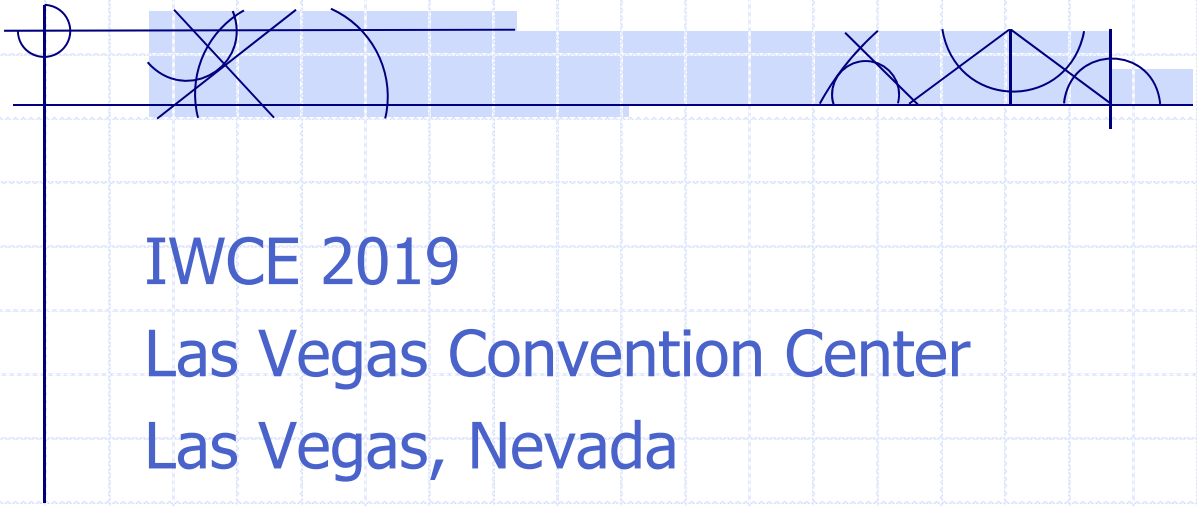
Radio over IP

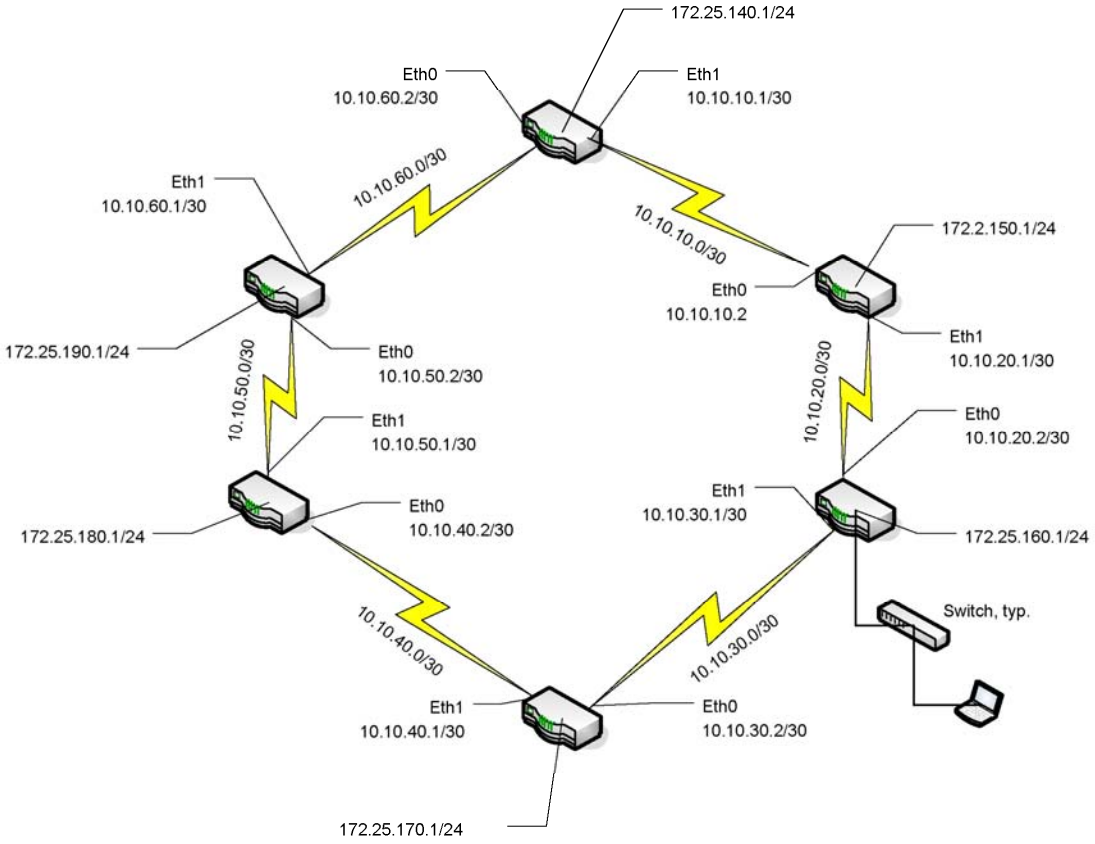
Network Troubleshooting



IWCE 2019
Las Vegas Convention Center
Las Vegas, Nevada

Demo Network Configuration

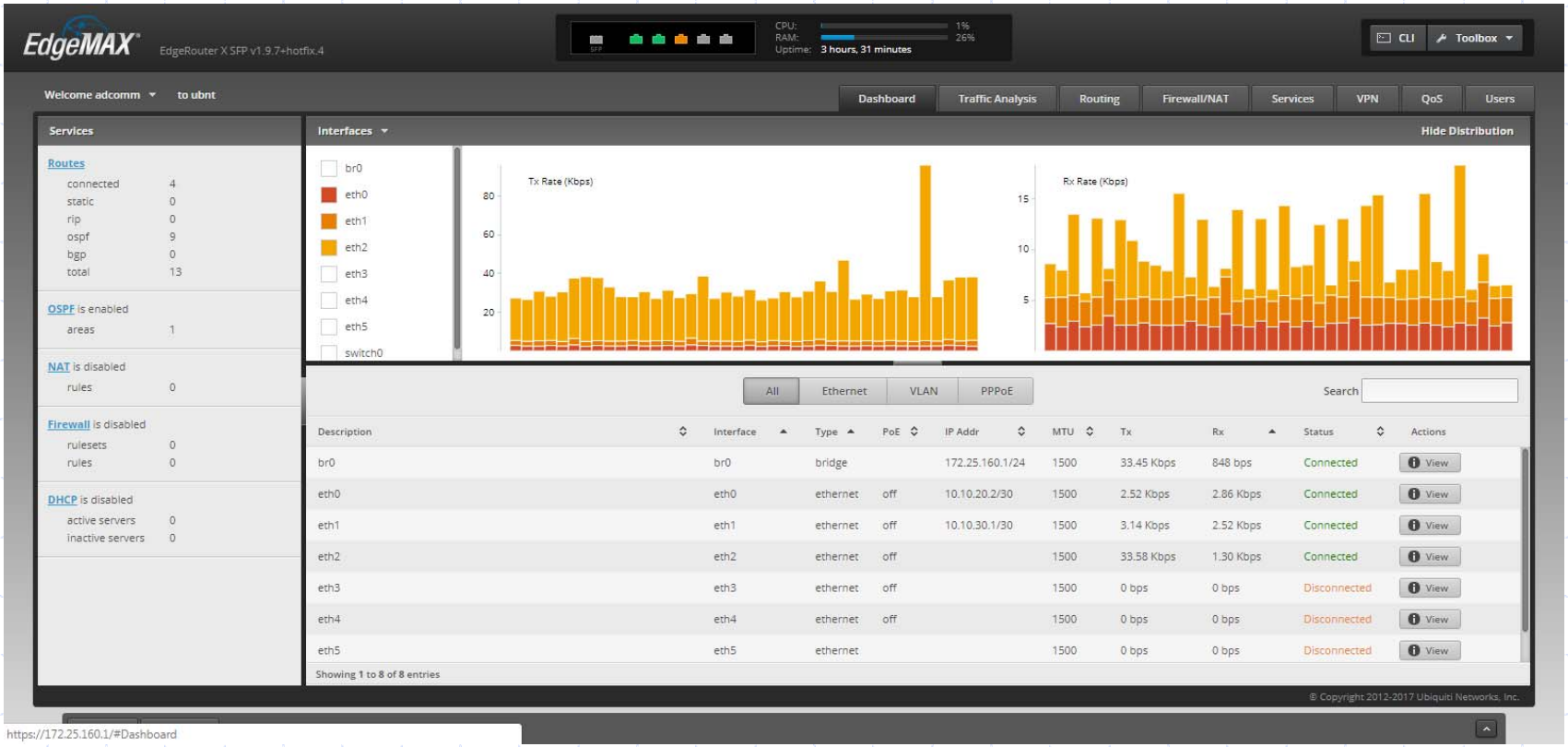
Notes:
1. Failure of any link causes traffic to be rerouted.



IP Class
Network Configuration

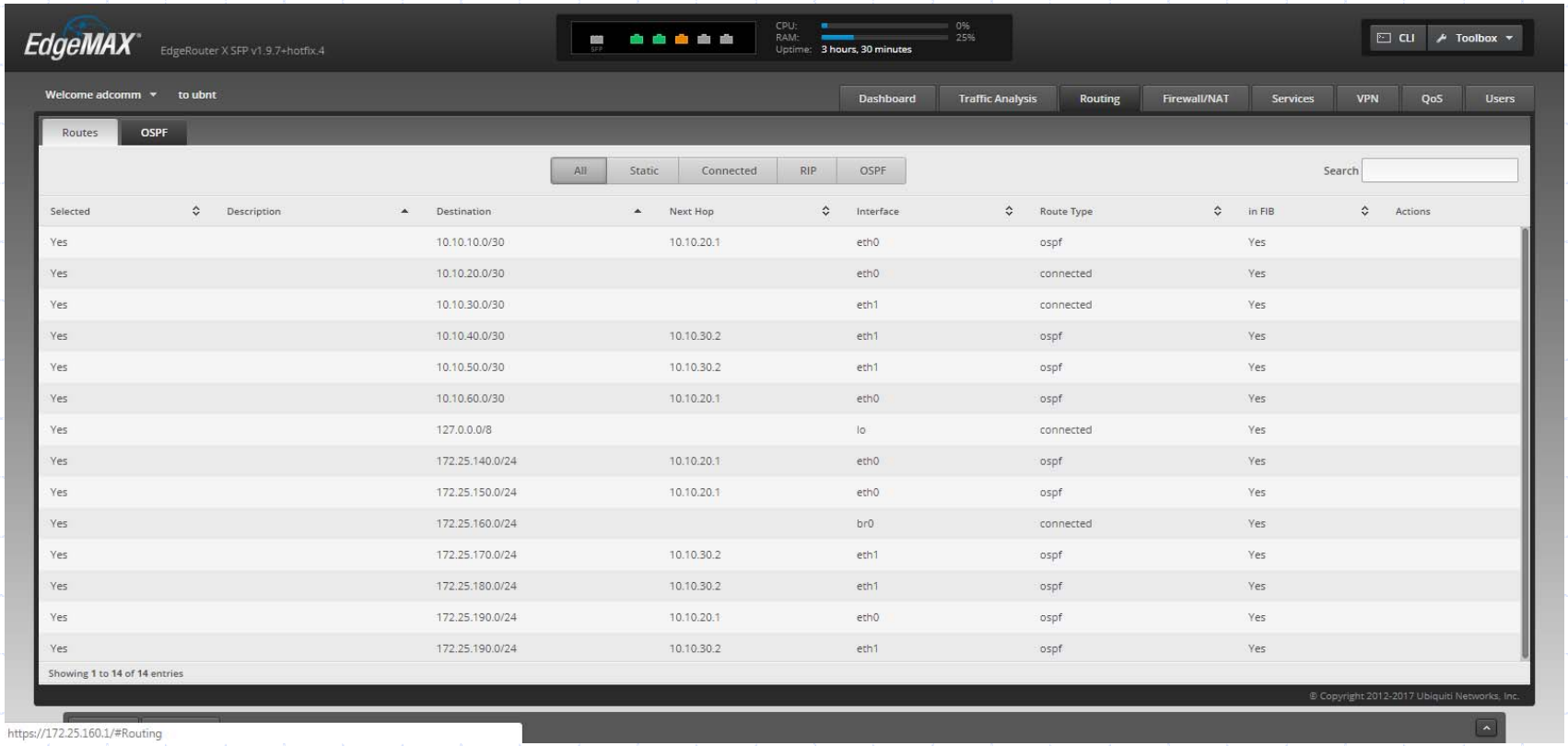
10/26/2018

Demo Router Config - Dashboard



Router login: adcomm Password: adcomm

Demo Router Config - Routing



Demo Router IP Addresses

- **172.25.140.1**
- **172.25.150.1**
- **172.25.160.1**
  - ZeppoMarx Wi-Fi AP (open)
- **172.25.170.1**
- **172.25.180.1**
- **172.25.190.1**
  - GrouchoMarx Wi-Fi AP (PSK: GrouchoMarx)

Demo Gadget IP Addresses

- **172.25.140.101** Temperature Sensor
- **172.25.150.51** Serial-to-IP Adapter
- **172.25.150.101** Telex IP-223
- **172.25.160.50** Serial-to-IP Adapter
- **172.25.160.101** Telex IP-223
- **172.25.170.50** Serial-to-IP Adapter
- **172.25.180.51** Serial-to-IP Adapter

Basic Command-Line Tools

- **ping**
  - Determine whether particular host is reachable
  - Sends ICMP "echo request" packets to target
  - Measures round-trip packet time & packet loss

    examples: *ping -t 172.25.140.1*
    ping www.yahoo.com

- **traceroute (tracert)**
  - Determines route taken by packets across an IP network

    examples: *tracert 172.25.160.1*
    tracert www.google.com

Basic Command-Line Tools

- **ipconfig**
  - MS Windows console application
  - Displays current TCP/IP network configuration values
    - IP address
    - Subnet mask
    - Gateway
    - DHCP server
    - DNS servers
    - other details

Basic Command-Line Tools

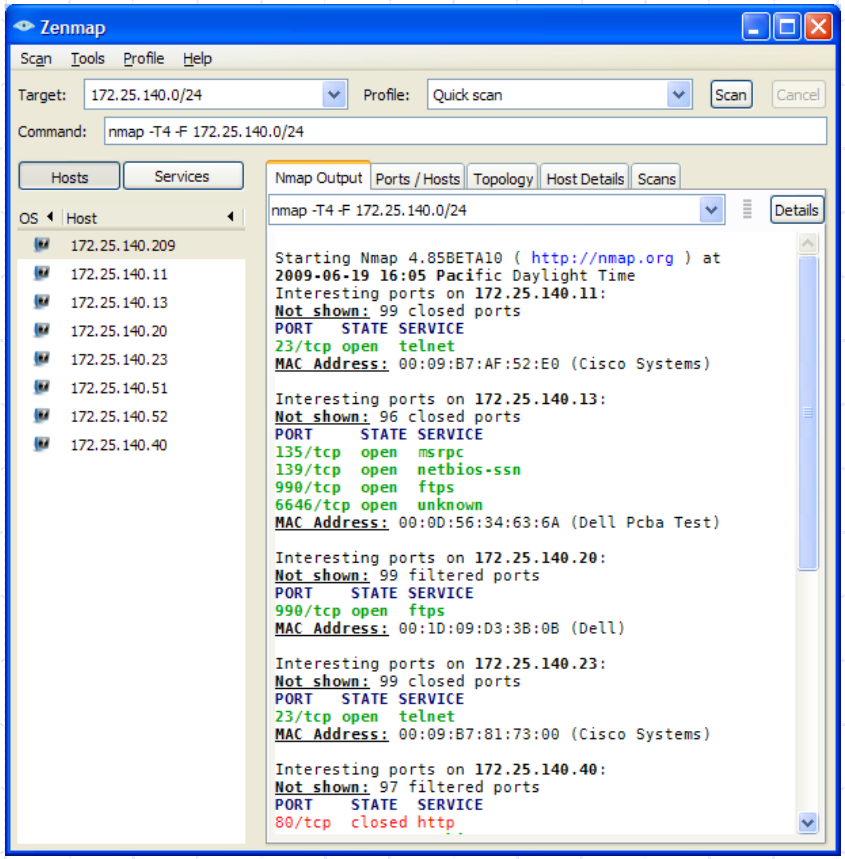
- **telnet**
  - Interactive remote login tool
  - Generally used to access a command line interface on a remote host (or device)
  - Default TCP port 23
  - Not installed by default in Windows 10/8/7, but can be enabled in Control Panel

    example: *telnet 172.25.140.50*

- **netstat -r**
  - Display PC routing table

Windows Tools

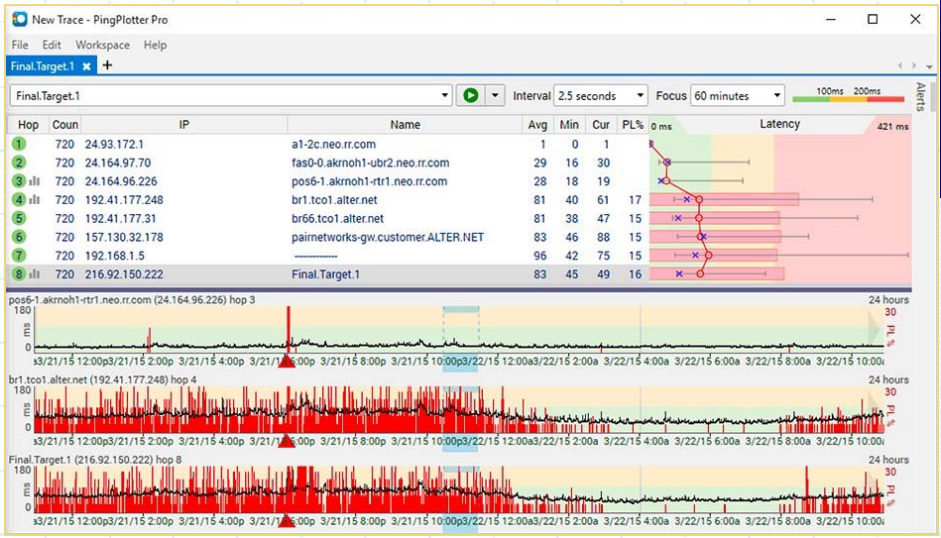
- **NMAP/Zenmap**
  - "Network Mapper"
  - Network exploration tool
  - Identifies Hosts & Running Services
  - TCP/UDP port scanner
  - NMAP: command line
  - Zenmap: GUI



https://nmap.org/

Windows Tools

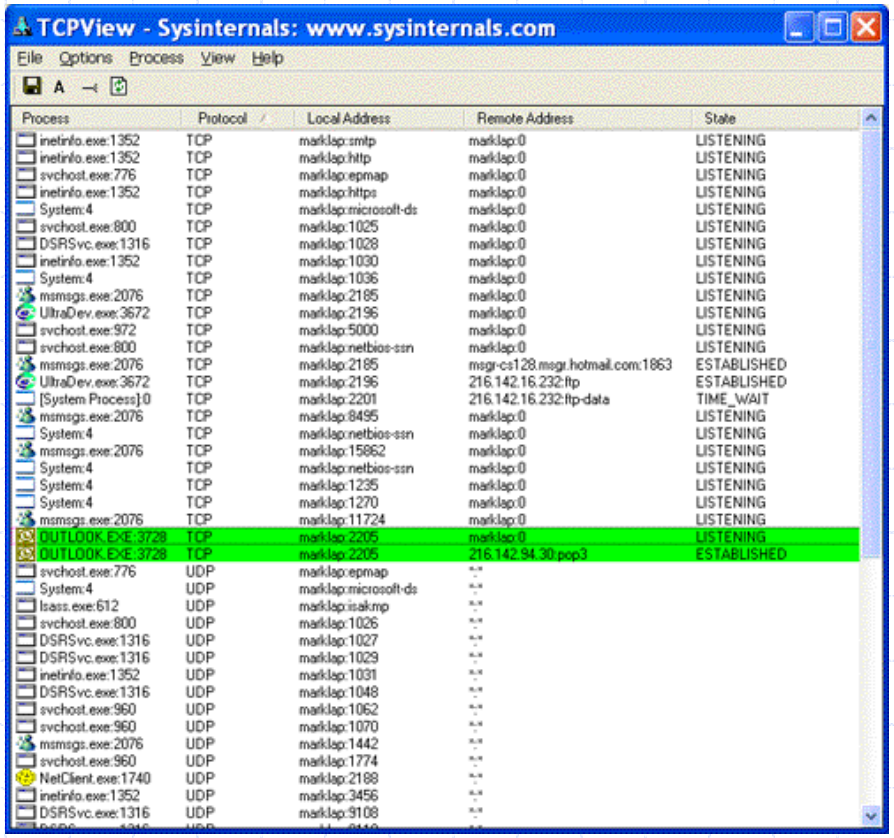
- **PingPlotter**
  - Graphical traceroute software
  - Graphs latency and packet loss to visualize network performance at every hop between computer and target device
  - Logging capability
  - Pro, Standard, Free versions
  - Also available for Mac and iOS



https://www.pingplotter.com/

Windows Tools

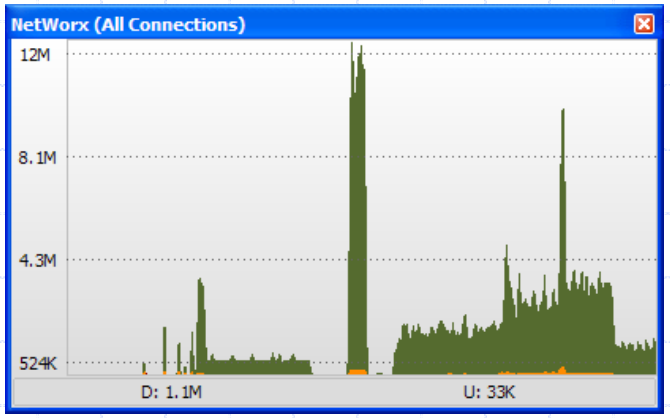
- **TCPView**
  - Lists all TCP & UDP port endpoints on a PC
  - Similar to *netstat* command in Linux/Unix and Windows

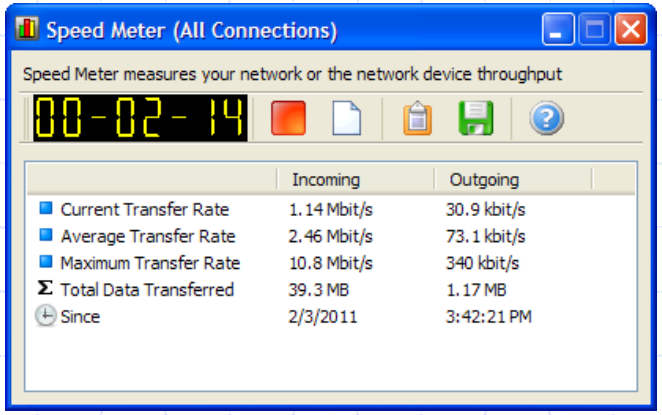


https://docs.microsoft.com/en-us/sysinternals/downloads/tcpview

Windows Tools

- **Networx**
  - Live monitoring of incoming & outgoing TCP/IP bandwidth
  - Also built-in ping, traceroute, netstat, and other advanced features
  - Free 30-day trial for current version
  - See also: Windows *Resource Monitor*

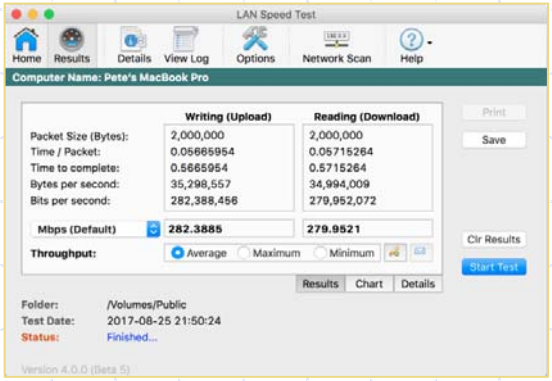




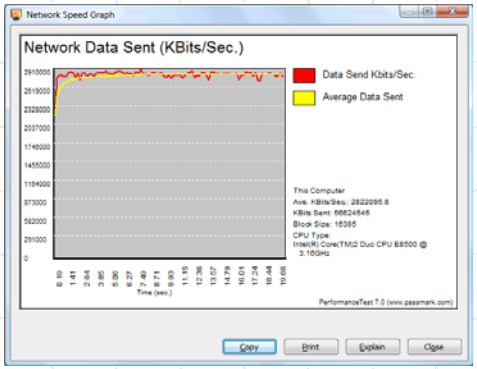
https://www.softperfect.com/products/networx/

Windows Tools

- Private-network speed test tools
  - **LAN Speed Test / Server**
    - Free "lite" mode, advanced paid mode ($10)
    - https://totusoft.com/lanspeed

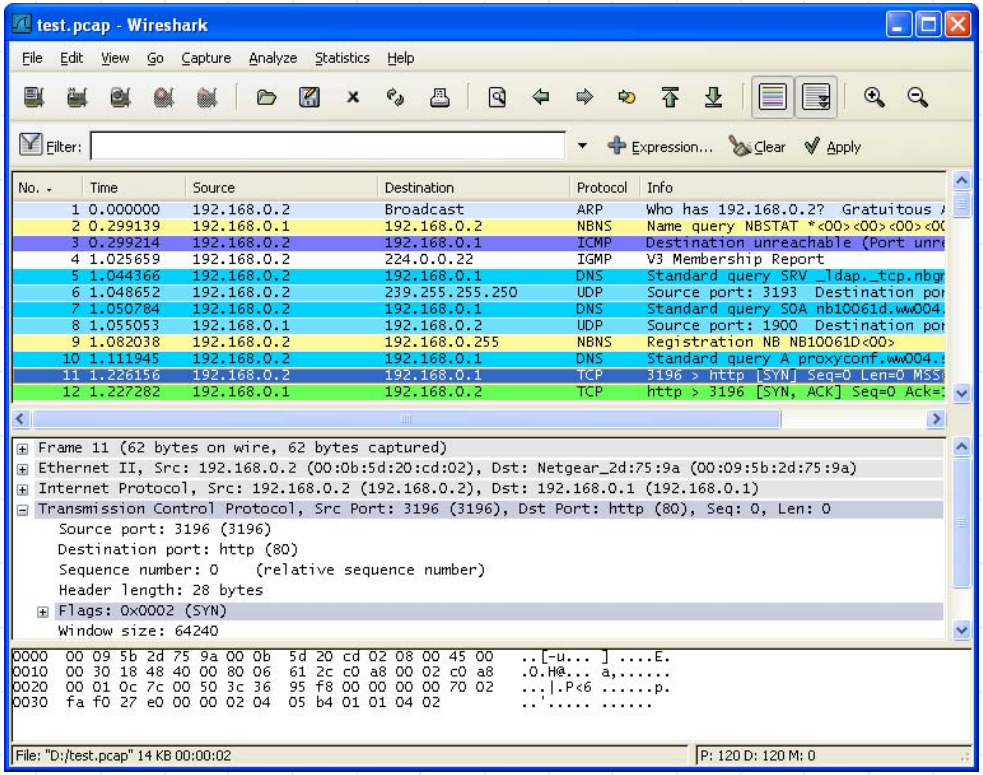


  - **PassMark Performance Test**
    - *Advanced Networking Test*
    - Free 30-day evaluation, $28 to buy
    - https://www.passmark.com/products/pt.htm



Advanced Tools

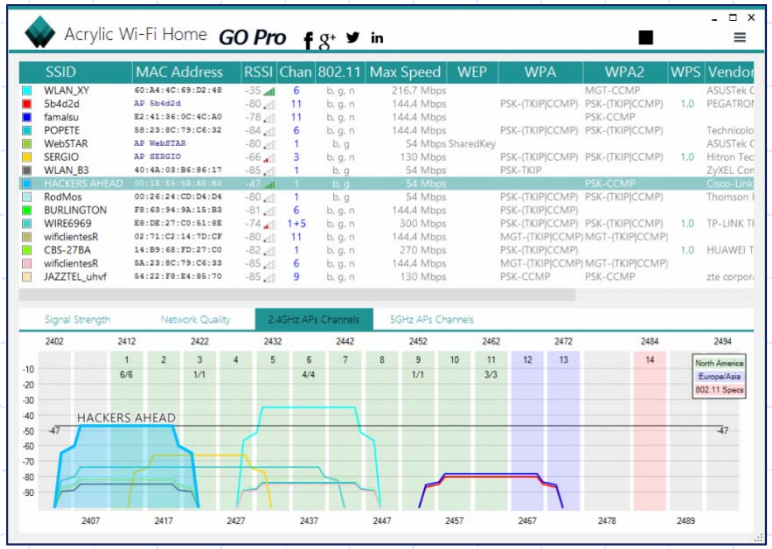
- **Wireshark**
  - "Deep packet inspection"
  - Network protocol analyzer

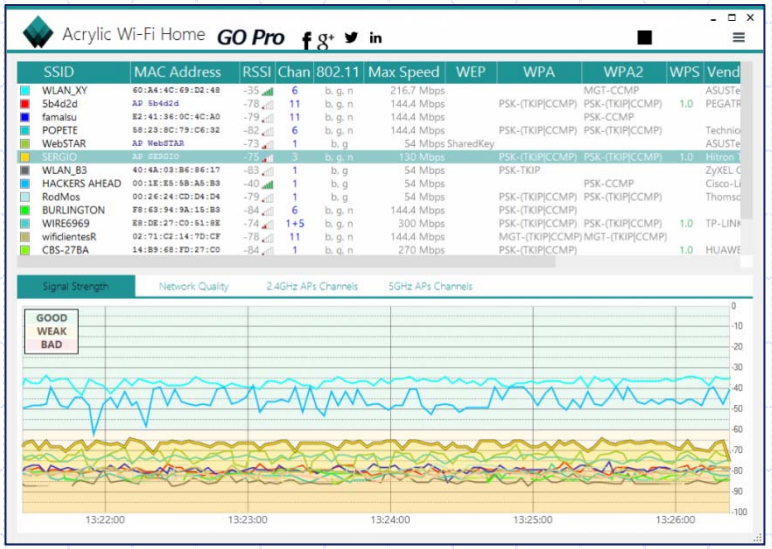


https://www.wireshark.org

Wireless Tools

- **Acrylic WiFi Free / Home**
  - Wireless network "sniffer"





https://www.acrylicwifi.com/en/wlan-wifi-wireless-network-software-tools/wlan-scanner-acrylic-wifi-free/

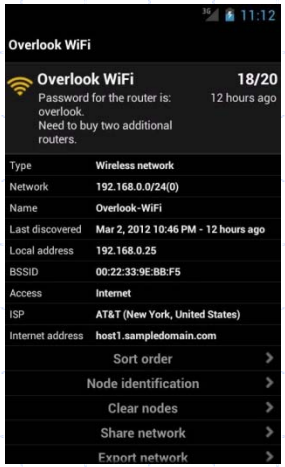
Wireless Tools

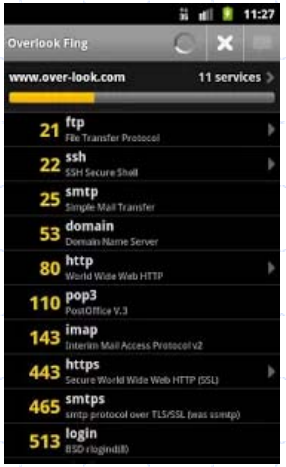
- Mobile Apps
  - Android **WiFi Analyzer**
    - Graphical or tabular display of Wi-Fi networks in range
    - Shows signal strength vs. channel or time
    - Similar functionality as Acrylic, for mobile devices
    - Not available for Apple iOS devices (iPhone, iPad, etc.)
    - Note reduced functionality in Android 9 (Pie)

https://play.google.com/store/apps/details?id=com.farproc.wifi.analyzer

Wireless Tools

- Mobile Apps
  - Android, iOS **Fing** - Network Scanner
    - Discover devices connected to network
    - Port scanning
    - Ping, traceroute
    - Other network tools
    - Similar functionality as NMAP, for mobile devices





https://itunes.apple.com/us/app/fing-network-scanner/id430921107
https://play.google.com/store/apps/details?id=com.overlook.android.fing

Questions?

- Thank you!

ADCOMM Engineering Co.
adcomm@adcomm911.com
(425) 489-0125
www.adcommeng.com