Application Overview

The Network Flow Check Application (FlowCheck) is a bandwidth assessment tool for use with GeoPlex Peers. FlowCheck enables a user, running on a Peer computer, to execute several different types of tests to determine the average bandwidth throughput available between the Peer computer and the GeoPlex cloud Gate to which it is authenticated. This enables the user to estimate the average IP traffic flow capabilities available for accessing GeoPlex-based services provided by the cloud. For example, a collaborative application on a high bandwidth network would include both shared video and audio; in a lower-bandwidth setting (i.e. over a modem or ISDN line) would only include shared audio. Based on the bandwidth available, the functionality of a GeoPlex service can be adjusted accordingly.

Implementation Details

The Network Flow Check Application consists of a Client Peerlet and a Gate-side Proxy. The proxy is registered as a service (on GUNet, gunet.net, its handle is EchoProxy) and should be announced every time it's started and denounced when stopped and unavailable. This proxy should be running on each gate to which a client might want to connect. The proxy itself is a simple one, it only waits for connections and opens up a new thread for each received connection. It then reads from the socket until the end of the sent packet (buffers of “0”s are sent, the ending packet signified by a buffer of “1”s). The proxy then signals the receipt of the packet to the client by sending an acknowledgement (ACK).

In turn, the client's implementation is slightly more complicated, mostly because of the GUI. It is assumed that the user is authenticated to the GeoPlex Cloud (in this case, GUNet) prior to starting the Client Peerlet. The Peerlet thus detects the connection domain, but cannot determine the exact gate. Thus the peerlet assumes that the proxy is running on the cloudvip at port 7172 on the detected cloud domain. The user has an option of changing the connection information. The user needs to choose what type of connection she/he has. It is better to choose the correct type, or assume a fast connection, to obtain a more precise estimation. To estimate, the user presses the Start button. The client opens a socket to the proxy and sends the stream of “0”s trailed by a “1”. The progress bar indicates the state of the process. The client then waits to receive the acknowledgement of the receipt by the proxy. The operation is timed and this way the throughput is estimated.

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Future Ideas

There are several ways in which this tool could be extended and enhanced in absence of the ready-developed QoS API.

1. **Estimate UDP Traffic**: GeoPlex does not yet support UDP proxying and UDP-based services. Most collaborative and multimedia network applications are UDP-based.

2. **Traffic Monitor Service**: This application could be used to create a simple API that other Peer and Peerlet Clients could employ directly, within their applications. Currently Quality of Service API are being developed and would have a tight connection to estimating which kind of connection to set up.

3. **Traffic Flow from Client Peer to Service Peer**: Extend the application to monitor the course of the traffic, past the GeoPlex Gate, through the Cloud, and off to the Peer providing a specific service. Accomplishing this will require additional, and more sophisticated, Proxies as well as some facility for Service Peers to receive the packet transmissions needed to generate the estimate. This could also be further extended to work between any two Peer nodes.