Ethernet Packet Statistics

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Introduction

- **Statistics of Ethernet traffic, e.g. peak/mean seem to vary depending on the measurement time scale**
- **Recent papers suggest that this traffic is *Fractal* in nature**
- **We have repeated the work of some of these**

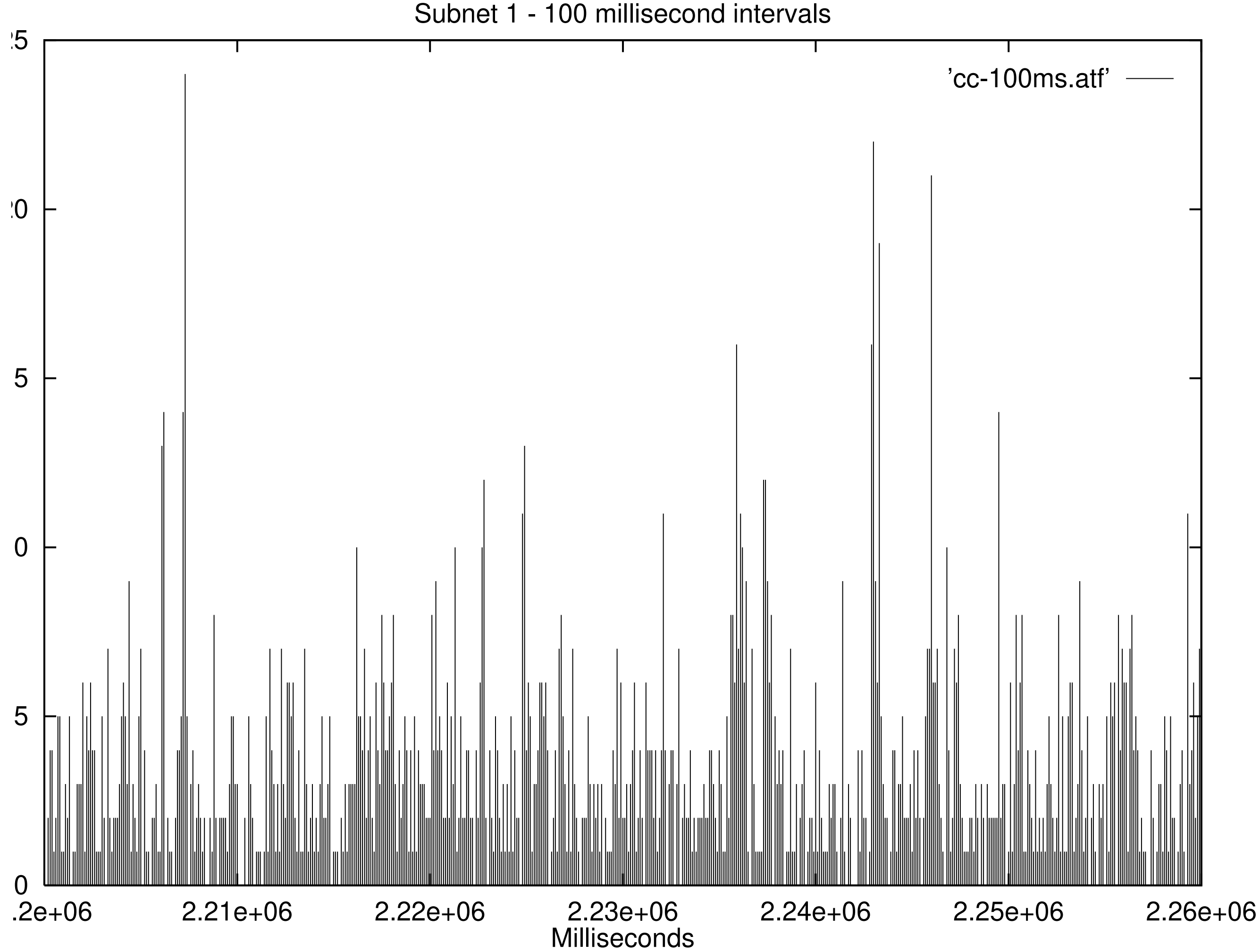
Data Collection

- We use a PC, with packet drivers to receive packets.
- Assembler routines allow us to read the PC real-time clock with 0.2 ms resolution
- The arrival time and first 50 bytes of every packet are written to hard disk

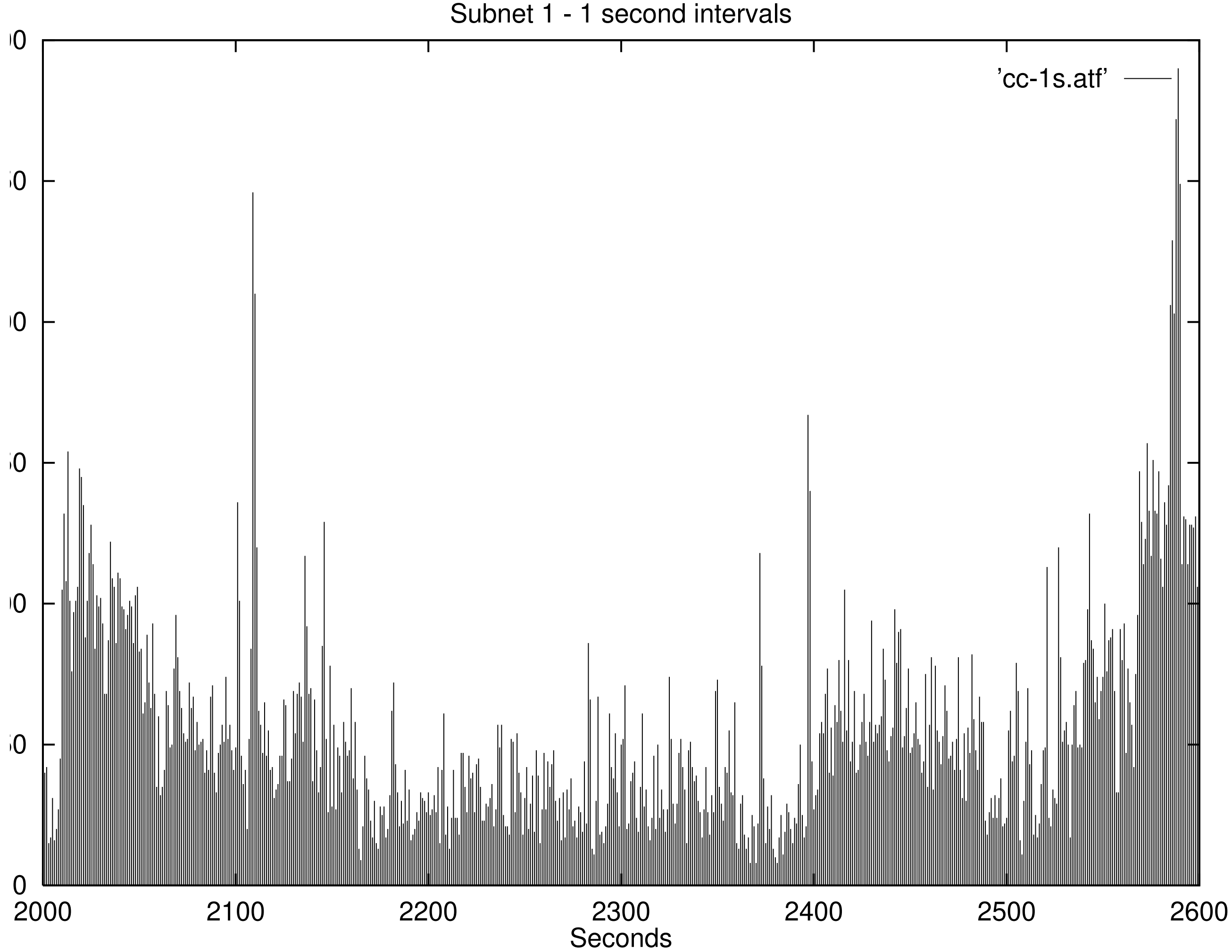
LAN traffic

- We have collected data from a fairly busy LAN, and on our Internet Gateway (DMZ) Ethernet
- LAN has IP, Novell, EtherTalk and DECnet
- Gateway has only IP
- Next four slides show LAN traffic ..

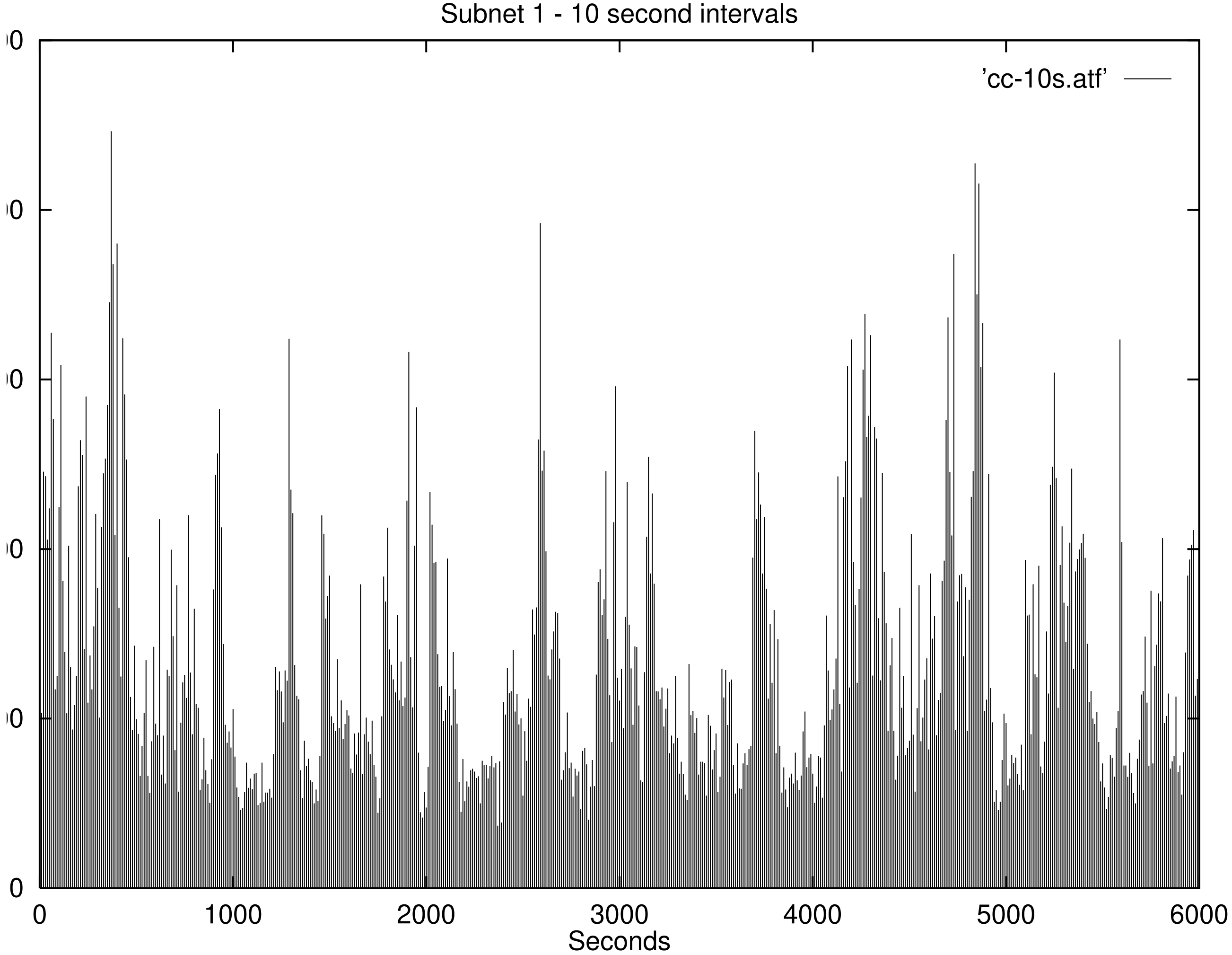
Packets per 0.1s



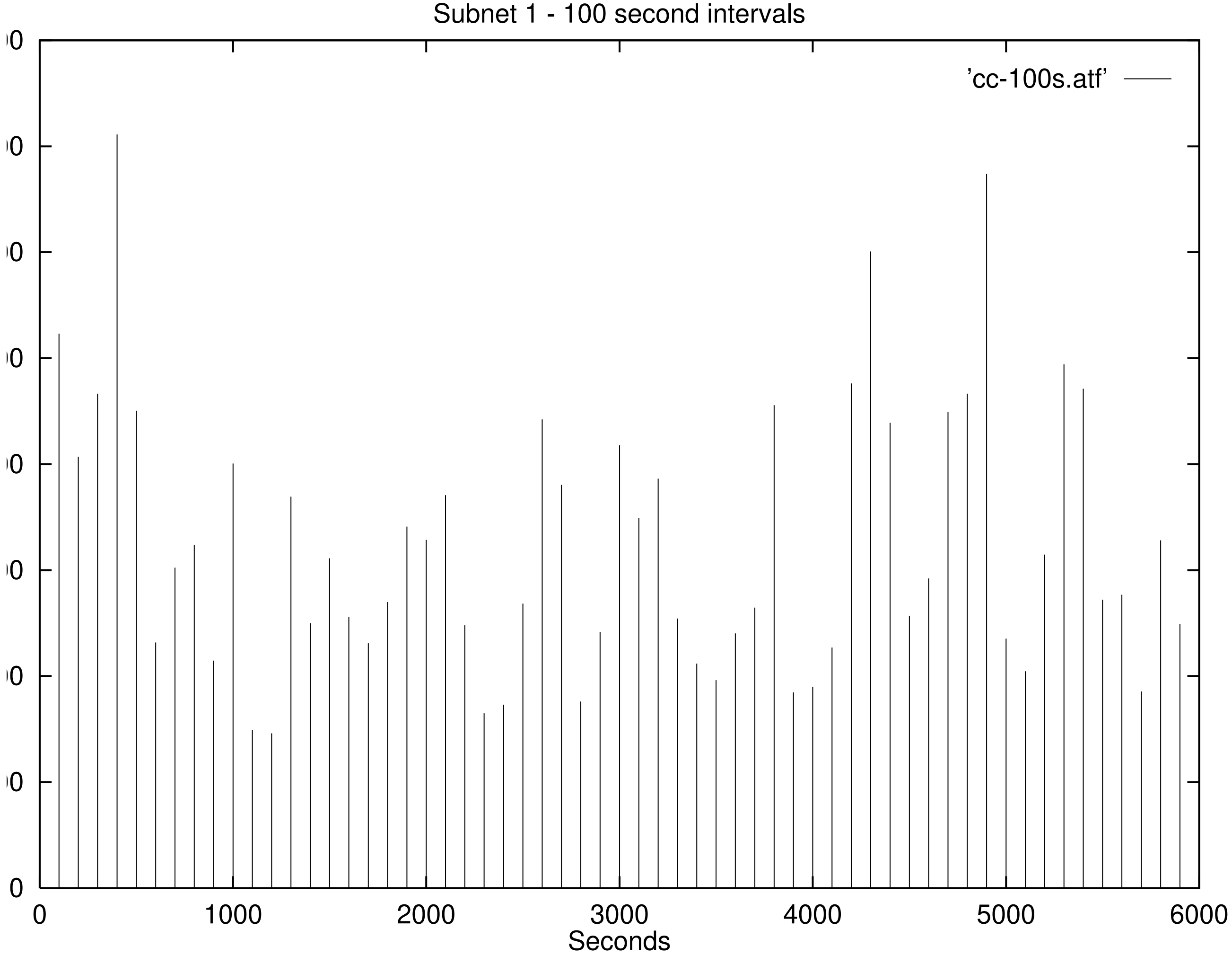
Packets per 1s



Packets per 10s



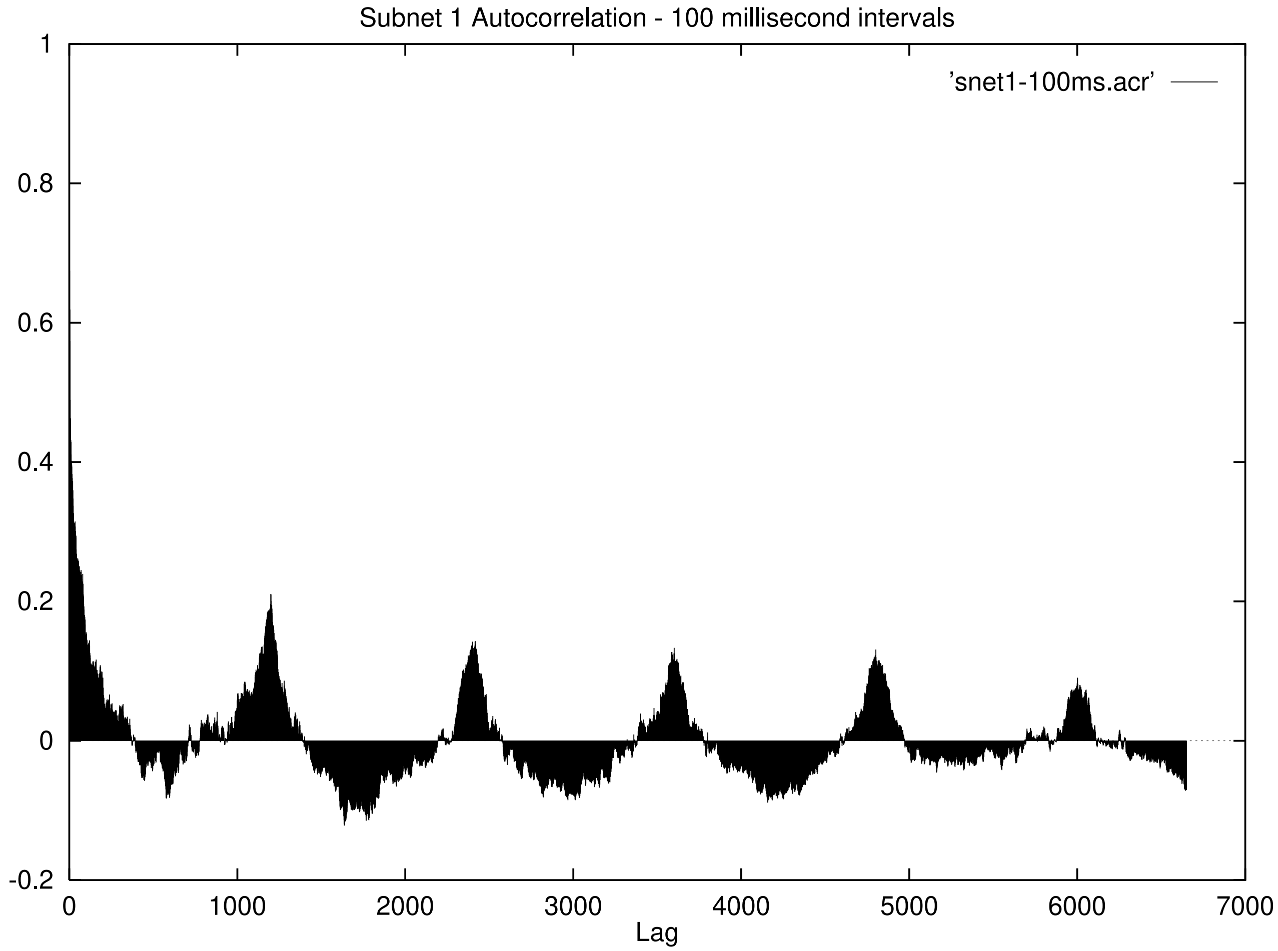
Packets per 100s



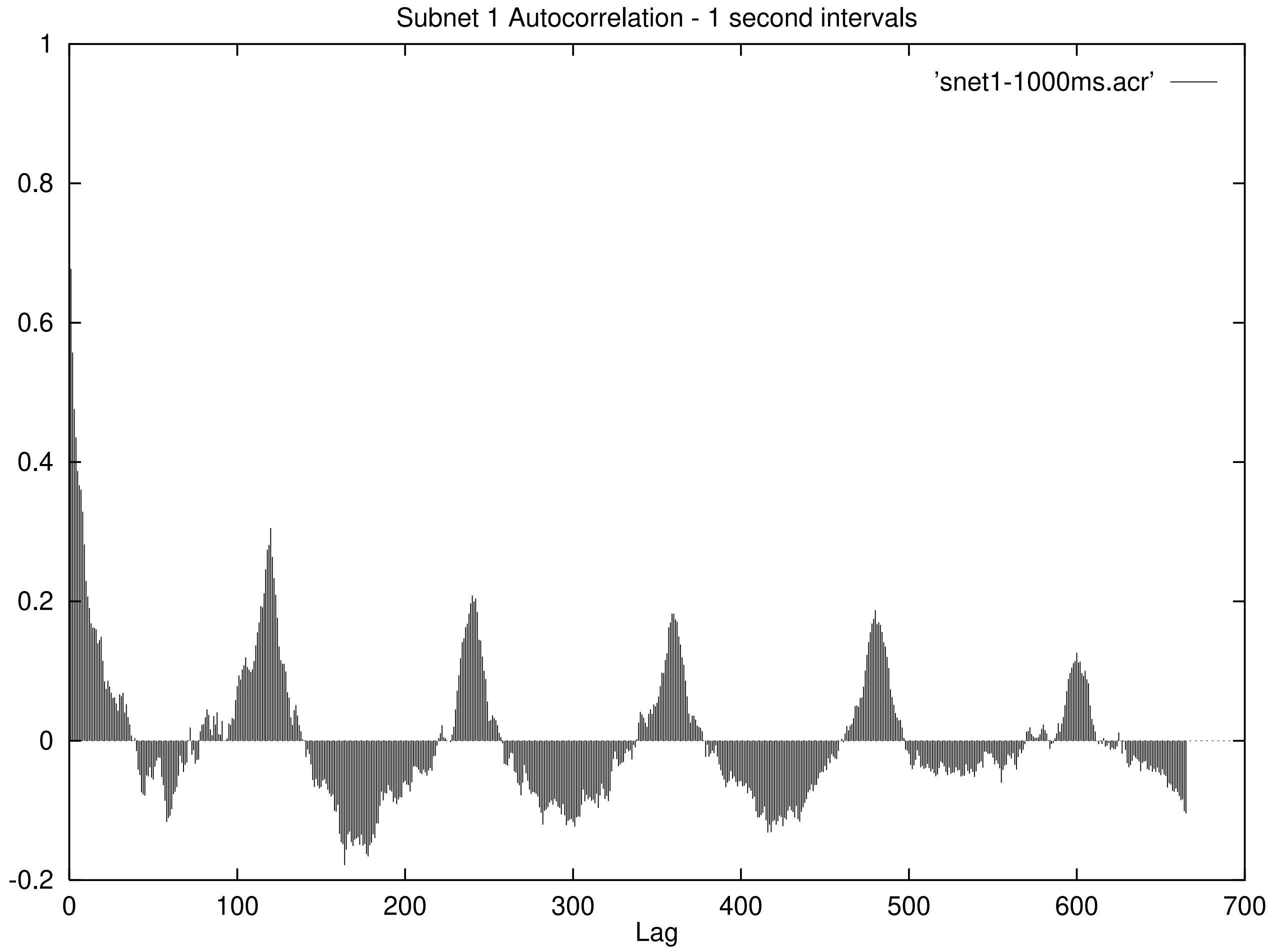
Autocorrelations

- **Recorded traffic is summed over fixed intervals**
- **Autocorrelations of these sums follow ..**

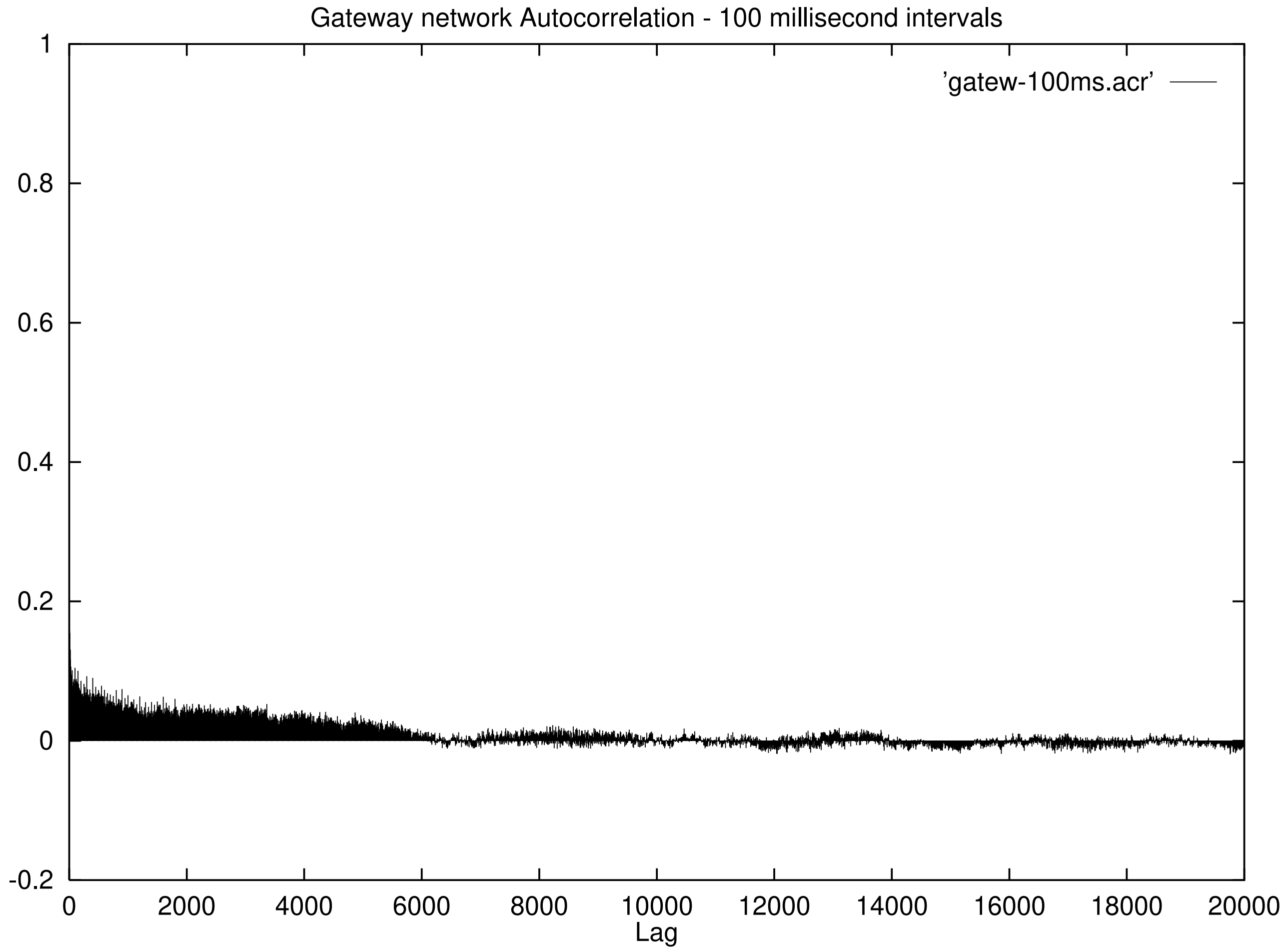
LAN Autocorrelation, 0.1s sums



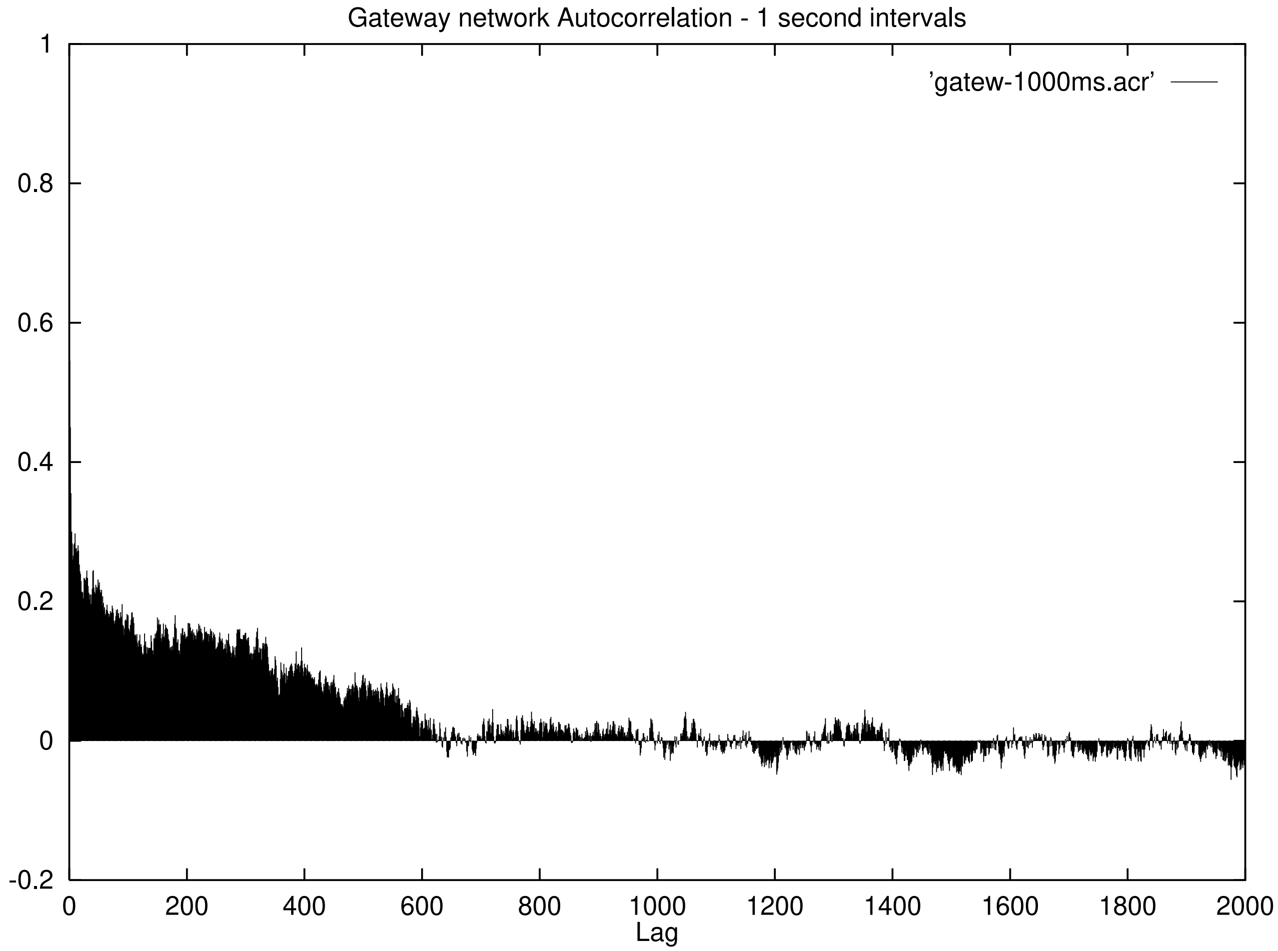
LAN Autocorrelation, 1s sums



Gateway Autocorrelation, 0.1s sums



Gateway Autocorrelation, 1s sums



Comments

- The 2m Novell SAP announcements dominate both the LAN plots – even though these peaks aren’t visible on the traffic plots!
- The gateway plots don’t show any repetitive traffic. But both show short-term correlation, fading out after about 600s

Further Work

- We are attempting to create a practical traffic model for Ethernet and LAN traffic
- If we can do this we will try to derive useful performance measures from it, which should be useful in describing real network behaviour