CHAPPELL UNIVERSITY

Wireshark® Workbook 1

Practice, Challenges, and Solutions

Laura Chappell
Founder, Chappell University™
Creator of the WCNA Certification Program
(formerly referred to as the Wireshark Certified Network Analyst program)

Edited by James Aragon

Always ensure you have proper authorization before you listen to or capture network traffic.

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About the Author

Laura Chappell has been a protocol analyst for almost 30 years – yes, she has gray hair! Back in the 1990s, Laura became a networking evangelist and member of the IEEE while working at Novell.

Laura is the CEO and Founder of Protocol Analysis Institute, Inc., and Chappell University.

Laura began using Wireshark as her sole network analysis tool when it was in its infancy (under the Ethereal name). Laura teaches courses online and onsite and continues to research and write about troubleshooting, optimization, and security techniques for both terrestrial and interplanetary network systems.

Laura's customers include many of the Fortune 100, as well as local, national, and international law enforcement agencies. Visit chappell-university.com for more information on Laura Chappell's projects, join her newsletter and read her blog (*In Laura's Lab*).

Laura's courses are available online at *chappell.talentlms.com*.

Ms. Chappell can be reached at laura@chappellu.com.

In 2006, with the encouragement of Gerald Combs (creator of Wireshark), Laura founded *Wireshark University* to evangelize network analysis skills and promote a baseline of knowledge with the *Wireshark Certified Network Analyst (WCNA)* program. [1]

Laura Chappell remains an adamant supporter of the network analysis developer and user community and the open source Wireshark project.

Is This Book Available as a Training Course?

Yes. You can take this *Wireshark Workbook* as a pre-recorded course online through Laura Chappell's **Wireshark Training All Access Pass** training portal (*chappell.talentlms.com*).

Wireshark Versions Used in These Labs

This *Wireshark Workbook* was written using several Wireshark 3 versions. If you are still stuck in the world of Wireshark 1.x, it's time to update your version. Wireshark versions 2 and 3 offer numerous advantages over the earlier versions, such as a native installation for Macintosh users, USBpcap support, Intelligent Scrollbar, much better graphs, a Related Packets Indicator, Npcap support, Cisco Remote Capture, and more.

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[1] In 2019, Riverbed (the "sponsor" of the Wireshark project) prompted the Wireshark Foundation to take over the "Wireshark University" name in their quest to "monetize Wireshark assets." The certification program is simply referred to as the "WCNA Certification program" because of trademark issues enforced by Riverbed's attorneys. Don't ask her what she thinks of Riverbed, their former employees who pushed to "sell off" the "Wireshark University" name for money, or her thoughts on the secretive workings of the "Wireshark Foundation."

How to Use This Wireshark Workbook 1

This *Wireshark Workbook* contains 16 sets of lab questions with fully-documented solutions to each question. It is designed to test your knowledge of Wireshark and TCP/IP analysis by focusing on your ability to locate answers to network traffic questions.

If you've participated in Laura Chappell's wildly successful Packet Challenge during *SharkFest*, the Wireshark user and developer conferences, then you know what you're in for! The difference, however, is that now you'll be able to see the step-by-step processes used to get the answer to those challenging questions.

Step 1: Lab Preparation

Start with the **Lab Preparation** section on page 1. That will walk you through creating your *Wireshark Workbook 1* profile that is referred to throughout the book.

Step 2: Book Supplements

Next, visit the book supplements page at *https://www.chappell-university.com/books* to download the trace files and blank Answer Sheet document used with this book.[2]

Step 3: Warm-up Lab

Finally, complete **Lab 1: Wireshark Warm-Up** to get an idea of the type of questions asked and the detail level of the solutions provided.

From that point on, feel free to skip around to different labs as you wish.

Suggested Prerequisite Knowledge to Run these Labs

Before you delve into this *Wireshark Workbook* (or network analysis in general), you should have a solid understanding of basic network concepts and TCP/IP fundamentals. For example, you should know the purpose of a switch, a router, and a firewall. You should be familiar with the concepts of Ethernet networking, basic wireless networking, and be comfortable with IP network addressing, as well.

This *Wireshark Workbook* assumes that you may not know how to use some of Wireshark's features. This is why the workbook will walk you step-by-step through the processes used to get the answers – and, in many cases, show more than one method to get the answers.

[2] Consider capturing your traffic when you download the book trace files! You will see where we actually keep our book supplements and have a nice file transfer trace for later analysis.

Table of Contents

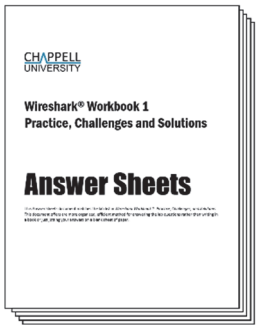
Lab Preparation

Hello fellow Wireshark and packet analyst enthusiasts!

If you've ever joined me at *SharkFest*, the Wireshark user and developer conference, you've likely seen and hopefully participated in my Packet Challenge. I began the packet challenge many, many years ago as a contest at the conference. The shark fin awards would be presented on the last day of the conference to the contestants who were the closest to 100% correct on their answer sheets.

This book is based on my Packet Challenges, but I've included lots of detail on how I got the answers. There are often many ways to get the answers, so you might find alternatives – as long as we get the same answer, that's ok!

Step 1: Download the Lab trace files and Answer Sheets *from* www.chappell-university.com/books



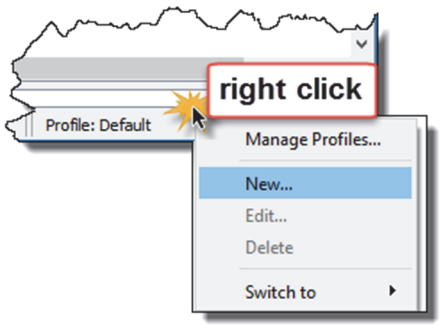
The *Answer Sheets* document does not contain the answers. The *Answer Sheets* document offers an organized, efficient method for answering the lab questions rather than writing in a book or just jotting your answers on a blank sheet of paper.

Download the *Answer Sheets* document and the set of *Wireshark Workbook 1* trace files from *www.chappell-university.com/books*.

*I recommend that you write your answer **and** make a note of how you got that answer. Did you add a specific column? Did you use a certain display filter? Did you look at one of the statistics windows? When you look at the answers, you will see how I got the answer and you can compare your method to mine. Quite often there is more than one way to get an answer.*

Step 2: Create your Wireshark Workbook 001 *profile*

In Wireshark, profiles enable you to customize Wireshark columns, dissector preference settings, display filter buttons, and more.



Right-click on the *Profile* column on the Status Bar and select *New*.

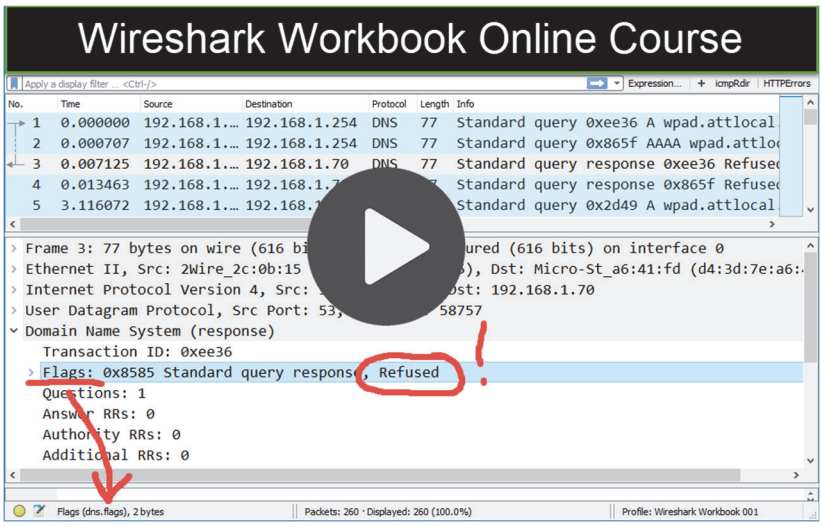
Name your new profile *Wireshark Workbook 001* and click *OK*.

That's it! Now you have created a new profile that can be used as you work through the labs in this book.

Step 3: Check out the online Wireshark Workbook 1 *course*

If you are already a **Wireshark Training All Access Pass** member, you can take the **Wireshark Workbook 1** course set to watch how the labs are solved. You can skip around to different lab solutions as desired.

Visit *chappell-university.com* for more information on online and onsite training courses.



Ok! Once you have the trace files, *Answer Sheet*, and your *Wireshark Workbook 001* profile, you are ready to go! Fire up Wireshark and let's get started!