



## Gamepipe Networking Framework

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The GNET Framework provides a multi-threaded and easy to use networking architecture. It can be used for networked games as well as for desktop applications. Just put your data into a C++ structure, register it with GNET, and send it off! GNET handles the rest, and can even guarantee that the packet is delivered successfully.

### *We Handle Shipping!*

Who knew sending entire structures across the net could be so EASY?

We did, so after registering your packet with us, you never need to worry about encoding or decoding it.

### *A Well Designed Architecture*

We do all the frustrating memory handling and thread coordination, so you don't have to worry about it.

### *Never Lose a Packet!*

With our optional reliability layer, you'll never lose a packet. The framework will keep trying to send it until the packet's receiver says, "Thank you."

### *Are You Still There?*

If one host hasn't heard from another, they'll play Marco Polo to make sure the connection hasn't timed out.

### Three Threads

GNET uses a three threaded architecture to facilitate networking: a send thread, a receive thread, and a logic thread. They communicate via semaphores and send/receive buffers. This is invisible to the user, who is able to use GNET in their single threaded application, as all the memory controls are handled within the calls to GNET.

### Architecture and Memory

GNET's architecture makes heavy use of composition, which enables the framework to be easily understood, maintained, and extended. It also uses a counted

pointer class with many structures within the framework to minimize CPU use by avoiding excessively copying and allocating data.

### Packet Serialization

To simplify sending data across the network, GNET can serialize any structure after it has been registered as long as it does not have any pointers in it. To deal with pointers, variable size arrays, or any other data which could be pruned dynamically; a user can easily override the default encoding and decoding behavior for a specific packet structure.

### Reliable UDP Send Flag

By using the User Datagram Protocol, GNET is able to achieve the transfer speeds required by interactive applications, but in doing so, sacrifices reliability. GNET's reliability layer, when used, will guarantee delivery of a packet by sending it repeatedly until an Ack packet is received.

### Connection Timeout Handling

If a host has not been active recently, GNET can ensure that a connection is still alive by sending a Marco packet to the timed out host. If the host repeatedly fails to respond the host is disconnected.