Welcome to

The Newcomers' Guide to Networking: *Textbooks* for the Next Generation

RIPE86 Community Plenary

Henrik Kramselund he/him han/ham hlk@zencurity.com @kramse

Slides are available as PDF, kramse@Github

newcomers-guide-to-networking.tex in the repo security-courses

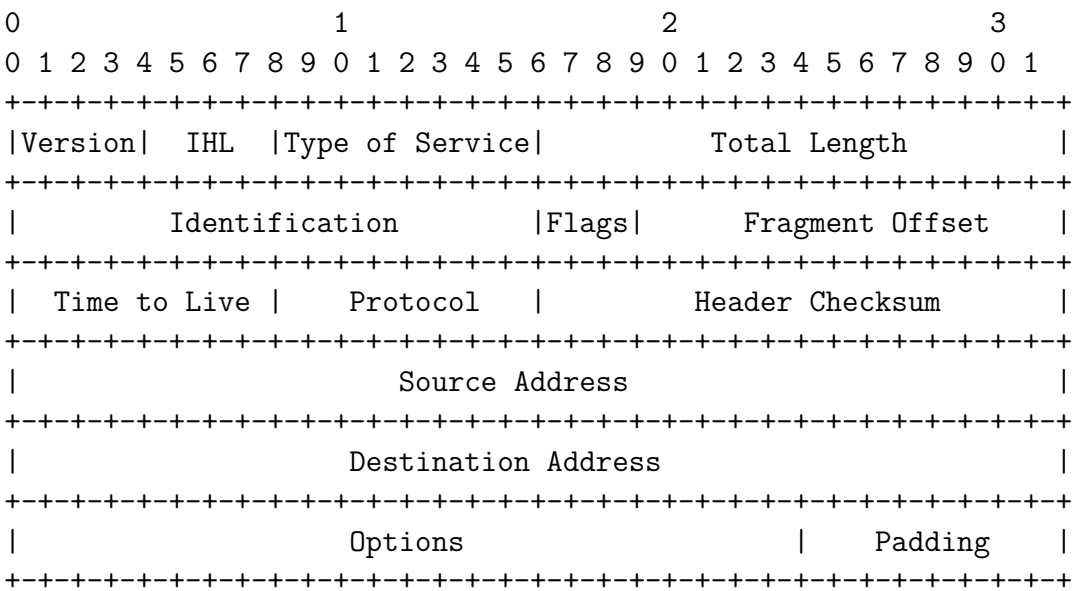
Problem statement

Your co-worker has a question: *You work in networking*, so can you give me some pointers for my friend that wants to *get into networking*?!

> How can we **attract more newcomers** to our **networking communities?** I work in **education**, and I learnt about networking the **old school way** in the 1990s, with large **500 page textbooks**, and this is still sometimes the case. Can we **crowdsource interesting and useful sources of knowledge for the next generation**? Can we create a **"newcomers'** guide to networking"?

- A small call for resources, send me your best links, resources, books, papers, and interesting resources
  I will add them here ====> https://github.com/kramse/learning-paths
- May contain opnionated content, beware
- BTW *my slides are boring!*

First of all Thank you!



- Thank you to all the authors of the books I have learnt from. Thank you all that wrote RFCs, I enjoy them a lot
- Unfortunately they are not beginner friendly, if I was a newcomer today I would probably NOT read them
- Many resources are very structured, but become a bit boring, sorry

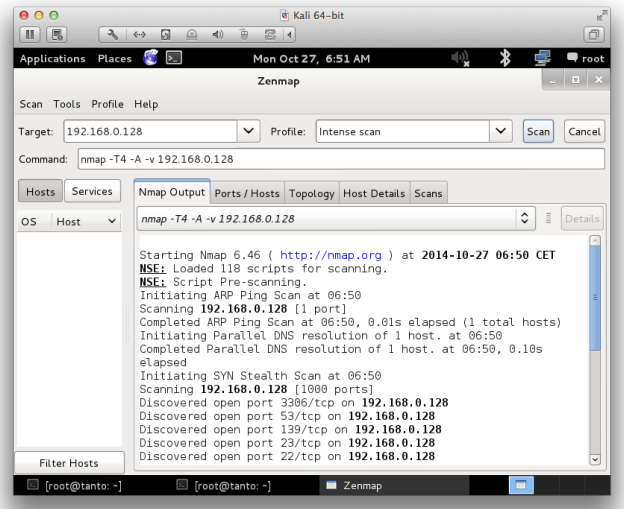
Prerequisite knowledge

Plan: You want to learn Port Scanning and Nmap!
Usefull in both defense and attack scenarios!

- Knowledge level: What is a port scanner
  Need to know TCP/IP, IP address, ports and services – example HTTP 80/tcp, TCP session setup

  So a newcomer should get this sorted out first, otherwise they cannot understand what Nmap does, and output returned

Skills are needed



- Skills level: Running a port scanner
  Need to have operating system – luckily Nmap supports Mac, Windows, Linux, ...
- My recommendation: create a virtual machine with Kali Linux
  BTW ... what is a Virtual Machine?! And so it keeps on

Small set of Recommended networking technologies to learn

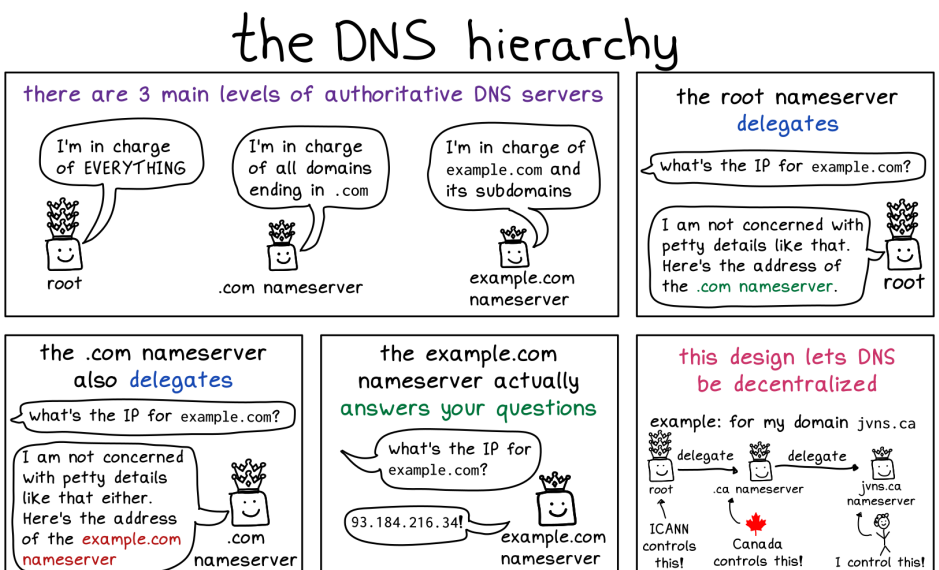
So to accomplish the goal of using Nmap efficiently you need some basics

Networking: Basic Protocols from the Internet Protocols suite IP/TCP, or TCP/IP

- Network Layer: Ethernet, Address Resolution Protocol (ARP), IPv4 and ICMP
  Later add Wi-Fi and IPv6
- Transport Layer: Transmission Control Protocol (TCP) and User Datagram Protocol (UDP)
- Common upper layer: Dynamic Host Configuration Protocol (DHCP), Domain Name System (DNS), Hypertext Transfer Protocol (HTTP)
  Later add the encrypted/secure versions like Hypertext Transfer Protocol Secure (HTTPS) which uses Transport Layer Security (TLS)

Enough to be able to go to other resources, and a connected path from ARP to TLS

What am I looking for – easier entry ways into networking



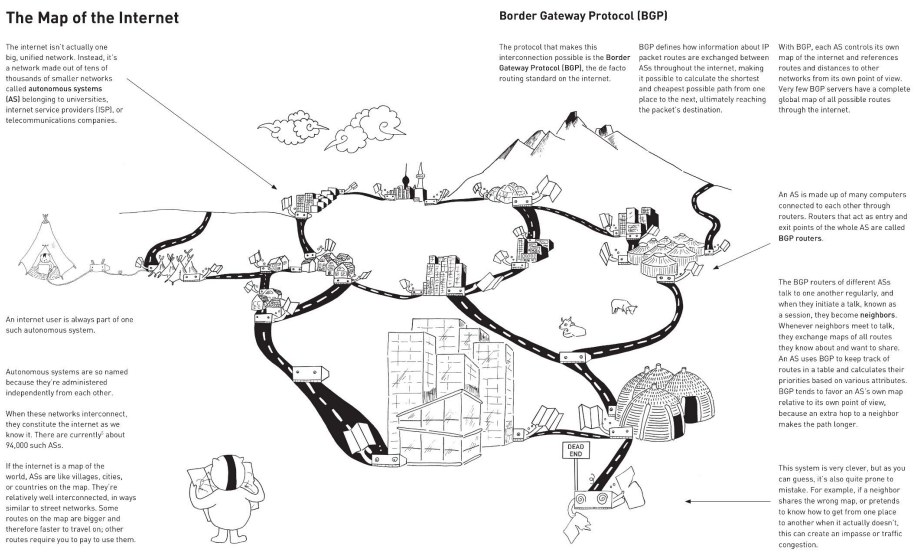
Source: *The DNS hierarchy* by Julia Evans

https://wizardzines.com/zines/dns/samples/1-dns-hierarchy.png ❤

Tools that help present real world data

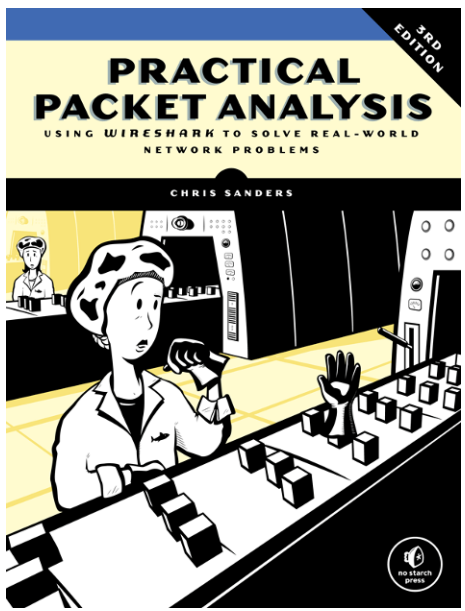
- at the DNS hackathon I saw this cool tool, EduDIG https://edudig.se/ ❤️

Books that are fun and educational



Source: *How the Internet Really Works An Illustrated Guide to protocols, privacy, censorship, and governance* by catnip19 https://catnip.article19.org/ ❤

Real books are also welcome



- *Practical Packet Analysis - Using Wireshark to Solve Real-World Network Problems*, 3rd edition 2017, 368 pp Chris Sanders ISBN: 9781593278021

Send me your best resources for newcomers

- Send your best links and resource to me `hlk@kramse.org`
- I will collect it and probably make an *awesome list* – there are awesome lists for just about any topic on Github
- Github repo added https://github.com/kramse/learning-paths – pull requests welcome

I am also very happy to discuss learning with you in breaks, I am here until friday.