**Bellcore**
Bell Communications Research

**Proposal to Participate in International Workshop on Feature Interaction**

Mark Rosenstein
Bellcore

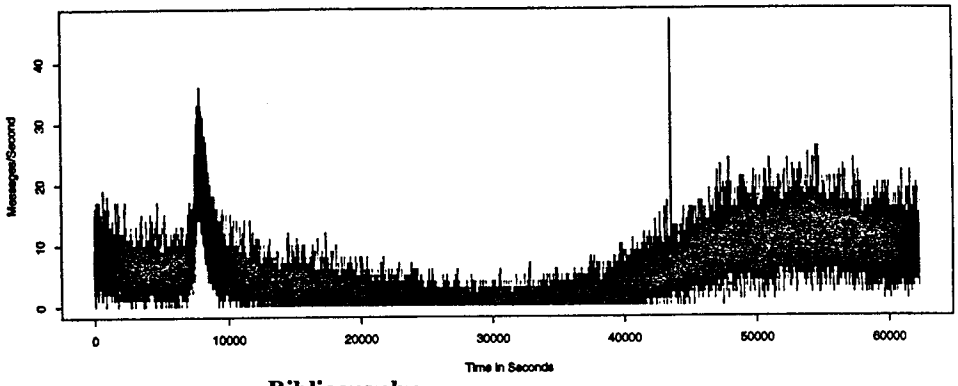
Relevant to this workshop, we have been pursing research to develop methodologies and tools which will help users discover "events" in Signaling System 7 (SS7) networks. SS7 is a common channel signaling protocol used to exchange information between telephone network elements, such as in phone call setup. A goal is to embrace broadly defined events which will allow an exploration of the space of phenomena occurring in the network. Our current analysis is based on data collected over a year ago, which is providing us a baseline to compare data scheduled to be collected over the summer of 1992. We are very interested in cases where things are not going well, and feature interaction certainly falls under that broad cover.

Data is collected with a #2 NSTS, which records SS7 traffic at the granularity of millisecond timestamped messages, basically recording all the bits on a signaling link. The NSTS can record up to 16 simultaneous links with our dataset consisting of 7 links at each of two paired Signaling Transfer Points (STPs) taken over 18 hours. Linnel[1991] contains a detailed description of the data.

Figure 1, taken from Duffy[1992], shows message counts by second on a single link from this data. The peak around time 9000 is a New Year's Eve peak. More interesting is the 2 second peak at approximately 43000, near 10 am. This peak is clearly larger than New Year's Eve and of further interest because on analysis, little of the traffic is call setup. It is this type of event our tools are aimed at helping users detect and analyze, events that are unexpected and either individually or in combination with other factors could have significant impact on the network.

Our system consists of a computer software prototype 3D graphics visualization system which takes advantage of human perceptual abilities to detect patterns in spacial presentations. Also provided are SS7 specific environments to look at the data both from a traffic analysis standpoint, and at a packet by packet or at call setup by call setup level.

If invited to this workshop, I would be very interested in giving a short presentation of our work, especially being able to show a videotape of our tools in action. Certainly the exciting part of this work is discovering uncharted events. We are very interested in all types of interaction. Our current dataset has very few high level features (indicated by very low CLASS™ traffic). On our agenda for the data collected this summer is looking for feature interactions and possibly, we will have an interesting event or two to show.




**Bibliography**

Duffy, Diane, and Willinger, Walter*(1992). Analysis of CCSN/SS& Traffic Data at the Message Level*, Bellcore TR pending.

Kagan, J.S., Linnel, M.G., and Weingarten, A. (1991). *Validation of CCSN/SS7 Link Traffic Engineering Algorithms by Use of Actual Data.* Bellcore TM-TSV-019329.

email: mbr@bellcore.com
445 South Street, Room MRE-2A359
Morristown, NJ 07960 USA
Phone: +1 201 829 4037
Fax: +1 201 829 5981