WEBER STATE UNIVERSITY

# Wireshark: Are You Under Attack?

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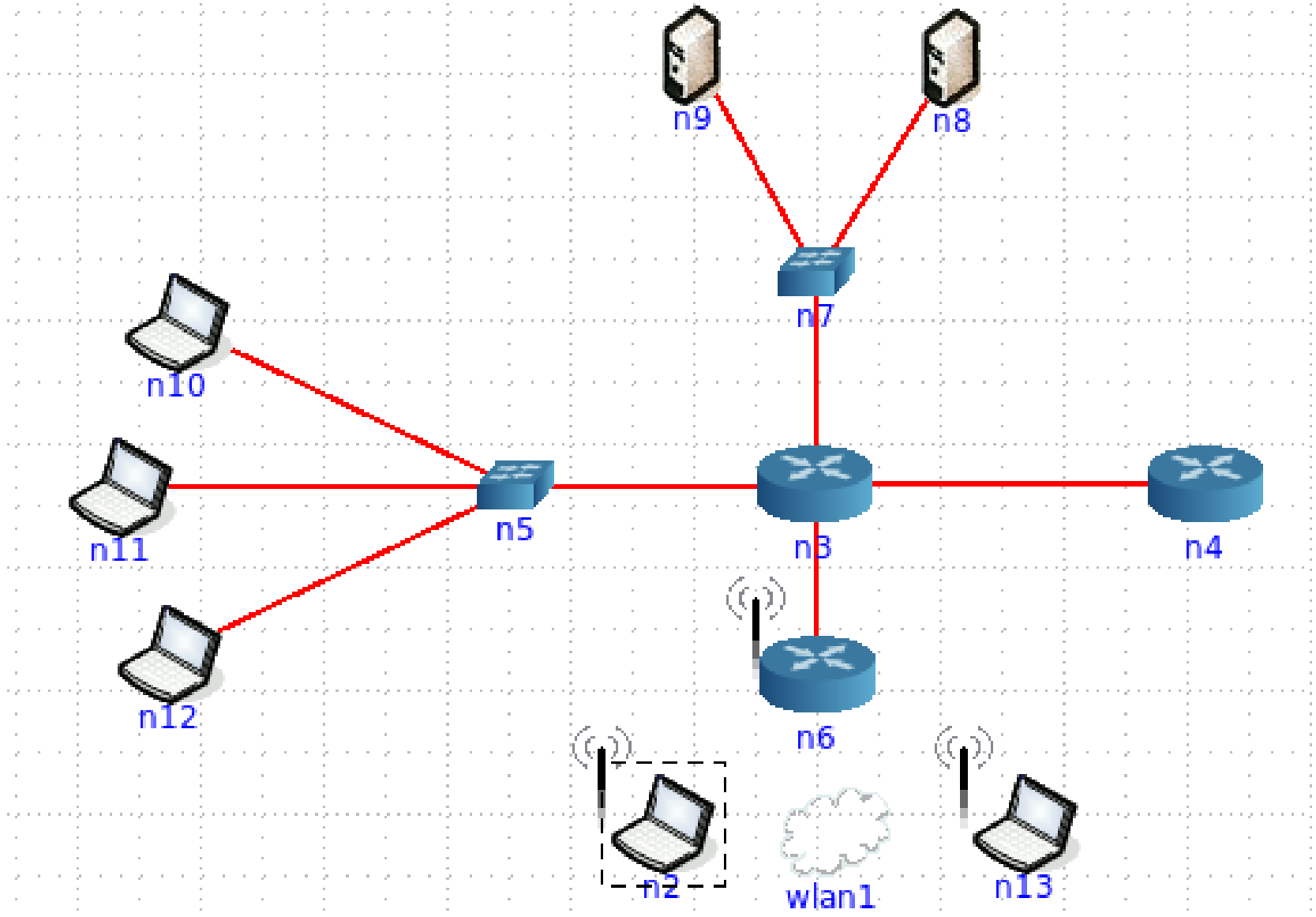
# Introduction

- Download Wireshark and capture files
  - https://www.wireshark.org/download.html
  - http://icarus.cs.weber.edu/~kfeuz/downloads/saintcon2016_captures.zip
- Know the law (and company policy)
- Skills needed and skills covered

# Outline

- ~~Introduction~~
- Where and How to sniff
- Having a baseline
- Finding the Needle
- Network Reconnaissance
- ARP/IP spoofing
- Malware/tool specific signatures
- Putting it all together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n6
n2
wlan1
n13

# SSL Decryption

- Private key
- Symmetric key (SSLKEYLOGFILE)
- SSL Proxy (MITM)

# Live Demo/Practice

- Files
  - ssl_saintcon
  - ssl_saintcon_key

  - ssl_weber
  - ssl_weber_key

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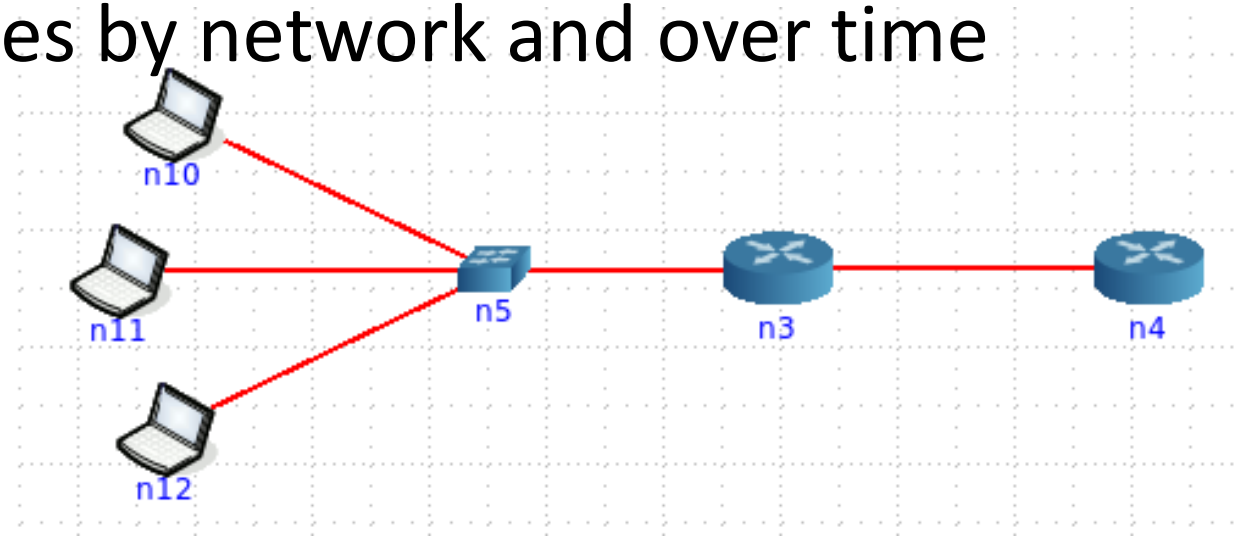
# Baselining

- What does “normal” look like
- Protocols used and percentage of traffic
- Common hosts and percentage of traffic
- Varies by network and over time



# Live Demo/Practice

- Compare
  - baseline.pcapng
  - double_time.pcapng

# Merge multiple files

- File -> Merge
- Drag-and-Drop
- Mergecap

# Live Demo/Practice

- Merge the files by appending
  - baseline.pcapng
  - double_time.pcapng
- Merge the capture files by timestamp
  - NAT_front.pcapng
  - NAT_back.pcapng

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# Custom Profiles

- Capture Filters
- Display Filters
- Coloring Rules
- Etc.

# Live Demo/Practice

- Create a new profile for Demo
- Create a new profile for NetworkRecon
- Create a new profile for Spoofing Attacks

# Finding the Needle

- Capture filters
  - More efficient capture
  - Limit what is seen
  - Cannot recover what has been filtered
  - Use sparingly

# Finding the Needle

- Display Filters
  - Limit packets currently displayed
  - Great for focusing
  - No efficiency boost
  - Can export packets
  - Use generously

# Display Filters

- Presets
  - Using
  - Modifying
- Freeform
- Expression Builder
- Shortcut buttons
- IO Graphs

# Live Demo/Practice

- Load baseline.pcapng
- Which host is an ssh server?
- What UDP protocols are used?
- Which IP address is associated with MAC Address:  XXX

# Finding the Needle

- Coloring Rules
  - All data is still visible
  - Make certain data stand out or fade
  - Use Generously
  - Setup different configurations

# Live Demo/Practice

- Load baseline.pcapng
- Color all SSH traffic
- Color all traffic on port 443

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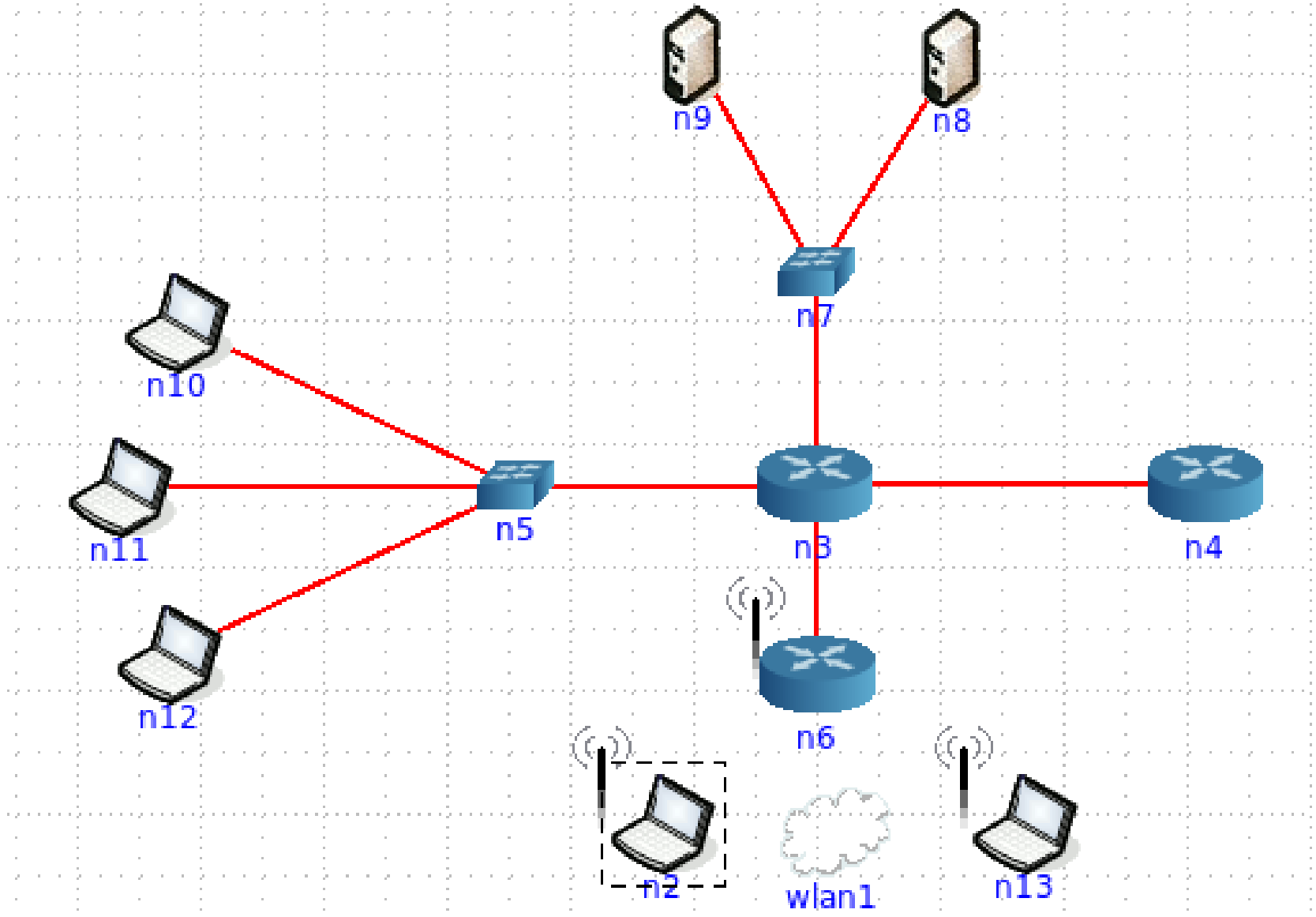
# Network Reconnaissance

- Host Scanning
- Port Scanning
- OS Detection

# Host Scanning

- DNS
- ARP
- ICMP
- TCP/UDP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# Live Demo/Practice

- Create coloring rules and filters
- Files
  - nmap_sL*
  - nmap_sn*
  - nmap_external_*

# Port Scanning

- Half-open
- Full-connect
- Null scan, Xmas, FIN, ACK scans

| Protocol | Port | | Protocol | Port |
|---|---|---|---|---|
| FTP | 21 | | DNS | 53 |
| SSH | 22 | | DHCP | 67,68 |
| Telnet | 23 | | SNMP | 161,162 |
| SMTP | 25 | | NetBIOS | 137,139 |
| HTTP | 80 | | | |
| HTTPS | 443 | | | |

# Live Demo/Practice

- Create coloring rules and filters
  - nmap_half*
  - nmap_full*
  - nmap_null*
  - nmap_xmas*
  - nmap_fin*
  - nmap_ack*
  - nmap_udp*

# OS Detection

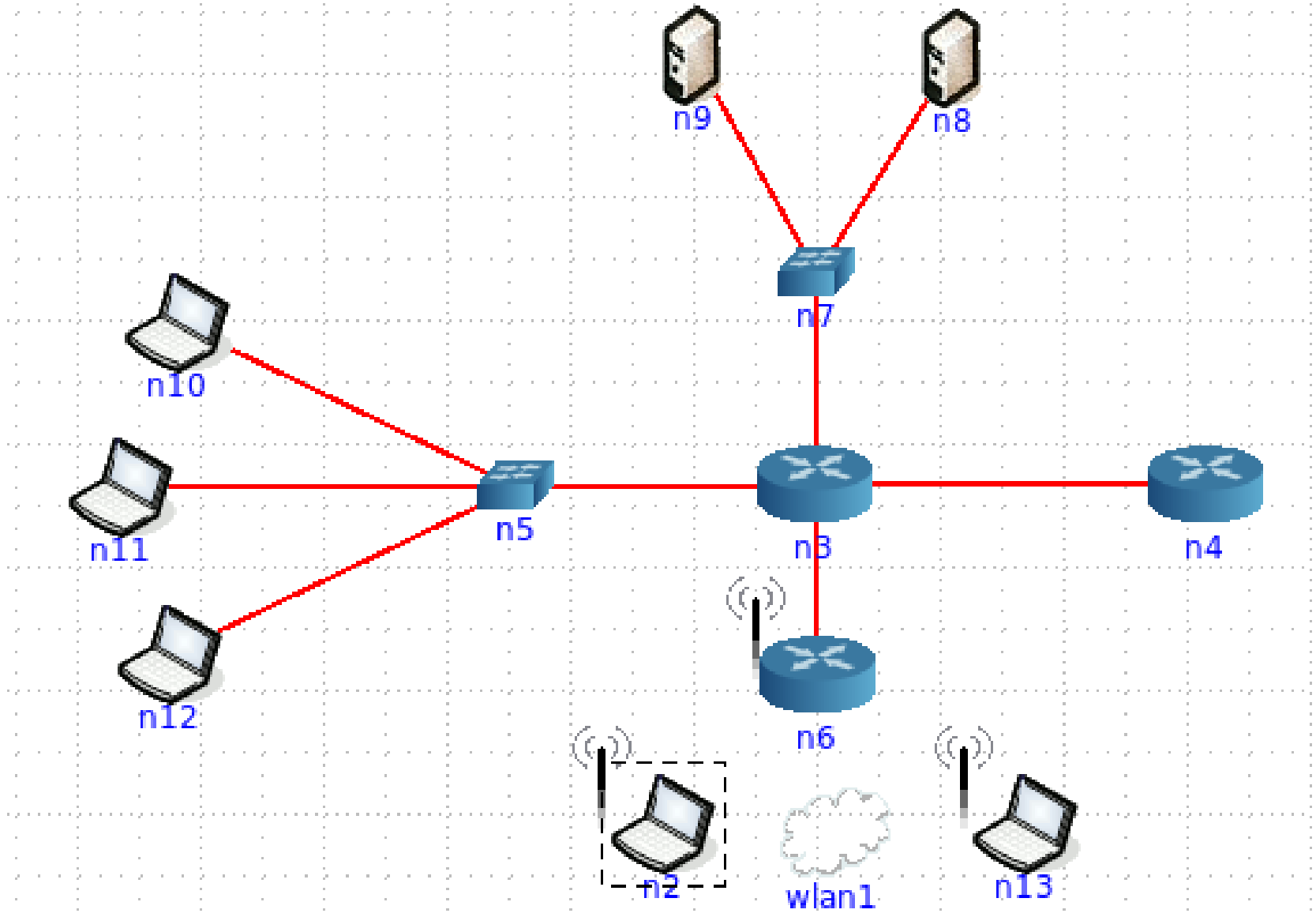
- OS respond differently to different packets
- ICMP type 8 no payload
- ICMP type 8 unusual code (i.e. non-zero)
- ICMP type 13, 15, 17
- TCP with unusual flag/option settings

# Live Demo/Practice

- Create coloring rules and filters
  - nmap_os*

# Others

- Traceroute
- Zombie scan
- IP Protocol scans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# Live Demo/Practice

- Create Coloring Rules and Filters
  - nmap_idle*
  - nmap_sO*
  - traceroute*

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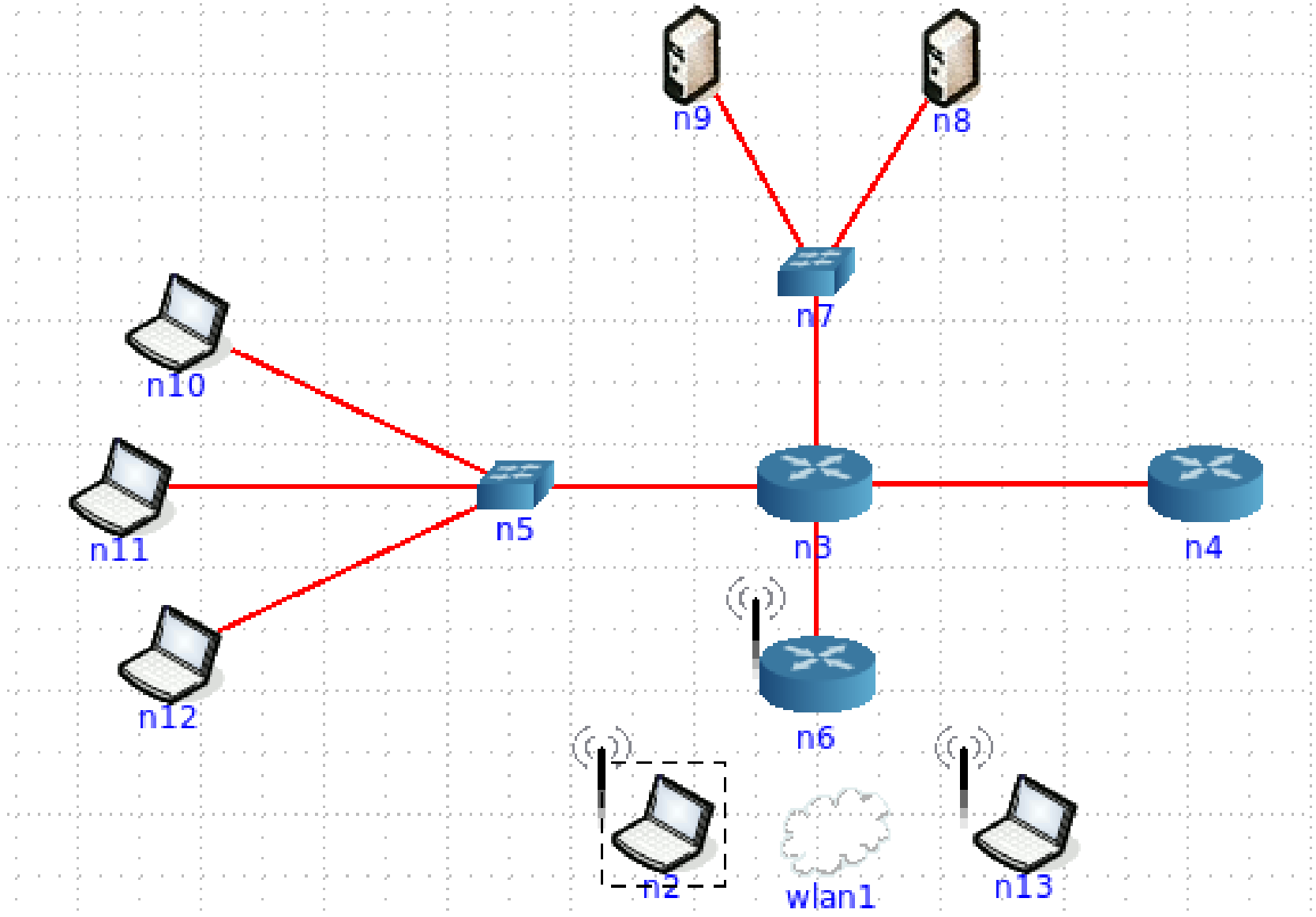
# ARP Spoofing

- Hide true source
- DOS
- MITM
- Force “Hub” behavior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# Live Demo/Practice

- Create coloring rules and filters
  - nmap_spoofed_mac
  - macof_flood
  - arp_poison

# IP Spoofing

- Hide true source
- DOS

# Live Demo/Practice

- Create coloring rules and filters
  - nmap_idle
  - nmap_spoofed_ip

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# Scan/Probe Tools

- Nmap
- NetScanTools Pro
- Xprobe

# Live Demo/Practice

- Which tool was used?
  - Probe1.pcapng
  - Probe2.pcapng

# IRC Bots

- Standard IRC Ports
- Large number of DNS responses

# Heartbleed

- Malformed SSL Heartbeat message
- Payload length invalid

# Live Demo/Practice

- Create coloring rules and capture filters
  - heartbleed_encrypted
  - heartbleed_decrypted

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# Live Demo/Practice

- Sharkfest 13 Challenges
  - 1 challengescan
  - 2 challengewhatsup
  - 4 challengeattack
  - 7 challengeboyscout

# Thank You!