Visualizing the gnutella overlay network

Geographic peer location:
We will augment the ION P2P gnutella data with geographic information using geomapping software to convert IP address to geographic data (country, latitude/longitude). The geographic data serves two purposes:
   (a) can be used for layout purposes for both 2D and 3D visualizations
   (b) can be used as a parameter for research inquiry

Proposed research questions for the visualization:

Q1: How do the following node characteristics vary with geographic region?
   Node degree
   Number of leaves
   Clustering coefficient
   Uptime (is this info easily available?)
   Implementation (Lime-Wire, BearShare, other)

Q2: What is the distribution of inter-regional connections in the top level overlay?

Q3: To what extent do regional sub-networks exhibit small world properties (low shortest paths and high clustering coefficients)

Proposed visualization techniques to be explored:

2D v. 3D
animation of time series data
interactive features, navigation through the visualization

Assignments for 4/19/07 (more details coming)

Geomapping Team (led by Shad Stafford)
   Decide on best geomapping software and order it
   Pre-process one set of data for our use (one small sample set, later complete sets)

Viz SW evaluation team (Tim Halverson)
   Evaluate candidate SW listed on wiki (and search for other candidates)
   Propose best candidates for the criteria of 3D, interactivity, scalability
   Prepare in-class presentation for next week

Gnutella research team (led by Peter Boothe)
   Discuss the above three research questions, refine, focus.
   Give preliminary thoughts about effective ways to visualize.
   Introduce additional interesting research question(s).
Decide whether we will do one, two, or three.