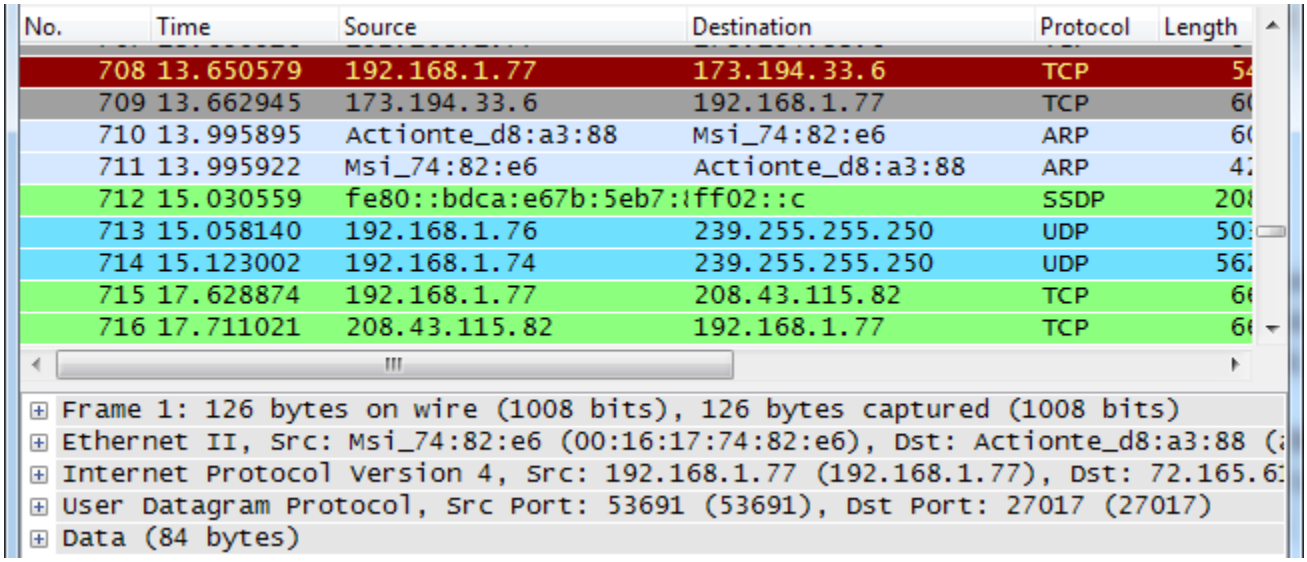
How to Use Wireshark to Capture, Filter and Inspect Packets



Wireshark, a network analysis tool formerly known as Ethereal, captures packets in real time and display them in human-readable format. Wireshark includes filters, color-coding and other features that let you dig deep into network traffic and inspect individual packets.

This tutorial will get you up to speed with the basics of capturing packets, filtering them and inspecting them. You can use Wireshark to inspect a suspicious program's network traffic, analyze the traffic flow on your network or troubleshoot network problems.

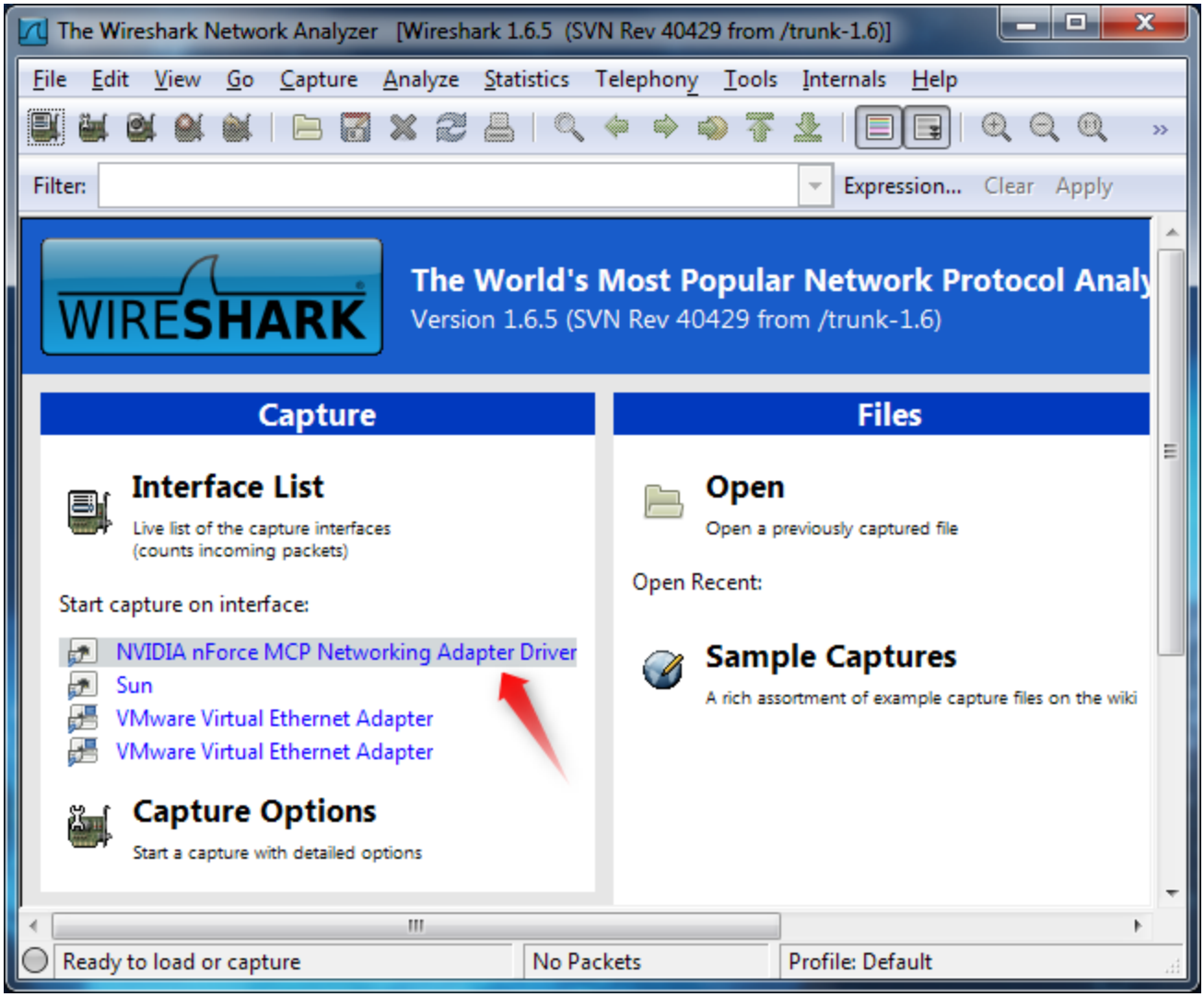
Getting Wireshark

You can download Wireshark for Windows or Mac OS X from its official website. If you're using Linux or another UNIX-like system, you'll probably find Wireshark in its package repositories. For example, if you're using Ubuntu, you'll find Wireshark in the Ubuntu Software Center.

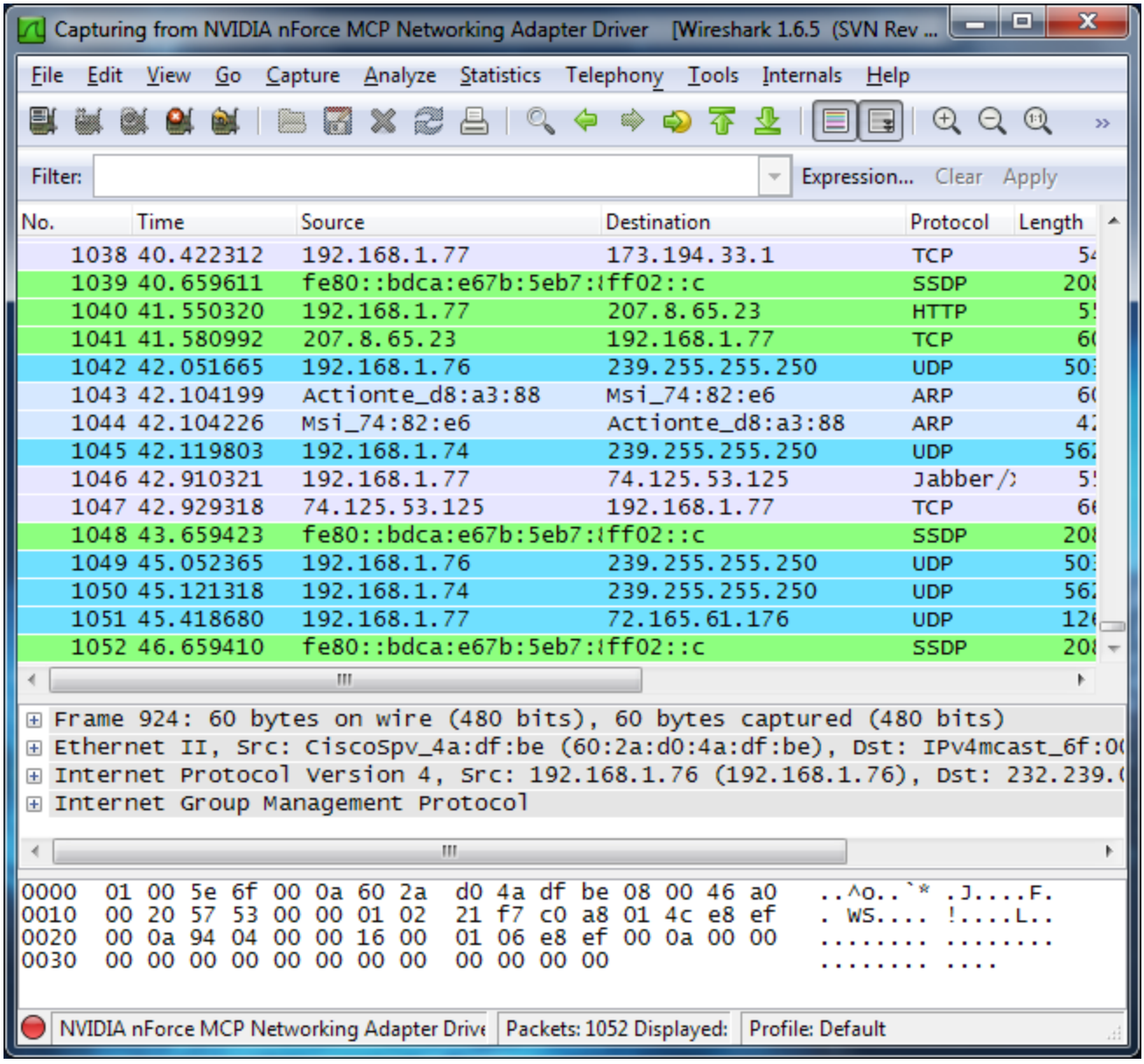
Just a quick warning: Many organizations don't allow Wireshark and similar tools on their networks. Don't use this tool at work unless you have permission.

Capturing Packets

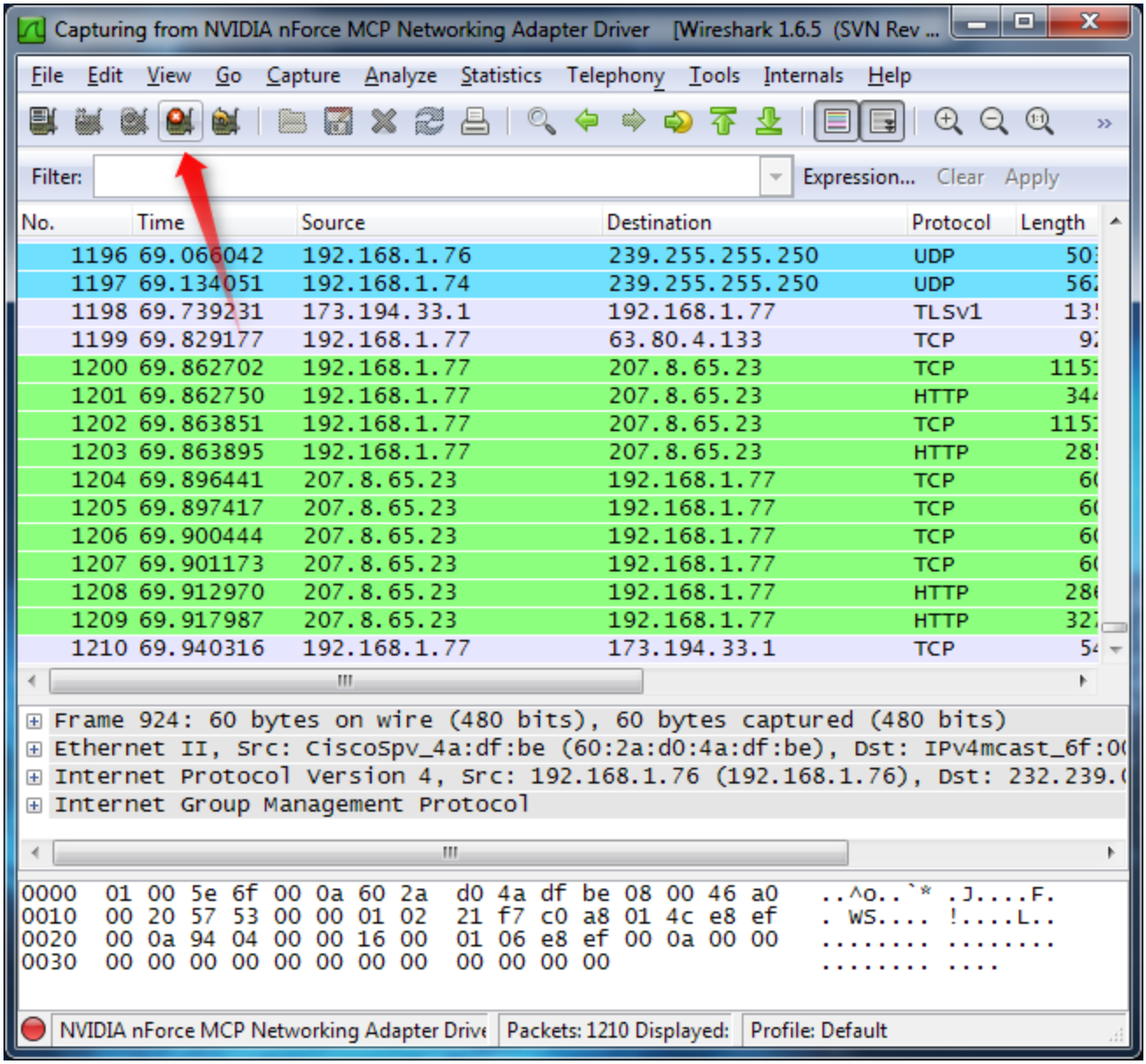
After downloading and installing Wireshark, you can launch it and click the name of an interface under Interface List to start capturing packets on that interface. For example, if you want to capture traffic on the wireless network, click your wireless interface. You can configure advanced features by clicking Capture Options, but this isn't necessary for now.



As soon as you click the interface's name, you'll see the packets start to appear in real time. Wireshark captures each packet sent to or from your system. If you're capturing on a wireless interface and have promiscuous mode enabled in your capture options, you'll also see other the other packets on the network.

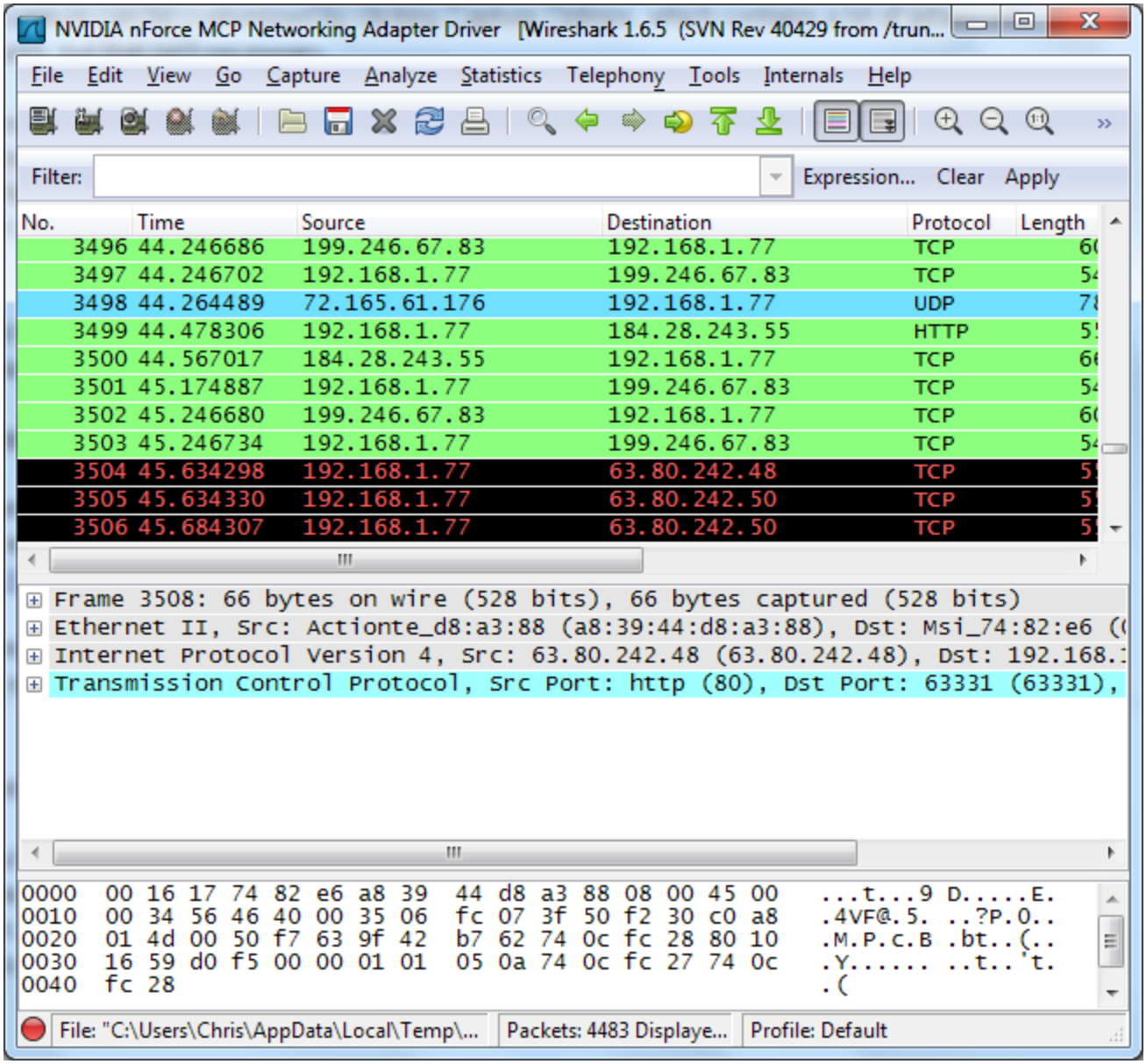


Click the stop capture button near the top left corner of the window when you want to stop capturing traffic.



Colour Coding

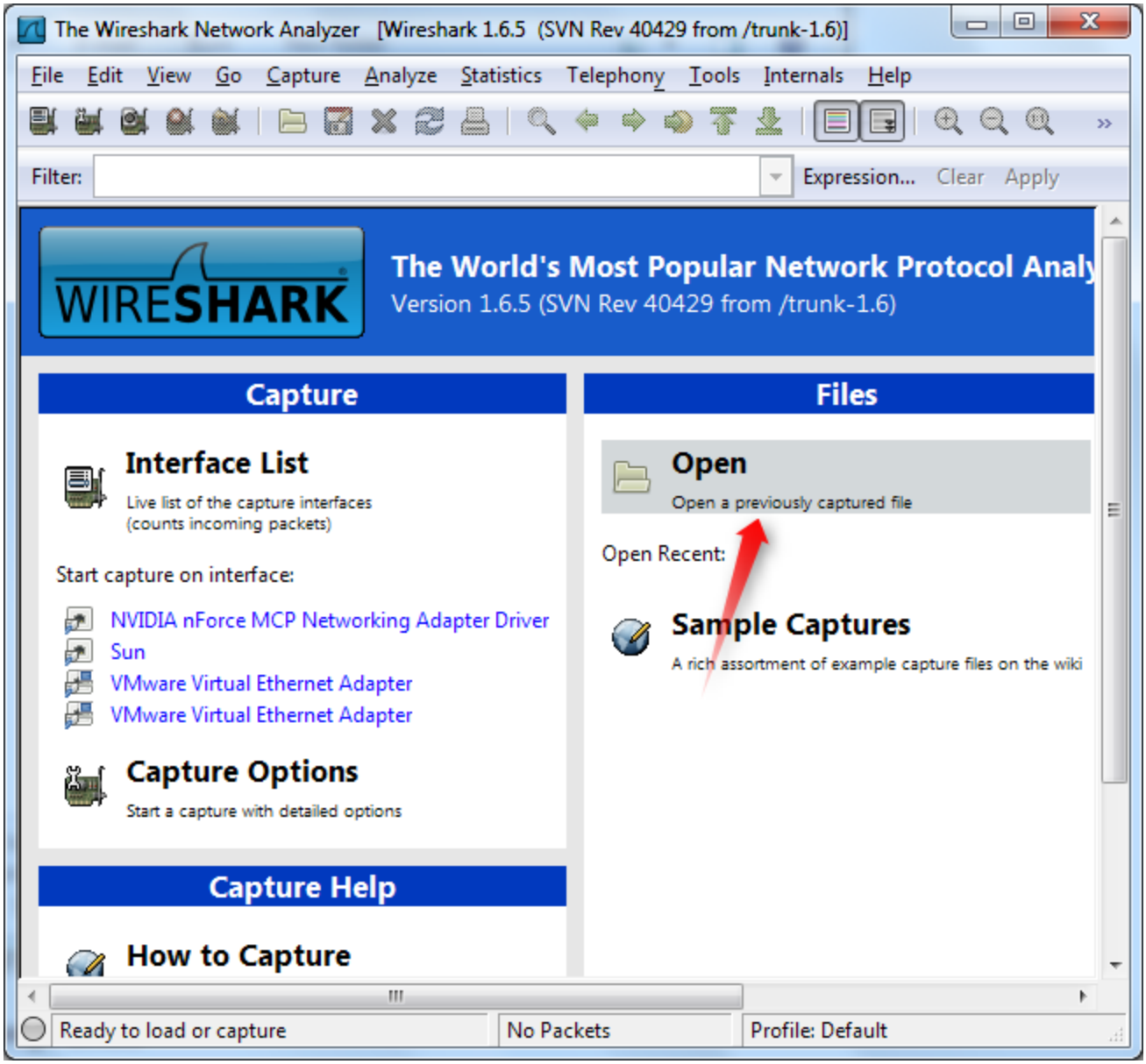
You'll probably see packets highlighted in green, blue and black. Wireshark uses colours to help you identify the types of traffic at a glance. By default, green is TCP traffic, dark blue is DNS traffic, light blue is UDP traffic and black identifies TCP packets with problems — for example, they could have been delivered out-of-order.



Sample Captures

If there's nothing interesting on your own network to inspect, Wireshark's wiki has you covered. The wiki contains a page of sample capture files that you can load and inspect.

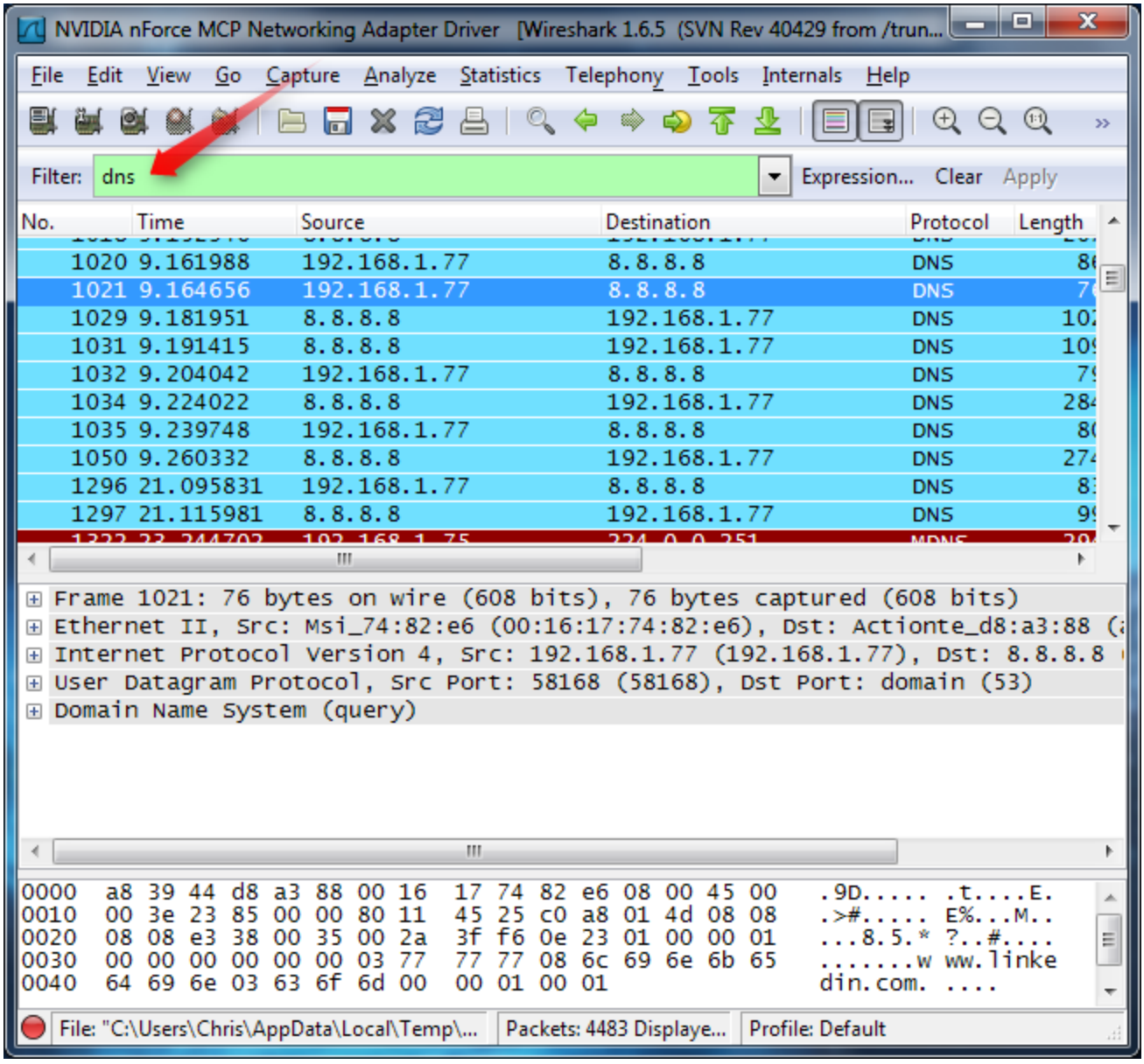
Opening a capture file is easy; just click Open on the main screen and browse for a file. You can also save your own captures in Wireshark and open them later.



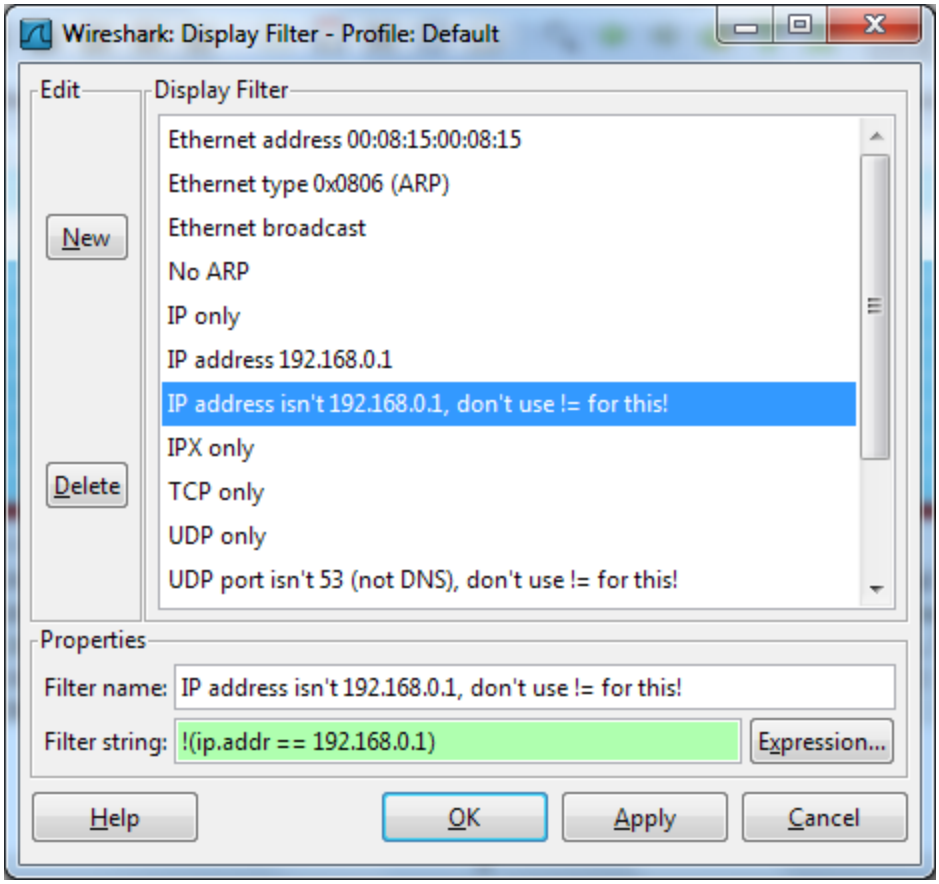
Filtering Packets

If you're trying to inspect something specific, such as the traffic a program sends when phoning home, it helps to close down all other applications using the network so you can narrow down the traffic. Still, you'll likely have a large amount of packets to sift through. That's where Wireshark's filters come in.

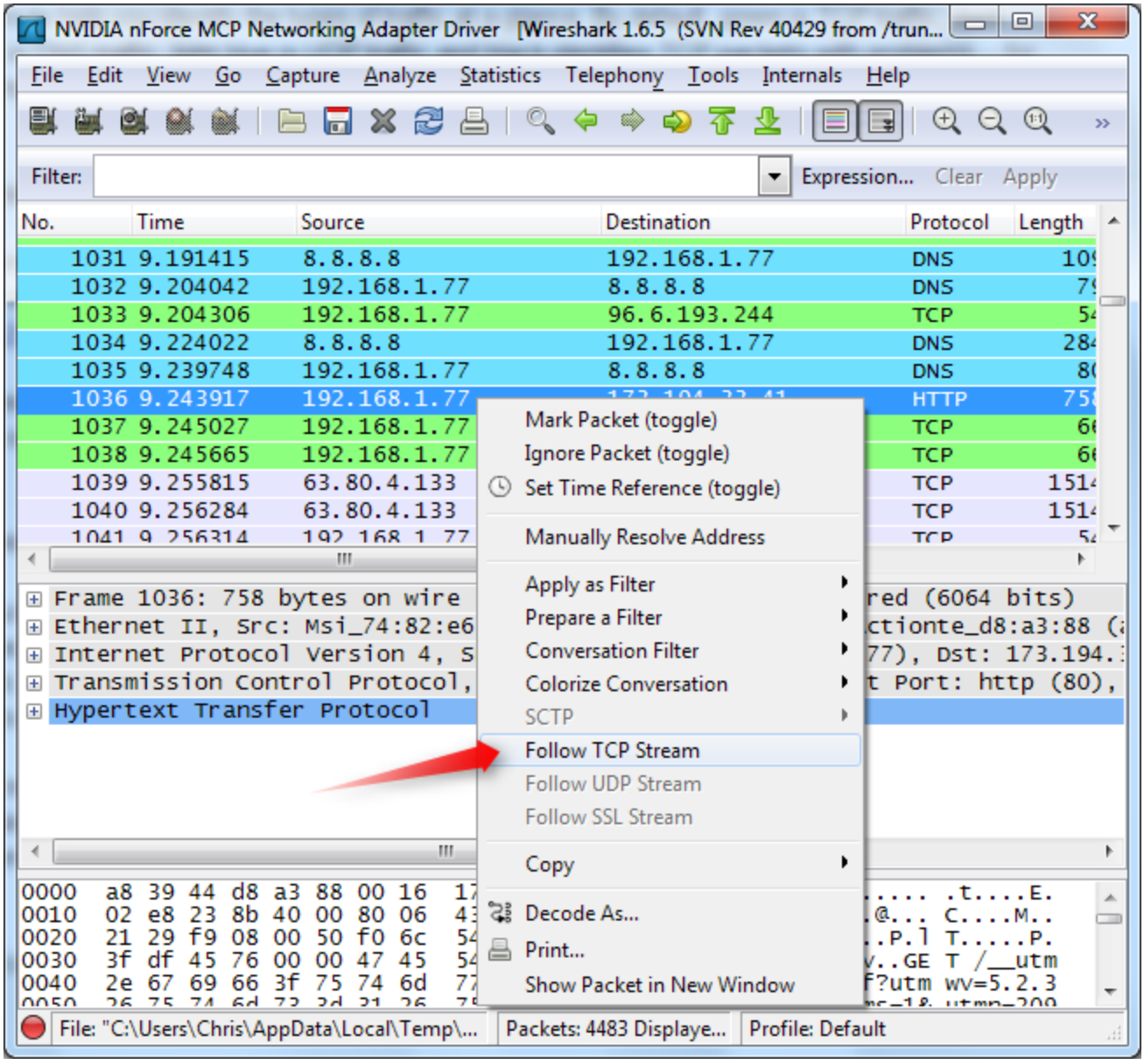
The most basic way to apply a filter is by typing it into the filter box at the top of the window and clicking Apply (or pressing Enter). For example, type "dns" and you'll see only DNS packets. When you start typing, Wireshark will help you autocomplete your filter.



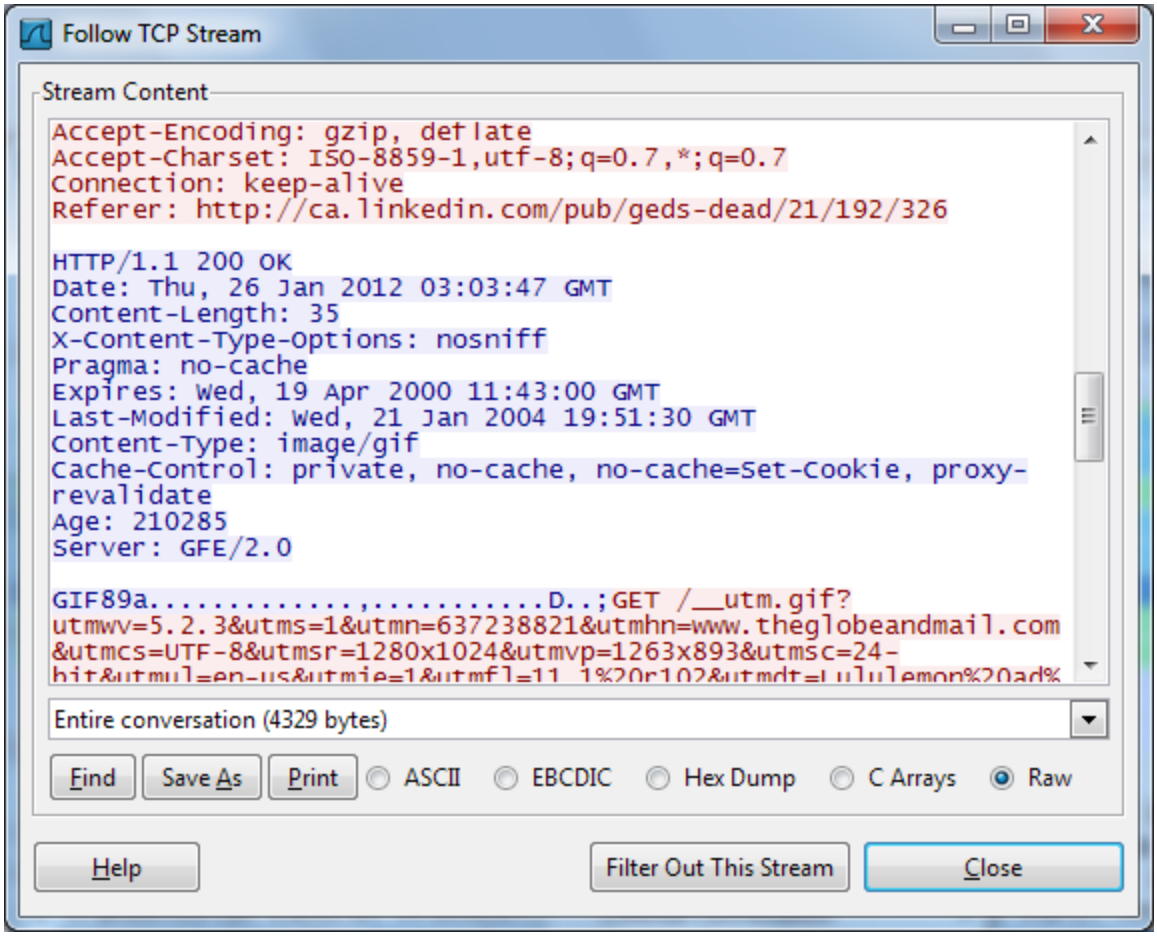
You can also click the Analyze menu and select Display Filters to create a new filter.



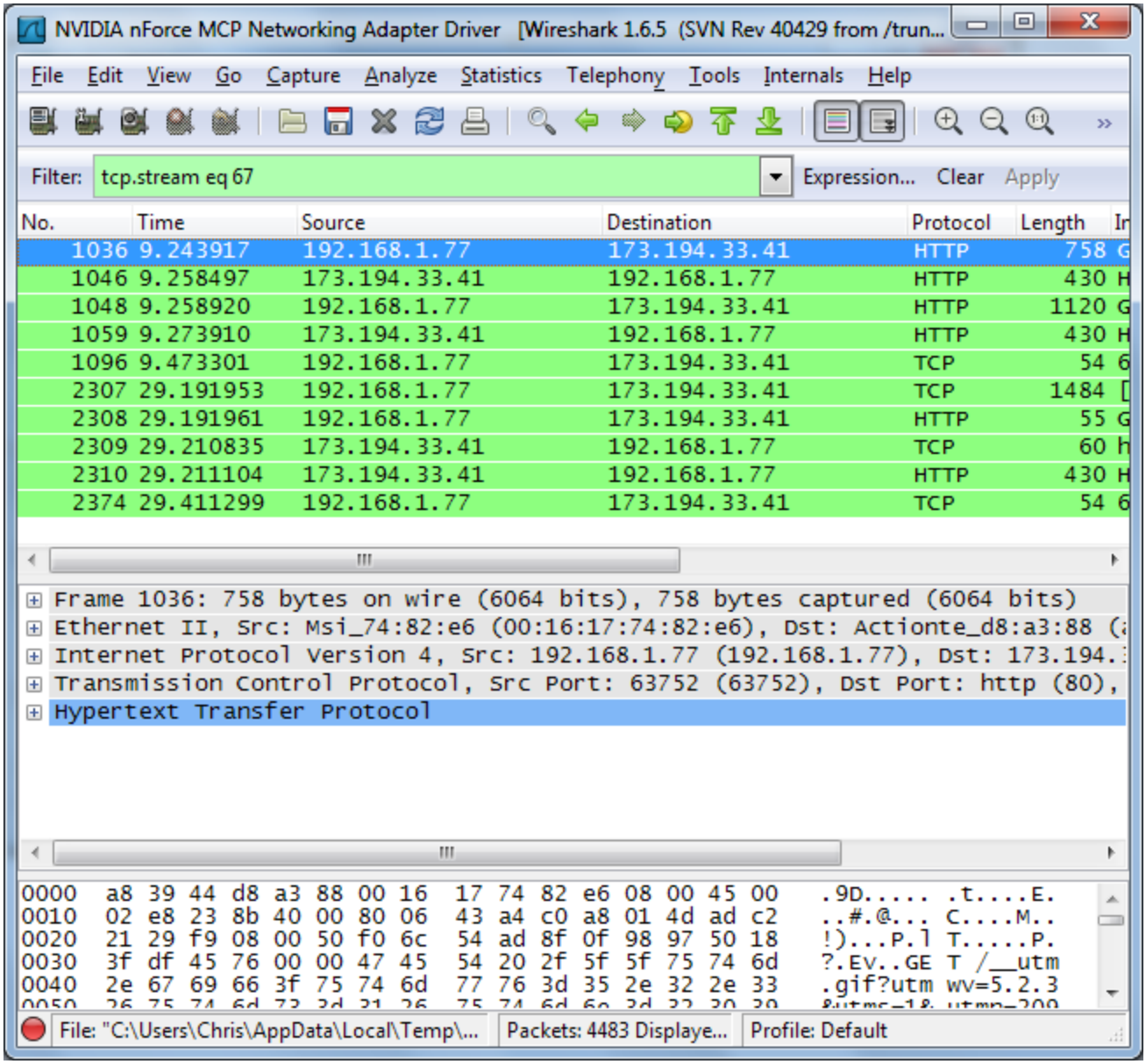
Another interesting thing you can do is right-click a packet and select Follow TCP Stream.



You'll see the full conversation between the client and the server.

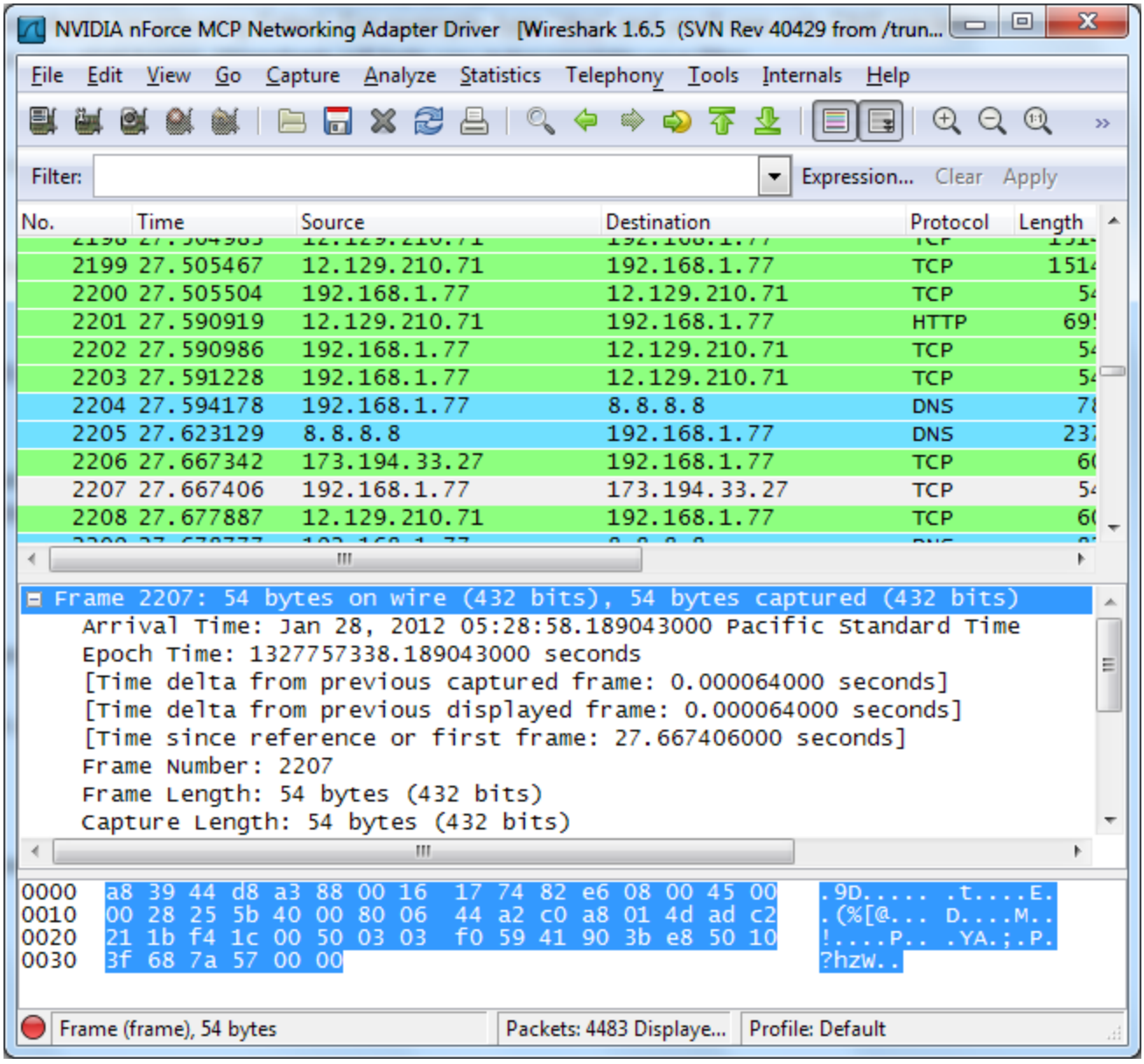


Close the window and you'll find a filter has been applied automatically — Wireshark is showing you the packets that make up the conversation.

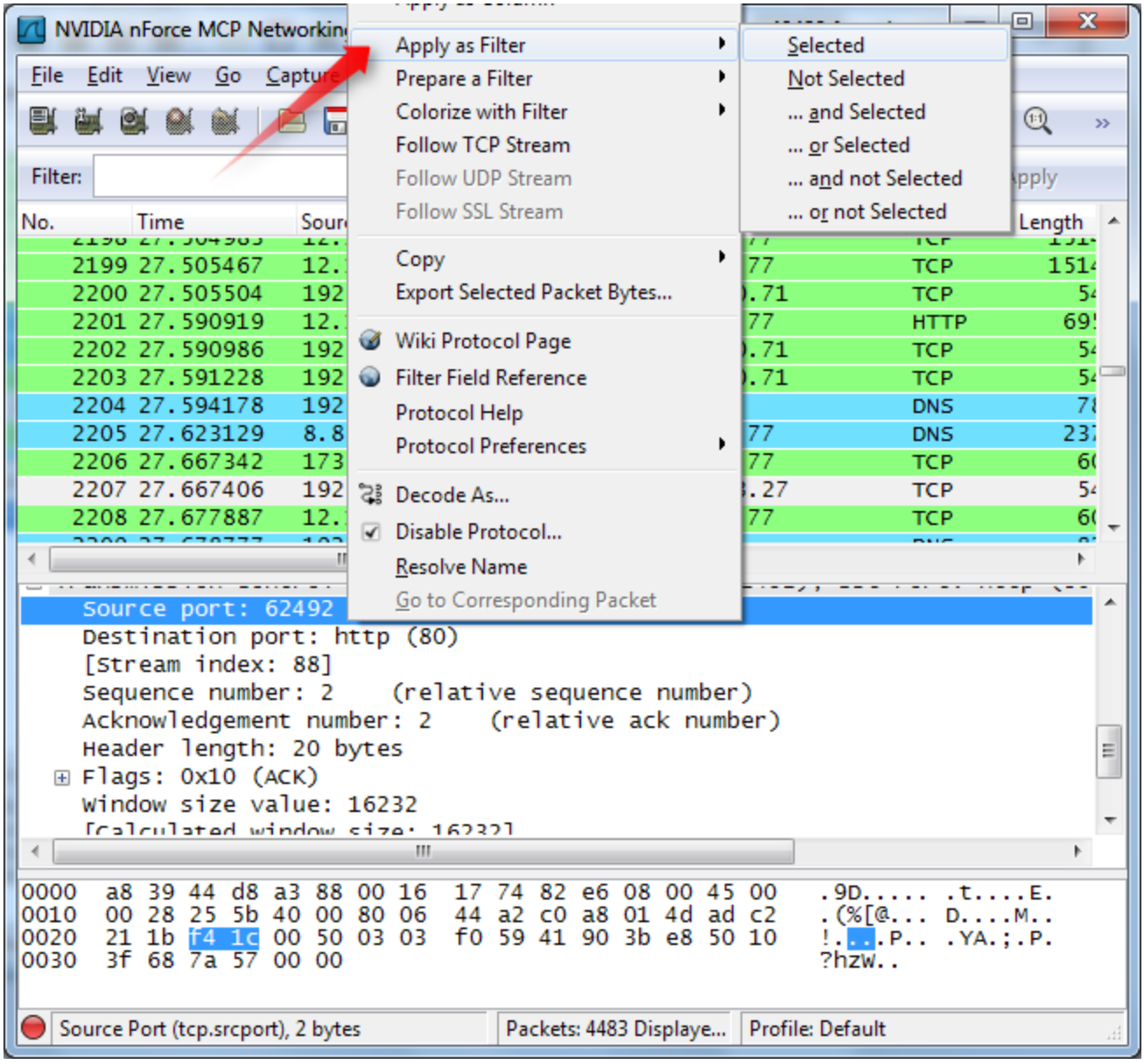


Inspecting Packets

Click a packet to select it and you can dig down to view its details.



You can also create filters from here — just right-click one of the details and use the Apply as Filter submenu to create a filter based on it.



Wireshark is an extremely powerful tool, and this tutorial is just scratching the surface of what you can do with it. Professionals use it to debug network protocol implementations, examine security problems and inspect network protocol internals.