.46.3.16 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_HANDLE , globus_xio_system_socket_t * *handle_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the socket handle on an attr or handle.

Parameters

handle_out	The udp socket will be stored here. If none is set, GLOBUS_XIO_UDP_INVALID_HANDLE will be set.

6.46.3.17 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_UDP_GET_HANDLE , globus_xio_system_socket_t * *handle_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the socket handle on an attr or handle.

Parameters

handle_out	The udp socket will be stored here. If none is set, GLOBUS_XIO_UDP_INVALID_HANDLE will be set.

6.46.3.18 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_SNDBUF , int *sndbuf*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the socket send buffer size.

Used to set the size of the send buffer used on the socket.

Parameters

sndbuf	The send buffer size in bytes to use. (default is system specific)

6.46.3.19 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_UDP_SET_SNDBUF , int *sndbuf*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the socket send buffer size.

Used to set the size of the send buffer used on the socket.

Parameters

sndbuf	The send buffer size in bytes to use. (default is system specific)

6.46.3.20 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_SNDBUF , int * *sndbuf_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the send buffer size on the attr or handle.

Parameters

sndbuf_out	The send buffer size will be stored here.

6.46.3.21 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_UDP_GET_SNDBUF , int * *sndbuf_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the send buffer size on the attr or handle.

Parameters

sndbuf_out	The send buffer size will be stored here.

6.46.3.22 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_RCVBUF , int *rcvbuf*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the socket receive buffer size.

Used to set the size of the receive buffer used on the socket.

Parameters

rcvbuf	The receive buffer size in bytes. (default is system specific)

6.46.3.23 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_UDP_SET_RCVBUF , int *rcvbuf*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the socket receive buffer size.

Used to set the size of the receive buffer used on the socket.

Parameters

rcvbuf	The receive buffer size in bytes. (default is system specific)

6.46.3.24 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_GET_RCVBUF , int * *rcvbuf_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the receive buffer size on the attr or handle.

Parameters

rcvbuf_out	The receive buffer size will be stored here.

6.46.3.25 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_UDP_GET_RCVBUF , int * *rcvbuf_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the receive buffer size on the attr or handle.

Parameters

rcvbuf_out	The receive buffer size will be stored here.

6.46.3.26 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_UDP_GET_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the contact string associated with a handle or data descriptor.

Use with **globus_xio_handle_cntl()** (p. 11) to get a contact string for the udp listener. Use with **globus_xio_data_descriptor_cntl()** (p. 11) to get the sender's contact string from a data descriptor passed to **globus_xio_register_read()** (p. 12).

Parameters

contact_string_out	A pointer to a contact string will be stored here. The user should free() it when done with it. It will be in the format: <hostname>:<port>

See Also

GLOBUS_XIO_GET_LOCAL_CONTACT (p. 8)

6.46.3.27 globus_result_t globus_xio_data_descriptor_cntl (dd , driver , GLOBUS_XIO_UDP_GET_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the contact string associated with a handle or data descriptor.

Use with **globus_xio_handle_cntl()** (p. 11) to get a contact string for the udp listener. Use with **globus_xio_data_descriptor_cntl()** (p. 11) to get the sender's contact string from a data descriptor passed to **globus_xio_register_read()** (p. 12).

Parameters

contact_string_out	A pointer to a contact string will be stored here. The user should free() it when done with it. It will be in the format: <hostname>:<port>

See Also

GLOBUS_XIO_GET_LOCAL_CONTACT (p. 8)

6.46.3.28 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_UDP_GET_NUMERIC_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the contact string associated with a handle or data descriptor.

Use with **globus_xio_handle_cntl()** (p. 11) to get a contact string for the udp listener. Use with **globus_xio_data_descriptor_cntl()** (p. 11) to get the sender's contact string from a data descriptor passed to **globus_xio_register_read()** (p. 12).

Parameters

contact_string_out	A pointer to a contact string will be stored here. The user should free() it when done with it. It will be in the format: <ip>:<port>

See Also

GLOBUS_XIO_GET_LOCAL_NUMERIC_CONTACT (p. 8)

6.46.3.29 globus_result_t globus_xio_data_descriptor_cntl (dd , driver , GLOBUS_XIO_UDP_GET_NUMERIC_CONTACT , char ** *contact_string_out*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get the contact string associated with a handle or data descriptor.

Use with **globus_xio_handle_cntl()** (p. 11) to get a contact string for the udp listener. Use with **globus_xio_data_descriptor_cntl()** (p. 11) to get the sender's contact string from a data descriptor passed to **globus_xio_register_read()** (p. 12).

Parameters

contact_string_out	A pointer to a contact string will be stored here. The user should free() it when done with it. It will be in the format: <ip>:<port>

See Also

GLOBUS_XIO_GET_LOCAL_NUMERIC_CONTACT (p. 8)

6.46.3.30 globus_result_t globus_xio_data_descriptor_cntl (dd , driver , GLOBUS_XIO_UDP_SET_CONTACT , char * *contact_string*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the destination contact.

Use on a data descriptor passed to **globus_xio_register_write()** (p. 13) to specify the recipient of the data. This is necessary with unconnected handles or to send to recipients other than the connected one.

Parameters

contact_string	A pointer to a contact string of the format <hostname/ip>:<port/service>

See Also

GLOBUS_XIO_UDP_CONNECT (p. 112)

6.46.3.31 globus_result_t globus_xio_handle_cntl (handle , driver , GLOBUS_XIO_UDP_CONNECT , char * *contact_string*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Set the default destination contact.

Connecting a handle to a specific contact blocks packets from any other contact. It also sets the default destination of all outgoing packets so, using **GLOBUS_XIO_UDP_SET_CONTACT** (p. 112) is unnecessary.

Parameters

contact_string	A pointer to a contact string of the format <hostname/ip>:<port/service>

6.46.3.32 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_UDP_SET_MULTICAST , char * *contact_string*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Join a multicast group.

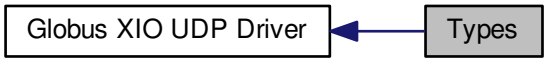
Specifiy a multicast group to join. All packets received will be to the specified multicast address. Do not use **GLOBUS_XIO_UDP_CONNECT** (p. 112), **GLOBUS_XIO_UDP_SET_PORT** (p. 112), or pass a contact string on the open. Consider using **GLOBUS_XIO_UDP_SET_REUSEADDR** (p. 112) to allow other apps to join this group. Use **GLOBUS_XIO_UDP_SET_INTERFACE** (p. 112) to specify the interface to use. Will not affect handles set with **GLOBUS_XIO_UDP_SET_HANDLE** (p. 112). **GLOBUS_XIO_UDP_SET_RESTRICT_PORT** (p. 112) is ignored.

Parameters

contact_string	A pointer to a contact string of the multicast group to join with the format: <hostname/ip>-:<port/service>

6.47 Types

Collaboration diagram for Types:



Macros

- #define **GLOBUS_XIO_UDP_INVALID_HANDLE**

6.47.1 Detailed Description

6.47.2 Macro Definition Documentation

6.47.2.1 #define GLOBUS_XIO_UDP_INVALID_HANDLE

Invalid handle type.

See Also

GLOBUS_XIO_UDP_SET_HANDLE (p. 112)

6.48 Error Types

Collaboration diagram for Error Types:



Enumerations

- enum **globus_xio_udp_error_type_t** {
  GLOBUS_XIO_UDP_ERROR_NO_ADDRS,
  GLOBUS_XIO_UDP_ERROR_SHORT_WRITE }

6.48.1 Detailed Description

The UDP driver is very close to the system code, so most errors reported by it are converted from the system errno. A few of the exceptions are GLOBUS_XIO_ERROR_COMMAND, GLOBUS_XIO_ERROR_CONTACT_STRING, GLOBUS_XIO_ERROR_CANCELED, **GLOBUS_XIO_UDP_ERROR_NO_ADDRS** (p. 122), and **GLOBUS_XIO_-UDP_ERROR_SHORT_WRITE** (p. 122)

See Also

globus_xio_driver_error_match()
globus_error_errno_match()

6.48.2 Enumeration Type Documentation

6.48.2.1 enum globus_xio_udp_error_type_t

UDP driver specific error types.

Enumerator

GLOBUS_XIO_UDP_ERROR_NO_ADDRS Indicates that no IPv4/6 compatible sockets could be resolved for the specified hostname.

GLOBUS_XIO_UDP_ERROR_SHORT_WRITE Indicates that a write of the full buffer failed. Possibly need to increase the send buffer size.

7 Data Structure Documentation

7.1 globus_i_xio_blocked_thread_t Union Reference

7.1.1 Detailed Description

Information about the what thread is being blocked by a callback.

In the non-threaded case, this will be the callback_depth, otherwise the thread_id

7.2 globus_xio_http_header_t Struct Reference

Data Fields

- char * **name**
- char * **value**

7.2.1 Detailed Description

doxygen varargs filter stuff

HTTP Header

7.2.2 Field Documentation

7.2.2.1 char* globus_xio_http_header_t::name

Header Name.

7.2.2.2 char* globus_xio_http_header_t::value

Header Value.

8 File Documentation

8.1 globus_xio_file_driver.h File Reference

Macros

- #define **GLOBUS_XIO_FILE_INVALID_HANDLE**

Enumerations

- enum **globus_xio_file_attr_cmd_t** {
  GLOBUS_XIO_FILE_SET_MODE,
  GLOBUS_XIO_FILE_GET_MODE,
  GLOBUS_XIO_FILE_SET_FLAGS,
  GLOBUS_XIO_FILE_GET_FLAGS,
  GLOBUS_XIO_FILE_SET_TRUNC_OFFSET,
  GLOBUS_XIO_FILE_GET_TRUNC_OFFSET,
  GLOBUS_XIO_FILE_SET_HANDLE,
  GLOBUS_XIO_FILE_GET_HANDLE,
  GLOBUS_XIO_FILE_SET_BLOCKING_IO,
  GLOBUS_XIO_FILE_GET_BLOCKING_IO,
  GLOBUS_XIO_FILE_SEEK }
- enum **globus_xio_file_flag_t** {
  GLOBUS_XIO_FILE_CREAT = O_CREAT,
  GLOBUS_XIO_FILE_EXCL = O_EXCL,
  GLOBUS_XIO_FILE_RDONLY = O_RDONLY,
  GLOBUS_XIO_FILE_WRONLY = O_WRONLY,
  GLOBUS_XIO_FILE_RDWR = O_RDWR,
  GLOBUS_XIO_FILE_TRUNC = O_TRUNC,
  GLOBUS_XIO_FILE_APPEND = O_APPEND,
  GLOBUS_XIO_FILE_BINARY = 0,
  GLOBUS_XIO_FILE_TEXT = 0 }
- enum **globus_xio_file_mode_t** {
  GLOBUS_XIO_FILE_IRWXU = S_IRWXU,
  GLOBUS_XIO_FILE_IRUSR = S_IRUSR,
  GLOBUS_XIO_FILE_IWUSR = S_IWUSR,
  GLOBUS_XIO_FILE_IXUSR = S_IXUSR,
  GLOBUS_XIO_FILE_IRWXO = S_IRWXO,
  GLOBUS_XIO_FILE_IROTH = S_IROTH,
  GLOBUS_XIO_FILE_IWOTH = S_IWOTH,
  GLOBUS_XIO_FILE_IXOTH = S_IXOTH,
  GLOBUS_XIO_FILE_IRWXG = S_IRWXG,
  GLOBUS_XIO_FILE_IRGRP = S_IRGRP,
  GLOBUS_XIO_FILE_IWGRP = S_IWGRP,
  GLOBUS_XIO_FILE_IXGRP = S_IXGRP }
- enum **globus_xio_file_whence_t** {
  GLOBUS_XIO_FILE_SEEK_SET = SEEK_SET,
  GLOBUS_XIO_FILE_SEEK_CUR = SEEK_CUR,
  GLOBUS_XIO_FILE_SEEK_END = SEEK_END }

Functions

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_MODE**, int mode)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_MODE**, int *mode_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_FLAGS**, int flags)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_FLAGS**, int *flags_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_TRUNC_OFFSET**, globus_-off_t offset)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_TRUNC_OFFSET**, globus_-off_t *offset_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_HANDLE**, globus_xio_-system_file_t handle)

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_HANDLE**, globus_xio_system_file_t *handle_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_FILE_GET_HANDLE**, globus_xio_system_file_t *handle_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_SET_BLOCKING_IO**, globus_bool_t use_blocking_io)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_FILE_SET_BLOCKING_IO**, globus_bool_t use_blocking_io)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_FILE_GET_BLOCKING_IO**, globus_bool_t *use_blocking_io_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_FILE_GET_BLOCKING_IO**, globus_bool_t *use_blocking_io_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_FILE_SEEK**, globus_off_t *in_out_offset, **globus_xio_file_whence_t** whence)

8.1.1 Detailed Description

Header file for XIO File Driver.

8.2 globus_xio_http.h File Reference

Data Structures

- struct **globus_xio_http_header_t**

Enumerations

- enum **globus_xio_http_handle_cmd_t** {
  GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HEADER,
  GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_STATUS_CODE,
  GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_REASON_PHRASE,
  GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HTTP_VERSION,
  GLOBUS_XIO_HTTP_HANDLE_SET_END_OF_ENTITY }
- enum **globus_xio_http_attr_cmd_t** {
  GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_METHOD,
  GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HTTP_VERSION,
  GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HEADER,
  GLOBUS_XIO_HTTP_ATTR_DELAY_WRITE_HEADER,
  GLOBUS_XIO_HTTP_GET_REQUEST,
  GLOBUS_XIO_HTTP_GET_RESPONSE }
- enum **globus_xio_http_errors_t** {
  GLOBUS_XIO_HTTP_ERROR_INVALID_HEADER,
  GLOBUS_XIO_HTTP_ERROR_PARSE,
  GLOBUS_XIO_HTTP_ERROR_NO_ENTITY,
  GLOBUS_XIO_HTTP_ERROR_EOF,
  GLOBUS_XIO_HTTP_ERROR_PERSISTENT_CONNECTION_DROPPED }
- enum **globus_xio_http_version_t** { ,
  GLOBUS_XIO_HTTP_VERSION_1_0,
  GLOBUS_XIO_HTTP_VERSION_1_1 }

Functions

- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HEADER**, const char *header_name, const char *header_value)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_STATUS_CODE**, int status)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_REASON_PHRASE**, const char *reason)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_RESPONSE_HTTP_VERSION**, **globus_xio_http_version_t** version)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_HTTP_HANDLE_SET_END_OF_ENTITY**)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_METHOD**, const char *method)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HTTP_VERSION**, **globus_xio_http_version_t** version)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_HTTP_ATTR_SET_REQUEST_HEADER**, const char *header_name, const char *header_value)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_HTTP_ATTR_DELAY_WRITE_HEADER**)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_HTTP_GET_REQUEST**, char **method, char **uri, **globus_xio_http_version_t** *http_version, globus_hashtable_t *headers)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_HTTP_GET_RESPONSE**, int *status_code, char **reason_phrase, **globus_xio_http_version_t** *http_version, globus_hashtable_t *headers)

8.2.1 Detailed Description

Globus XIO HTTP Driver Header.

8.2.2 Function Documentation

8.2.2.1 globus_result_t globus_xio_attr_cntl (attr , driver , GLOBUS_XIO_HTTP_ATTR_DELAY_WRITE_HEADER)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Delay writing HTTP request until first data write.

If this attribute is present when opening an HTTP handle, the HTTP request will not be sent immediately upon opening the handle. Instead, it will be delayed until the first data write is done. This allows other HTTP headers to be sent after the handle is opened.

This attribute cntl takes no arguments.

8.2.2.2 globus_result_t globus_xio_data_descriptor_cntl (dd , driver , GLOBUS_XIO_HTTP_GET_REQUEST , char ** *method,* char ** *uri,* globus_xio_http_version_t * *http_version,* globus_hashtable_t * *headers*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get HTTP Request Information.

Returns in the passed parameters values concerning the HTTP request. Any of the parameters may be NULL if the application is not interested in that part of the information.

Parameters

method	Pointer to be set to the HTTP request method (typically GET, PUT, or POST). The caller must not access this value outside of the lifetime of the data descriptor nor free it.
uri	Pointer to be set to the requested HTTP path. The caller must not access this value outside of the lifetime of the data descriptor nor free it.
http_version	Pointer to be set to the HTTP version used for this request.
headers	Pointer to be set to point to a hashtable of **globus_xio_http_header_t** (p. 123) values, keyed by the HTTP header names. The caller must not access this value outside of the lifetime of the data descriptor nor free it or any values in it.

8.2.2.3 globus_result_t globus_xio_data_descriptor_cntl (dd , driver , GLOBUS_XIO_HTTP_GET_RESPONSE , int * *status_code,* char ** *reason_phrase,* globus_xio_http_version_t * *http_version,* globus_hashtable_t * *headers*)

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts. Get HTTP Response Information.

Returns in the passed parameters values concerning the HTTP response. Any of the parameters may be NULL if the application is not interested in that part of the information.

Parameters

status_code	Pointer to be set to the HTTP response status code (such as 404), as per RFC 2616. The caller must not access this value outside of the lifetime of the data descriptor nor free it or any values in it.
reason_phrase	Pointer to be set to the HTTP response reason phrase (such as Not Found). The caller must not access this value outside of the lifetime of the data descriptor nor free it or any values in it.
http_version	Pointer to be set to the HTTP version used for this request.
headers	Pointer to be set to point to a hashtable of **globus_xio_http_header_t** (p. 123) values, keyed by the HTTP header names. The caller must not access this value outside of the lifetime of the data descriptor nor free it or any values in it.

8.3 globus_xio_mode_e_driver.h File Reference

Enumerations

- enum **globus_xio_mode_e_error_type_t** { **GLOBUS_XIO_MODE_E_HEADER_ERROR** }
- enum **globus_xio_mode_e_cmd_t** {
  GLOBUS_XIO_MODE_E_SET_STACK,
  GLOBUS_XIO_MODE_E_GET_STACK,
  GLOBUS_XIO_MODE_E_SET_NUM_STREAMS,
  GLOBUS_XIO_MODE_E_GET_NUM_STREAMS,
  GLOBUS_XIO_MODE_E_SET_OFFSET_READS,
  GLOBUS_XIO_MODE_E_GET_OFFSET_READS,
  GLOBUS_XIO_MODE_E_SET_MANUAL_EODC,
  GLOBUS_XIO_MODE_E_GET_MANUAL_EODC,
  GLOBUS_XIO_MODE_E_SEND_EOD,
  GLOBUS_XIO_MODE_E_SET_EODC,
  GLOBUS_XIO_MODE_E_DD_GET_OFFSET,
  GLOBUS_XIO_MODE_E_SET_STACK_ATTR,
  GLOBUS_XIO_MODE_E_GET_STACK_ATTR }

Functions

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_STACK**, globus_xio_stack_t stack)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_STACK**, globus_xio_stack_t *stack_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_NUM_STREAMS**, int num_streams)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_NUM_STREAMS**, int *num_streams_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_OFFSET_READS**, globus_bool_t offset_reads)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_OFFSET_READS**, globus_bool_t *offset_reads_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_MANUAL_EODC**, globus_bool_t manual_eodc)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_MANUAL_EODC**, globus_bool_t *manual_eodc_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_MODE_E_SEND_EOD**, globus_bool_t send_eod)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_MODE_E_SET_EODC**, int eod_count)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_MODE_E_DD_GET_OFFSET**, globus_off_t *offset_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_SET_STACK_ATTR**, globus_xio_stack_t stack)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_MODE_E_GET_STACK_ATTR**, globus_xio_attr_t *stack_out)

8.3.1 Detailed Description

Header file for XIO MODE_E Driver.

8.4 globus_xio_ordering_driver.h File Reference

Enumerations

- enum **globus_xio_ordering_error_type_t** {
  GLOBUS_XIO_ORDERING_ERROR_READ,
  GLOBUS_XIO_ORDERING_ERROR_CANCEL }
- enum **globus_xio_ordering_cmd_t** {
  GLOBUS_XIO_ORDERING_SET_OFFSET,
  GLOBUS_XIO_ORDERING_SET_MAX_READ_COUNT,
  GLOBUS_XIO_ORDERING_GET_MAX_READ_COUNT,
  GLOBUS_XIO_ORDERING_SET_BUFFERING,
  GLOBUS_XIO_ORDERING_GET_BUFFERING,
  GLOBUS_XIO_ORDERING_SET_BUF_SIZE,
  GLOBUS_XIO_ORDERING_GET_BUF_SIZE,
  GLOBUS_XIO_ORDERING_SET_MAX_BUF_COUNT,
  GLOBUS_XIO_ORDERING_GET_MAX_BUF_COUNT }

Functions

- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_ORDERING_SET_OFFSET**, globus_off_t offset)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_SET_MAX_READ_COUNT**, int max_read_count)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_GET_MAX_READ_COUNT**, int *max_read_count_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_SET_BUFFERING**, globus_bool_t buffering)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_GET_BUFFERING**, globus_bool_t *buffering_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_SET_BUF_SIZE**, int buf_size)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_GET_BUF_SIZE**, int *buf_size_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_SET_MAX_BUF_COUNT**, int max_buf_count)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_ORDERING_GET_MAX_BUF_COUNT**, int *max_buf_count_out)

8.4.1 Detailed Description

Header file for XIO ORDERING Driver.

8.5 globus_xio_tcp_driver.h File Reference

Macros

- #define **GLOBUS_XIO_TCP_INVALID_HANDLE**

Enumerations

- enum **globus_xio_tcp_error_type_t** { **GLOBUS_XIO_TCP_ERROR_NO_ADDRS** }
- enum **globus_xio_tcp_cmd_t** {

GLOBUS_XIO_TCP_SET_SERVICE,
GLOBUS_XIO_TCP_GET_SERVICE,
GLOBUS_XIO_TCP_SET_PORT,
GLOBUS_XIO_TCP_GET_PORT,
GLOBUS_XIO_TCP_SET_BACKLOG,
GLOBUS_XIO_TCP_GET_BACKLOG,
GLOBUS_XIO_TCP_SET_LISTEN_RANGE,
GLOBUS_XIO_TCP_GET_LISTEN_RANGE,
GLOBUS_XIO_TCP_GET_HANDLE,
GLOBUS_XIO_TCP_SET_HANDLE,
GLOBUS_XIO_TCP_SET_INTERFACE,
GLOBUS_XIO_TCP_GET_INTERFACE,
GLOBUS_XIO_TCP_SET_RESTRICT_PORT,
GLOBUS_XIO_TCP_GET_RESTRICT_PORT,
GLOBUS_XIO_TCP_SET_REUSEADDR,
GLOBUS_XIO_TCP_GET_REUSEADDR,
GLOBUS_XIO_TCP_SET_NO_IPV6,
GLOBUS_XIO_TCP_GET_NO_IPV6,
GLOBUS_XIO_TCP_SET_CONNECT_RANGE,
GLOBUS_XIO_TCP_GET_CONNECT_RANGE,
GLOBUS_XIO_TCP_SET_KEEPALIVE,
GLOBUS_XIO_TCP_GET_KEEPALIVE,
GLOBUS_XIO_TCP_SET_LINGER,
GLOBUS_XIO_TCP_GET_LINGER,
GLOBUS_XIO_TCP_SET_OOBINLINE,
GLOBUS_XIO_TCP_GET_OOBINLINE,
GLOBUS_XIO_TCP_SET_SNDBUF,
GLOBUS_XIO_TCP_GET_SNDBUF,
GLOBUS_XIO_TCP_SET_RCVBUF,
GLOBUS_XIO_TCP_GET_RCVBUF,
GLOBUS_XIO_TCP_SET_NODELAY,
GLOBUS_XIO_TCP_GET_NODELAY,
GLOBUS_XIO_TCP_SET_SEND_FLAGS,
GLOBUS_XIO_TCP_GET_SEND_FLAGS,
GLOBUS_XIO_TCP_GET_LOCAL_CONTACT,
GLOBUS_XIO_TCP_GET_LOCAL_NUMERIC_CONTACT,
GLOBUS_XIO_TCP_GET_REMOTE_CONTACT,
GLOBUS_XIO_TCP_GET_REMOTE_NUMERIC_CONTACT,
GLOBUS_XIO_TCP_AFFECT_ATTR_DEFAULTS,
GLOBUS_XIO_TCP_SET_BLOCKING_IO,
GLOBUS_XIO_TCP_GET_BLOCKING_IO }

- enum **globus_xio_tcp_send_flags_t** { **GLOBUS_XIO_TCP_SEND_OOB** = MSG_OOB }

Functions

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_SERVICE**, const char *service_name)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_SERVICE**, char **service_name_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_PORT**, int listener_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_PORT**, int *listener_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_BACKLOG**, int listener_backlog)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_BACKLOG**, int *listener_backlog_out)

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_LISTEN_RANGE**, int listener_min_port, int listener_max_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_LISTEN_RANGE**, int *listener_min_port_out, int *listener_max_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_server_cntl** (server, driver, **GLOBUS_XIO_TCP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_HANDLE**, globus_xio_system_socket_t handle)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_INTERFACE**, const char *interface)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_INTERFACE**, char **interface_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_RESTRICT_PORT**, globus_bool_t restrict_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_RESTRICT_PORT**, globus_bool_t *restrict_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_REUSEADDR**, globus_bool_t resuseaddr)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_REUSEADDR**, globus_bool_t *resuseaddr_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_NO_IPV6**, globus_bool_t no_ipv6)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_NO_IPV6**, globus_bool_t *no_ipv6_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_CONNECT_RANGE**, int connector_min_port, int connector_max_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_CONNECT_RANGE**, int *connector_min_port_out, int *connector_max_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_KEEPALIVE**, globus_bool_t keepalive)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_KEEPALIVE**, globus_bool_t keepalive)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_KEEPALIVE**, globus_bool_t *keepalive_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_KEEPALIVE**, globus_bool_t *keepalive_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_LINGER**, globus_bool_t linger, int linger_time)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_LINGER**, globus_bool_t linger, int linger_time)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_LINGER**, globus_bool_t *linger_out, int *linger_time_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_LINGER**, globus_bool_t *linger_out, int *linger_time_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_OOBINLINE**, globus_bool_t oobinline)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_OOBINLINE**, globus_bool_t oobinline)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_OOBINLINE**, globus_bool_t *oobinline_out)

- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_OOBINLINE**, globus_bool_t *oobinline_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_SNDBUF**, int sndbuf)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_SNDBUF**, int sndbuf)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_SNDBUF**, int *sndbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_SNDBUF**, int *sndbuf_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_RCVBUF**, int rcvbuf)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_RCVBUF**, int rcvbuf)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_RCVBUF**, int *rcvbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_RCVBUF**, int *rcvbuf_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_NODELAY**, globus_bool_t nodelay)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_NODELAY**, globus_bool_t nodelay)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_NODELAY**, globus_bool_t *nodelay_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_NODELAY**, globus_bool_t *nodelay_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_TCP_SET_SEND_FLAGS**, int send_flags)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_TCP_GET_SEND_FLAGS**, int *send_flags_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_LOCAL_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_server_cntl** (server, driver, **GLOBUS_XIO_TCP_GET_LOCAL_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_LOCAL_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_server_cntl** (server, driver, **GLOBUS_XIO_TCP_GET_LOCAL_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_REMOTE_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_REMOTE_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_AFFECT_ATTR_DEFAULTS**, globus_bool_t affect_global)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_SET_BLOCKING_IO**, globus_bool_t use_blocking_io)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_SET_BLOCKING_IO**, globus_bool_t use_blocking_io)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_TCP_GET_BLOCKING_IO**, globus_bool_t *use_blocking_io_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_TCP_GET_BLOCKING_IO**, globus_bool_t *use_blocking_io_out)

8.5.1 Detailed Description

Header file for XIO TCP Driver.

8.6 globus_xio_udp_driver.h File Reference

Macros

- #define **GLOBUS_XIO_UDP_INVALID_HANDLE**

Enumerations

- enum **globus_xio_udp_error_type_t** {
  GLOBUS_XIO_UDP_ERROR_NO_ADDRS,
  GLOBUS_XIO_UDP_ERROR_SHORT_WRITE }
- enum **globus_xio_udp_cmd_t** {
  GLOBUS_XIO_UDP_SET_HANDLE,
  GLOBUS_XIO_UDP_SET_SERVICE,
  GLOBUS_XIO_UDP_GET_SERVICE,
  GLOBUS_XIO_UDP_SET_PORT,
  GLOBUS_XIO_UDP_GET_PORT,
  GLOBUS_XIO_UDP_SET_LISTEN_RANGE,
  GLOBUS_XIO_UDP_GET_LISTEN_RANGE,
  GLOBUS_XIO_UDP_SET_INTERFACE,
  GLOBUS_XIO_UDP_GET_INTERFACE,
  GLOBUS_XIO_UDP_SET_RESTRICT_PORT,
  GLOBUS_XIO_UDP_GET_RESTRICT_PORT,
  GLOBUS_XIO_UDP_SET_REUSEADDR,
  GLOBUS_XIO_UDP_GET_REUSEADDR,
  GLOBUS_XIO_UDP_SET_NO_IPV6,
  GLOBUS_XIO_UDP_GET_NO_IPV6,
  GLOBUS_XIO_UDP_GET_HANDLE,
  GLOBUS_XIO_UDP_SET_SNDBUF,
  GLOBUS_XIO_UDP_GET_SNDBUF,
  GLOBUS_XIO_UDP_SET_RCVBUF,
  GLOBUS_XIO_UDP_GET_RCVBUF,
  GLOBUS_XIO_UDP_GET_CONTACT,
  GLOBUS_XIO_UDP_GET_NUMERIC_CONTACT,
  GLOBUS_XIO_UDP_SET_CONTACT,
  GLOBUS_XIO_UDP_CONNECT,
  GLOBUS_XIO_UDP_SET_MULTICAST }

Functions

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_HANDLE**, globus_xio_system_socket_t handle)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_SERVICE**, const char *service_name)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_SERVICE**, char **service_name_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_PORT**, int listener_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_PORT**, int *listener_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_LISTEN_RANGE**, int listener_min_port, int listener_max_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_LISTEN_RANGE**, int *listener_min_port_out, int *listener_max_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_INTERFACE**, const char *interface)

- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_INTERFACE**, char **interface_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_RESTRICT_PORT**, globus_bool_t restrict_port)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_RESTRICT_PORT**, globus_bool_t *restrict_port_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_REUSEADDR**, globus_bool_t resuseaddr)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_REUSEADDR**, globus_bool_t *resuseaddr_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_NO_IPV6**, globus_bool_t no_ipv6)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_NO_IPV6**, globus_bool_t *no_ipv6_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_HANDLE**, globus_xio_system_socket_t *handle_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_SNDBUF**, int sndbuf)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_SET_SNDBUF**, int sndbuf)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_SNDBUF**, int *sndbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_SNDBUF**, int *sndbuf_out)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_RCVBUF**, int rcvbuf)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_SET_RCVBUF**, int rcvbuf)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_GET_RCVBUF**, int *rcvbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_RCVBUF**, int *rcvbuf_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_UDP_GET_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_GET_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_UDP_GET_NUMERIC_CONTACT**, char **contact_string_out)
- globus_result_t **globus_xio_data_descriptor_cntl** (dd, driver, **GLOBUS_XIO_UDP_SET_CONTACT**, char *contact_string)
- globus_result_t **globus_xio_handle_cntl** (handle, driver, **GLOBUS_XIO_UDP_CONNECT**, char *contact_string)
- globus_result_t **globus_xio_attr_cntl** (attr, driver, **GLOBUS_XIO_UDP_SET_MULTICAST**, char *contact_string)

8.6.1 Detailed Description

Header file for XIO UDP Driver.

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