



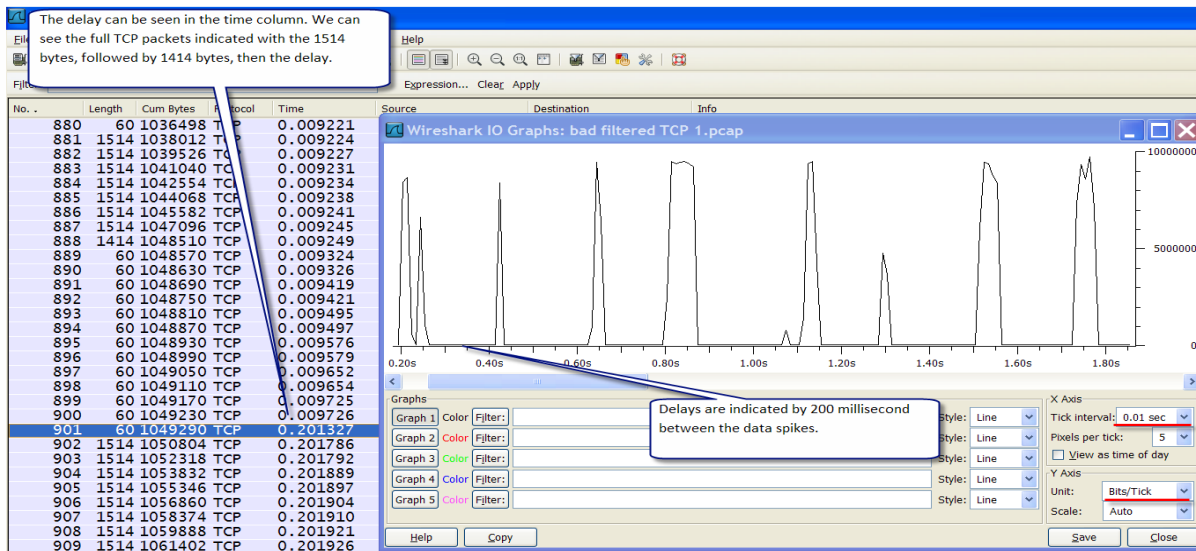
Under the Hood - Oct 2009

As I imagine most of you are, I'm always looking for performance tuning ideas, something that really helps improve performance, preferably with minimal cost. Recently, while reviewing trace files, I discovered the cause of an issue I was troubleshooting: Nagle's algorithm had struck again. Don't get me wrong, I'm not against Nagle or his algorithm, but I don't like it when things work against you, like my wife's car, which has an alarm system that locks all the doors, usually when you least expect it. I like the thought of safety, but lock all the doors but mine. I'll lock my own door, thank you.

Nagle's *Congestion Control in IP/TCP Internetworks (RFC 896)* describes what he called the 'small packet problem,' where an application repeatedly emits data in small chunks, frequently only one byte in size. Since TCP packets have a 40 byte header (20 bytes for TCP, 20 bytes for IP) and Ethernet 18 byte (14 bytes source and destination, type and 4 bytes CRC), this results in a 59 byte packet for one byte of useful information, a huge and usually unnecessary overhead. This situation often occurs in Telnet sessions, where most key presses generate a single byte of data that is transmitted immediately. Worse yet, over slow links, many such packets can be in transit at the same time, potentially leading to congestion collapse.

Just as my wife's car locks all the doors, with good intentions, Nagle's Congestion Control can have a negative effect. In Figure 1:1 a 200 millisecond delay interrupts the flow of data being transmitted. Using IO Graphs within Wireshark it becomes more obvious.

Figure 1:1 Wireshark trace indicating 200 millisecond delays, IP Graphs with 200 millisecond delays between data throughput spikes



Correcting the problem was straight forward by turning off Nagle's setting, a registry setting with Microsoft.

One last word of wisdom: always monitor the results of any tuning configuration changes carefully to be absolutely sure that it has a positive impact. I always look through the trace file that is measuring the results to confirm that the change had a positive effect.

For more technical tips see www.gearbit.com/techtips

Sharkfest 2009 Follow Up

The second annual Sharkfest was a big success and even more exciting than the first. What sets this conference apart is the core group of network analysts who contribute information and techniques. From Laura Chapel's information on finding hacks and viruses to Jerold Comes sharing his extensive knowledge of Wireshark core code and how it works. Also, the vendors' support and sponsorships add a unique flair. With technology as a core theme, their focus is on doing what they do and doing it well.

For more information on presentations given by Ray Tomkins at Sharkfest go to www.gearbit.com/news

gearbit Product Announcement

- Monitor - gear up your network with the latest monitoring equipment
- Proactive analysis – catch problems before they affect your users
- Expert Assessment - evaluate and improve your networks performance



The **gearbox** is equipped with a packet engine that inspects every packet. This expert deep packet analysis examines each packet for any issues and outputs accurate, detailed reports defining the problem.

We also include a select group of tools developed with automation intelligence that are configured for optimal effectiveness in locating network issues.

We provide superior support from knowledgeable network analysts with real world experience in identifying and solving network issues. The end result is a cost effective network monitoring solution. Contact us at sales@gearbit.com

gearbit Network Analysis Training

Our Network Analysis training class provides a detailed view of protocols and how they flow through the network. The goal of this course is to empower the analyst with advanced troubleshooting techniques. You will never look at packets the same way. This fascinating view through an analyzer reveals the true nature of a network and the engineering that supports popular technology applications. Key concepts covered include:

- a review of packet traces that have problems at various layers of the OSI
- client and server misconfigurations
- application analysis
- throughput measurement
- performance effectiveness

Cost \$695 Network Analysis Training – 2 day class [Register here](#) @gearbit.com

- **Houston TX**, Oct 8 & 8 2009, 519 North Sam Houston Pkwy, Suite 600, Houston, TX 77060
- **Austin TX**, Oct 29 & 30 2009, Courtyard Marriott at 3713 Tudor Blvd. Austin, TX 78759