Welcome to

Network Monitoring and SIEM

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Slides are available as PDF, kramse@Codeberg

prosa-network-monitoring-SIEM-2025.tex in the repo security-courses

Contact information

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- Run a small network for fun AS57860

You are welcome to drop me an email

Goals for today

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Photo is NWWC camp at BornHack 2024, looks about the same every year –come by and say hi

Time schedule

- 45 min Introduction and basics
- Rest of the time: Connect to the network, play with TCP/IP and routers

Note: even though I talk a lot about Unix and Linux, you can definitely run a lot of tools on Windows and Mac OS X. The basic tools are available like the built-in ones and Nmap

Command line tools are sometimes used in the slides, as they only show text where a GUI screenshot can be cluttered with a lot of information, feel free to find GUI tools and web sites with same functionality

Exercises

Exercises are completely optional

- Try ping and traceroute
- See your own IP settings
- Borrow a USB Ethernet and connect to a switch or router

Linux is a toolbox I will use and participants are free to use whatever they feel like Photo by Eugen Str on Unsplash

Course Materials

- This material is in multiple parts:
- Slide show - presentation - this file
- Exercises - PDF which is used for this and other workshops
- Additional resources from the internet are linked throughout
- Wikipedia has a LOT of nice pages about IP protocols, for example:

> Transport Layer Security (TLS) is a cryptographic protocol designed to provide communications security over a computer network. The protocol is widely used in applications such as email, instant messaging, and voice over IP, but its use in securing HTTPS remains the most publicly visible.

Source: https://en.wikipedia.org/wiki/Transport_Layer_Security

Prerequisites

If you are interested in TCP/IP you are welcome

If you want to be an expert in IP and network security I recommend doing exercises

Network security and most internet related security work has the following requirements:

- Network experience
- TCP/IP principles - often in more detail than a common user
- Programming is an advantage, for automating things
- Some Linux and Unix knowledge is in my opinion a **necessary skill** for infosec work
  – too many new tools to ignore, and lots found at sites like Github and Open Source written for Linux

It is recommended to use virtual machines for the exercises

Wifi Hardware

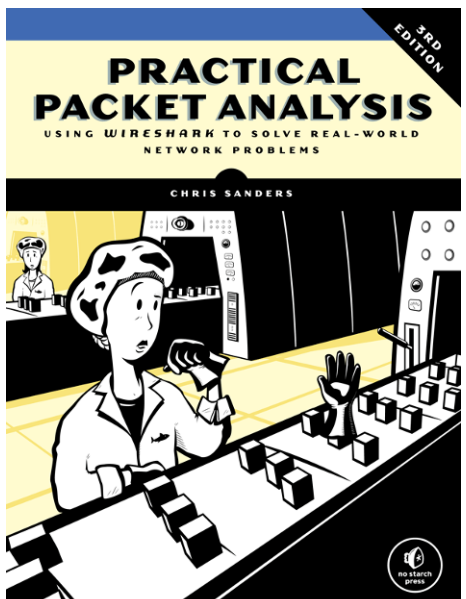
If you want to do sniffing of wireless it will be an advantage to have a wireless USB network card. Make sure to play nice, and dont abuse knowledge!

- The following are two recommended models:
- TP-link TL-WN722N hardware version 2.0 cheap but only support 2.4GHz
- Alfa AWUS036ACH 2.4GHz + 5GHz Dual-Band and high performing
- Both work great in Kali Linux for our purposes, but are older models by now

Unfortunately the vendors change models often enough that the above are hard to find. I recommend using your favourite search engine and research which cards work with Kali Linux and airodump-ng.

I have some available you can borrow

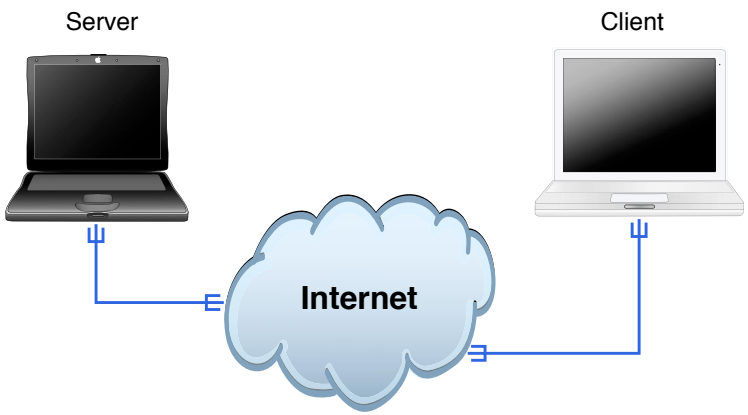
Book: Practical Packet Analysis (PPA)



Practical Packet Analysis, Using Wireshark to Solve Real-World Network Problems by Chris Sanders, 3rd Edition April 2017, 368 pp. ISBN-13: 978-1-59327-802-1 https://nostarch.com/packetanalysis3

I recommend this book for people new to networking, it has been in HumbleBundle book bundles multiple times

Internet Today



Clients and servers, roots in the academic world

Protocols are old, some more than 20 years

Very few protocols where encrypted, today a lot has switched to HTTPS and TLS

Opsummering

Husk følgende:

- UNIX og Linux er blot eksempler - navneservice eller HTTP server kører fint på Windows
- DNS er grundlaget for Internet
- Sikkerheden på internet er generelt dårlig, brug SSL!
- Procedurerne og vedligeholdelse er essentiel for alle operativsystemer!
- Man skal *hærde* operativsystemer *før* man sætter dem på Internet
- Husk: IT-sikkerhed er ikke kun netværkssikkerhed!
- God sikkerhed kommer fra langsigtede intiativer

Jeg håber I har lært en masse om netværk og kan bruge det i praksis :-)

Spørgsmål?

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http://www.zencurity.com

I er altid velkomne til at sende spørgsmål på e-mail

Referencer: netværksbøger

- Stevens, Comer,
- Network Warrior
- TCP/IP bogen på dansk
- KAME bøgerne
- O'Reilly generelt IPv6 Essentials og IPv6 Network Administration
- O'Reilly cookbooks: Cisco, BIND og Apache HTTPD
- Cisco Press og website
- Firewall bøger, Radia Perlman: IPsec,

Bøger om IPv6

IPv6 Network Administration af David Malone og Niall Richard Murphy - god til real-life admins, typisk O'Reilly bog

IPv6 Essentials af Silvia Hagen, O'Reilly 2nd edition (May 17, 2006) god reference om emnet

IPv6 Core Protocols Implementation af Qing Li, Tatuya Jinmei og Keiichi Shima

IPv6 Advanced Protocols Implementation af Qing Li, Jinmei Tatuya og Keiichi Shima

- flere andre