

GT 4.2.0 Component Guide to Public Interfaces: XIO

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Chapter 1. XIO APIs

1. Programming Model Overview

Globus XIO is based on an event based asynchronous programming model. This model is described in great detail at: [Asynchronous Event Handling](#). In short, with Globus XIO, connections are opened and closed. While open, read and write requests are posted with a callback function pointer given by the user. When the event completes, the given callback is called.

2. Component API

You can find documentation of the XIO library at:

http://www.globus.org/api/c/globus_xio/html/index.html

For information on the internationalization API, see [Chapter 1, APIs](#).

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Chapter 2. Environmental variables

1. Environmental variables for XIO

The vast majority of the environment variables that effect the Globus XIO framework are defined by the driver in use. The following are links to descriptions of the more common driver environment variables:

- http://www.globus.org/api/c-globus-4.2.0/globus_xio/html/group_tcp_driver_envs.html
- http://www.globus.org/api/c-globus-4.2.0/globus_xio/html/group_file_driver_envs.html
- http://www.globus.org/api/c-globus-4.2.0/globus_xio/html/group_gsi_driver_envs.html
- http://www.globus.org/api/c-globus-4.2.0/globus_xio/html/group_udp_driver_envs.html

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Appendix A. Errors

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Table A.1. XIO Errors

Error Code	Definition	Possible Solutions
Operation was canceled	An I/O operation has been canceled by a close or a cancel	In most cases this will be intentionally performed by the application developer. In unexpected cases the application developer should verify that there is not a race condition relating to closing a handle.
Operation timed out	Occurs when the application developer associates a timeout with a handle's I/O operations. If no I/O is performed before the timeout expires this error will be triggered.	The remote side of connection might be hung and busy. The network could have higher latencies than expected. The filesystem might be over worked.
An end of file occurred	This occurs when and EOF is detected on the file descriptor	When doing file I/O this like means you read to the end of the file and thus you are finished and should now close it. On network connections however it means the socket was closed on the remote end. This can happen if the remote side suddenly dies (seg-fault is common here) or if the remote side chooses to close the connection.
Contact string invalid	A poorly formed contact string was passed in to open	Verify the format of the contact string with the documentation of the drivers in use.
Memory allocation failed on XXXX	malloc failed. The system is likely quite overloaded	Free up memory in your application
System error in XXXX	A low level system error occurred. The errno and errstring should indicate more information.	
Invalid stack	The requested stack does not meet XIO standards	Most likely a transport driver is not on the bottom of the stack, or 2 transport drivers are in the stack.
Operation already registered	With certain common drivers like TCP and FILE, only one specific operations can be registered at a time (1 read, 1 write). If another operation of the same type is posted to the handle before receiving the previous operations callback, this error can occur.	Restructure the application code so that it waits for the callback before registering the next IO operation.
Unexpected state	The internal logic of XIO came across a logical path that should not be possible. Often times this is due to application memory corruption or trying to perform an IO operation on a closed or otherwise invalid handle.	Use valgrind or some sort of memory management tool to verify there is no memory corruption. Try to recreate the problem in a small program. Submit the program and the memory trace at bugzilla.globus.org
Driver in handle has been unloaded	A driver associated with the offending operation has already been unloaded by the application code.	Verify that you are not unloading drivers until they are no longer in use.

Error Code	Definition	Possible Solutions
Module not activated	globus_module_activate(GLOBUS_XIO_MODULE); has not been called.	Call this before making any other XIO API calls.

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